

***EAST OTTER TAIL COUNTY NSBI  
Social Research Report***

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## ACRONYMS

BMP	Best management practice
CATA	Check-all-that-apply
COLA	Coalition of Lake Associations
COOR	Check-only-one-response
DNR	Minnesota Department of Natural Resources
EOT	East Otter Tail
EOTSWCD	East Otter Tail County Soil and Water Conservation District
KAP	Knowledge, attitudes and practices study
LGU	Local government unit
MNENRTF	Minnesota Environment and Natural Resources Trust Fund
<i>n</i>	number
NSBI	Native Shoreland Buffer Incentives Project
Q	Question
SWCD	Soil and Water Conservation District
TMDL	Total maximum daily load
UM	University of Minnesota
WRC	University of Minnesota Water Resources Center

## Introduction

The Native Shoreland Buffer Incentives project (NSBI) was a pilot project designed to test and evaluate new approaches to engaging lakeshore property owners in northern Minnesota. The project was proposed by the DNR to the Minnesota Environment and Natural Resources Trust Fund (MNENRTF) in 2008. It was accepted by the Trust Fund Commission, which recommended the proposal to the Minnesota State Legislature, and was eventually funded for \$225,000. The program has run for three years (July 2008 – June 2011).<sup>1</sup>

The primary resource objective of the NSBI is to protect native vegetation buffers along Minnesota shorelines. The project goal is to develop, implement, and evaluate the efficacy of two substantially different models for incentivizing the maintenance of native shoreland buffers by local government units (LGUs). The project scope combines both social science and natural resources activities. Through the NSBI, the Minnesota Department of Natural Resources (DNR) offered two competitive grants to LGUs to craft shoreland protection incentive programs that encourage maintaining and restoring native shoreland buffers in areas of existing or newly proposed development. East Otter Tail County was one of the two LGUs selected to participate in the NSBI.

Intended outcomes of the NSBI program were:

- 1) A workshop and ongoing consultation services that educated prospective local governmental applicants about how to design incentive programs that elicit sustainable behavioral change;
- 2) two trial buffer incentive programs models (one per LGU);
- 3) interim and final reports on program efficacy; and
- 4) DNR technical and assessment support on the effectiveness of trial program buffers.

Measures of success:

This project will be considered successful if:

- Two buffer incentive programs (chosen by competitive process) are developed, implemented, and evaluated by June, 2011;
- the MNENRTF is satisfied with the final efficacy reports, and the reports are helpful to others considering incentive-based approaches to shoreland stewardship;
- involved stakeholders have increased their skills and knowledge as a result of the project; and
- the DNR and other interested parties can readily benefit from the lessons learned from the trial programs.

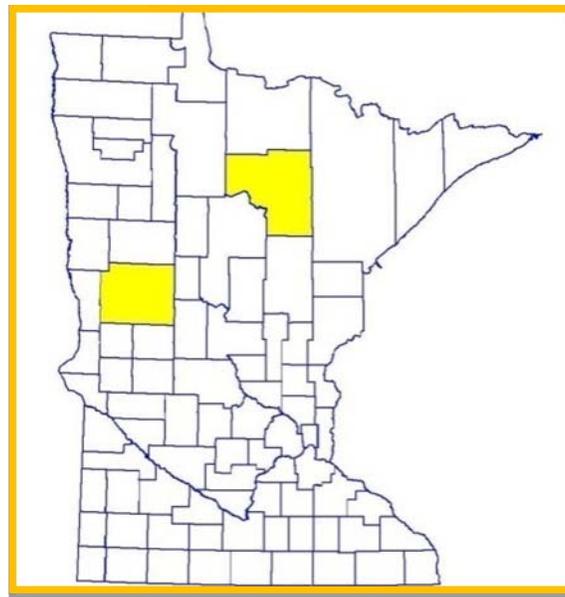
The project was led by the DNR, and a subcontract was awarded to the University of Minnesota Water Resources Center (WRC) for the social research component. The DNR partnered with the

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<sup>1</sup> The project was extended due to the state government shutdown as well as administrative delays in contracting.

WRC to conduct a workshop in October 2008 for prospective applicants, and to conduct social, economic and ecological efficacy research for each trial program. These project partners have provided technical assistance to LGUs in the design, administration, implementation and evaluation of the trial incentive programs.

The NSBI project commenced in October 2008 with a workshop called “Understanding your Target Audience,” which was attended by approximately forty staff of two dozen local governments, mainly counties and soil and water conservation districts (SWCDs). The LGUs were invited to submit proposals to the NSBI with innovative strategies intended to foster adoption and maintenance of shoreland buffers by lakeshore property owners. The proposals were submitted and reviewed by a panel with members drawn from The Initiative Foundation, DNR, WRC and others. Two proposals from the East Otter Tail (EOT) County Soil and Water Conservation District, and a coalition of partners from Itasca County (including Minnesota Extension, the Itasca Coalition of Lake Associations, or ICOLA) were selected for funding (\$75,000 each). Contracts were prepared for each county, and project activities commenced in late 2008.



*Figure 1: Location of Itasca and East Otter Tail Counties  
(Itasca is in northern Minnesota; East Otter Tail is in west-central Minnesota)*

Both counties committed to a social research component that investigated the awareness and behaviors of lakeshore property owners. Barriers and constraints to adoption of shoreland buffers were also explored. One social research and evaluation tool employed in both Itasca and East Otter Tail counties is the *knowledge, attitudes and practices (KAP) study* described in Eckman (2010 and 2011).

This report concerns only the social research aspects and social outcomes of the East Otter Tail County NSBI project. A similar report has been prepared for Itasca County. Each county will also submit a final report detailing the deliverables in each case. In addition, the NSBI final/efficacy report gives an overview of project accomplishments and lessons, and draws conclusions about the efficacy of the different strategies tested in each county.

It should be noted that unfortunate administrative delays in processing contracts in 2008, 2009 and 2010, combined with the 2011 state government shutdown, severely handicapped the social research elements of the NSBI. The long administrative delays and work stoppages caused frequent interruptions in field work, leaving insufficient time for data analysis. There has been limited time in which to prepare this report and the NSBI final/efficacy report. Nevertheless, valuable lessons and findings have been gained, and are summarized in this and the accompanying final/efficacy report.

### **The East Otter Tail County NSBI Project**

The purpose of the East Otter Tail County NSBI was described in the proposal submitted to the DNR in late 2008:

*“This project targets owners of larger lots (greater than 120 feet of shoreline) in the 50- to 70-year old age demographic with outreach materials and incentives to restore or maintain native shoreline buffers. Targeted shoreland homeowners will be invited to attend tours, site open houses and workshops, and will be offered opportunities and incentives to establish large, attractive and sustainable shoreland buffers on their sites. The project will also document changes in public knowledge, attitudes and perceptions (KAP) through pre- and post-implementation research, evaluate established buffer quality, and disseminate all results and developed materials through the eotswcd.org website.”*

A customized conceptual framework guided the NSBI strategy for each county. For East Otter Tail County, the “big picture” questions were determined to be:

- Which incentives should be offered to residents?
- What is the acceptability of cost-share to residents?
- What are perceptions of property owners of a naturalized shoreline?
- How to move the “maybes” (e.g. those individuals that say they might be interested in participating)?
- Which low-touch incentives will move the “maybes?”
- What kind of information do the “maybes” need?
- Which treatments or “offerings” (incentives and otherwise) do people prefer?

The following graphic was provided by the EOTSWCD in 2010 and describes the strategy used by EOT shoreland staff:

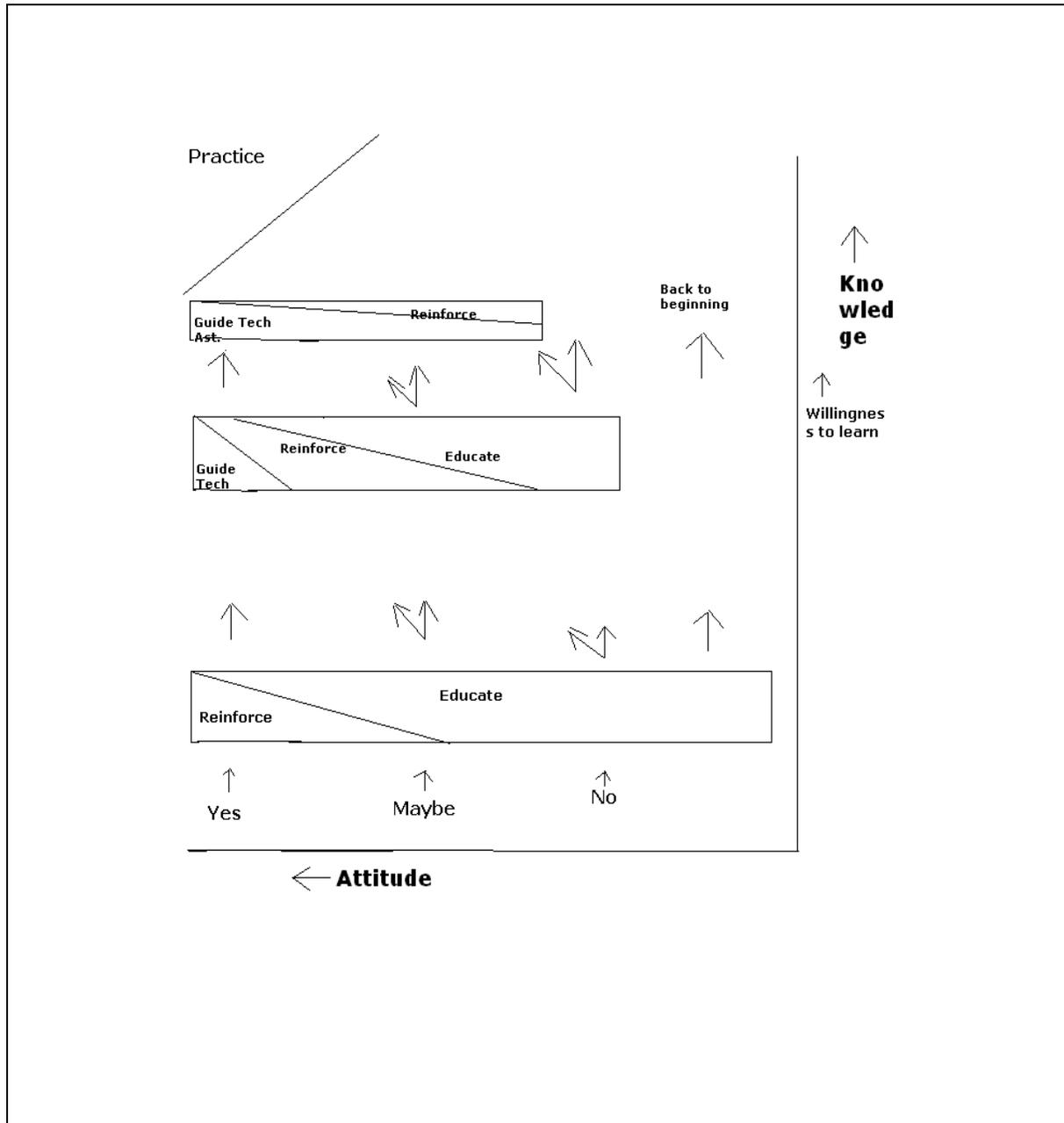


Figure 2: EOTSWCD Education and Outreach Strategy

Figure 2 is a way to visualize the application of a range of outreach elements to a target audience of varying original knowledge and intent. The goal is to move individuals through the attitude spectrum until they purposefully “intersect” with the appropriate knowledge to result in the practice outcome in the upper left corner. The outreach elements vary based on audience

willingness to learn, incorporating more technical elements as this willingness increases. While still carrying reinforcing and educating messages to cursory readers the outreach becomes more technical and targeted towards likely adopters across the spectrum. Audience angle (45 degree) arrows indicate a change in attitude resulting in increased willingness to consume additional education and outreach materials which may or may not result in adoption during this educational cycle.<sup>2</sup>

A knowledge, attitudes and practices (KAP) study was designed to provide county staff with a baseline data set that could determine the current level of audience knowledge, which would guide the design of educational messages. KAP values would also be useful to the EOT staff in understanding respondent motivation; identifying specific constraints preventing respondents from adopting buffers; identifying gaps in knowledge and practices; and identifying individuals ready to adopt and participate. Measureable changes in KAP values (particularly knowledge) over time would provide evidence of impact over the project period. Based upon the first-round KAP data, East Otter Tail staff (Steve Henry) developed an innovative education and outreach strategy with several options, which were tested and assessed during NSBI implementation. The EOT NSBI strategy can be summarized as:

**“High-touch,”** defined as frequent and direct on-site contact by shoreland specialists, with multiple options for adoption including buffer installations with free labor and other options. Guidebooks were given at an earlier step to all participants. There were multiple messengers (e.g. Karen Terry from UM Extension who did a shoreland workshop; Steve Henry directly contacted and prepared participants for site visits; site visits were all performed with small groups; and joint installations were conducted). Participants were asked to contact their neighbors (peer to peer contact).

**Sites:** Lake Seven (14 adoptees of 70 parcels; 11 are awaiting cost share through Clean Water)

**“Medium-touch”** defined as less frequent contact, but with some site visits. There was also joint installation (do one house then do next house with owners on each site). Participants received guidebooks at site visits, and were also asked to contact neighbors (peer to peer).

**Sites:** Pickerel Lake (11 adoptees of 250 parcels)

**“Low-touch”** defined as no direct contact with the property owner, who received a newsletter only. Property owners were given guidebook and asked to contact their neighbors (peer to peer). Only two property owners participated on adjoining lots. SWCD staff swayed one owner; the respondent got a guidebook and talked to neighbor. Result was the same result (adoption).

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<sup>2</sup> Personal correspondence, Steve Henry

**Sites:** West Battle (2 adoptees of 490)

Total: 27 adoptees (not all got NSBI cost share; two got no cost share from any source, but got labor)

The corresponding EOT treatments are summarized in the following table:

**Table 1: EOT Treatment and Control Groups**

<b>Treatment Groups</b>	Low touch	- Brochure (all)
	Medium touch	- Community meeting (West Battle Lake; Lake Seven)
	High touch	- Intense presence with personalization (Pickerel Lake)
<b>Control Group: East Battle Lake</b>	- No brochure - Monitor only - Post-KAP focus group	

### **Social Science Research Aspects of the EOT NSBI**

The NSBI included a social research and evaluation component, in contrast to most Minnesota water quality projects (Eckman, Walker, Nuckles and Bouapao, 2008). It has been observed that, within a targeted audience, some individuals are inclined to adopt a recommended best management practice (BMP), while others are disinclined. The reasons for this are not well explained by current research and literature. A major question among natural resource professionals is how to move people from being disinclined to being more inclined to adopt a conservation practice.

It has also been observed that most natural resources professionals are trained in the biophysical sciences. They are often unfamiliar with social research and evaluation practices and methods, which limits their use at the project level. In addition, as the NSBI began, it was learned that few water quality projects in Minnesota conduct any form of project evaluation, and that the evaluation of social outcomes and impacts is very rare (Eckman, Walker, Nuckles and Bouapao, 2008). Therefore, there is limited capacity among natural resources professionals and related public agencies to investigate the underlying reasons for non-adoption of BMPs and lack of participation in conservation. The vast majority of water quality projects in Minnesota are unable to determine with certainty the impact of their projects and messages on intended target audiences. Evaluating social outcomes also relates to questions of accountability: how can the

overall impact of major investments of public resources on resource users be known? The NSBI was designed in part to address these underlying questions.

Some of the underlying social research questions of the NSBI include:

- What motivates people to adopt and maintain a recommended practice? Why are some individuals inclined and others disinclined to adopt?
- Are the customary financial incentives offered by state and local agencies sustainable? Do people maintain the practice after the incentives end?
- How can education and outreach strategies be designed according to local needs for better impact?
- How can we, as natural resources professionals, foster civic engagement?
- How do we know what impact the NSBI project has on property owners? What are the social impacts, results and outcomes?

These are “big picture” questions currently being discussed by a number of natural resources professionals in Minnesota and elsewhere. While these questions may not be entirely answered by the social research in this particular project, our findings may contribute in a small way to this very active dialogue. One example comes from Lake Seven, where “high touch” social interaction provided by EOT staff encourages people to keep participating. In principle, the greater the interaction between natural resources professionals and local property owners, the better, but how can this be sustained and even expanded county-wide given limited LGU resources? How can one staff member work with an ever-expanding number of groups? How can civic engagement best be supported?



*Photo 1: EOTSWCD shoreland staff checking a newly-planted buffer at a “high touch” property.*

The social research methods selected in this project were chosen because of their relatively low cost, relatively rapid nature, and ease of application and interpretation. A mixed-methods approach was taken in order to triangulate and verify findings, and to obtain a richer understanding of attitudes and (especially) motivation of local property owners. The pre-implementation research methods used in East Otter Tail County included:

1. A baseline KAP (knowledge, attitudes and practices) study to assist in planning, the design of education and outreach methods, and to identify possible participants in the NSBI; and
2. a focus group held with lake association members to understand social networks and diffusion of information between property owners.

The end-of project research methods included:

1. A second-round KAP study to evaluate changes in knowledge, attitudes and practices, and the acceptability of recommended practices and installations. This yielded two data sets enabling comparison of pre and post KAP values; and
2. key informant interviews to gain a richer understanding of participant motivation and to better understand local social networks.

Coaching in the KAP method was provided throughout the NSBI by the University of Minnesota Water Resources Center, and a “how-to” workshop was organized on designing a focus group study.

The NSBI social research methods are characterized as purposive and exploratory in nature. Even though the baseline EOT KAP sample was intended to be a random probability sample, the response rates were not large enough to enable more sophisticated data analysis. The analysis, therefore, is based upon a comparison of descriptive statistics (frequencies/percentages) for the two data sets. These quantitative findings were contrasted with the qualitative data gained from key informant interviews.

### **The East Otter Tail County KAP Study**

As noted, a KAP study was designed specifically for property owners in East Otter Tail County. The purpose of the KAP study was to assess the views of shoreland property owners about shoreline buffers, as well as to identify potential incentives that might help to overcome barriers to installing and maintaining buffers.

The survey experimental design was guided by a “gap exercise,” whereby NSBI and EOT staff considered what they needed to know about the audiences on target lakes. Of special interest was gaps in staff knowledge about those audiences (“what *don’t* we know about these property owners, but *should* know, in order to design an effective education and outreach strategy). During this exercise, a list of gaps was made during a brainstorming session with EOT and NSBI staff. This preliminary list of gaps was the basis for questionnaire construction. The list of gaps and questions was refined, critiqued by the team, refined again, and finally converted into a Survey Monkey draft questionnaire. This was pretested and refined again. The two KAP questionnaires (2009 and 2011) are attached as annexes to this report.

The sampling frame was based on criteria determined by the EOT SWCD. These included:

- a. Shoreland property owners with larger lots (> 120 feet of shoreline);
- b. Shoreline property owners in the 50-70 years of age demographic.

***Table 2: Comparison of First and Second Round EOT KAP Studies***

	Dates	Sample Population	Sample size	# Respondents	Response Rate	Margin of Error
<b>KAP 1</b>	Summer 2009	1,500	665	383	58%	2.84
<b>KAP 2</b>	Summer 2011	1,500	379 (~20 returned) = 359	131	36%	4.35

For the second round KAP study, EOT staff sent a small number of surveys to three different treatment groups county-wide, drawn from the same pool as the original survey. These included:

- a. Pickerel Lake residents meeting EOTSWCD’s original criteria;
- b. Pickerel Lake residents in general;
- c. Lake Seven residents meeting EOTSWCD’s original criteria;
- d. Lake Seven residents in general.

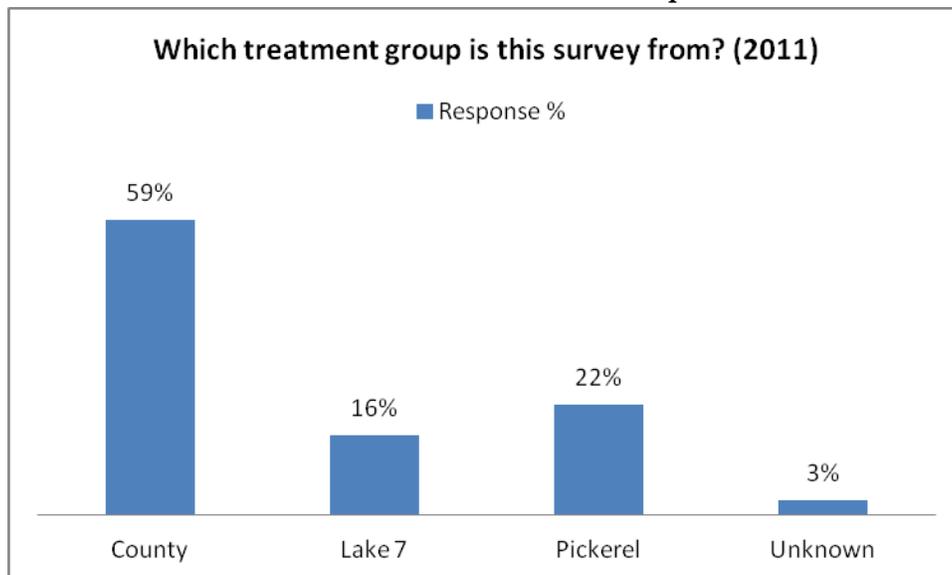
The individual respondents in the second sample were different than the first sample in most cases. EOT intended to compare targeted lakes (with the specific criteria) with the county-wide population. However, too few questionnaires were completed to enable such a comparison.

**Survey administration**

The EOT KAP study was administered twice: first as a baseline survey at the project outset (summer 2009); and again toward the end of the project (summer 2011). Both surveys were administered by mail, with mailing protocols based upon the Dillman Tailored Design Method (Dillman 2000). A professional company was employed by EOTSWCD to address and mail the surveys for the first-round surveys. Data entry for both surveys was done by EOT staff, except for one batch of 2011 questionnaires that was sent to WRC for data entry in December 2011. The first-round data set in the EOTSWCD Survey Monkey account was unfortunately deleted in 2010 resulting in some loss of some sampling data and respondent comments (although a partial dataset had been downloaded).

The second-round stratified sample is summarized in the following table:

***Table 3: EOT Treatment Groups***



Second-round survey administration was managed by EOTSWCD staff, with coaching provided by the WRC. EOTSWCD mailed less than one hundred questionnaires in the fall of 2011, of which about thirty were returned. EOT was encouraged by WRC to significantly increase the number of questionnaires in the sample to reach a minimum sample size. The second tranche of questionnaires was therefore sent in late October 2011 resulting in a total of 131 for the second-round data set. While this number is unfortunately low (*e.g.* 36% response rate and 4.35 margin of error), it is a basis for the comparison of pre and post project data. EOTSWCD provided the following possible explanations for the low response rates:

- The state government shutdown (July 2011) meant that the second-round KAP study was delayed for about two months, leaving only a small window of time for EOT staff to send out the introductory letter, a second-tranche survey, and reminder notices.
- Both verbal and written comments suggested that property owners were frustrated about the state government shutdown, which may have affected respondents' willingness to participate in the survey.

Data analysis was done by WRC with Survey Monkey and Excel software using basic descriptive statistics. Data from the pre and post surveys were compared to give longitudinal results. Given the small sample sizes, especially for the second-round survey, it was not possible to do more sophisticated data analysis.

Data application. The first-round data was used to inform the education and outreach aspects of the EOT NSBI, and to help identify property owners expressing an interest in participating.<sup>3</sup> The second-round survey differed somewhat from the first-round survey, although many questions were retained in order to give a basis for comparison and evaluation. The second-round study repeated many (but not all) of the questions in order to gauge changes in key KAP values. A few first-round questions needed for planning were dropped (*e.g.* Q8, 13 and 18). A set of efficacy questions were added to the second-round questionnaire (Q18-26) in order to assess acceptability and utility of the NSBI approach. These new questions were posed to assess the acceptability of the strategies and interventions that were introduced in the interim. This produced two data sets (pre and post implementation), enabling direct comparison of values. Specific details are provided in the Discussion section below.

The results and comparison of the first and second round surveys are presented below. Knowledge questions are presented first, followed by attitudes and practices questions. In the ranked scale data sets, the values with highest frequencies are highlighted in bold font. Where appropriate, the symbol  is used to signify an interpretive comment or note of the results for specific survey questions.

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<sup>3</sup> Details about how the KAP data was used in preparing the education/outreach strategy and materials are described in the NSBI final/efficacy report.

## Knowledge Questions

In 2009, a sequence of statements was posed in a scale question to respondents to explore their **knowledge about water quality**. 2009 results are summarized below in Table 4. Highest ranked results are in bold font.

*Table 4: How much do you agree with the following statements? Please check the box that best indicates how much you agree (2009 Results).*

	Agree	Neutral	Disagree	I don't know	Response count
“How the land around my lake is managed has an impact on the water quality in my lake.”	<b>92.3% ( 348)</b>	4.8% (18)	0.8% (3)	2.1% (8)	377
“Pollution that gets into my lake slowly builds up over time.”	<b>81.3% (304)</b>	9.9% (37)	2.7% (10)	6.1% (23)	374
“My lake’s water quality will get worse in the future.”	27.5% (103)	<b>38.2% (143)</b>	17.1% (64)	17.1% (64)	374
“The water clarity (how deep you can see) in my lake has an effect on the value of my property.”	<b>75.8% (285)</b>	16.0% (60)	2.7% (10)	5.6% (21)	376
“My actions impact the water quality experienced by future generations.”	Data unavailable	Data unavailable	Data unavailable	Data unavailable	Data unavailable
Answered question					377
Skipped question					12

This question was repeated in 2011, and results are presented below.

**Table 5: How much do you agree with the following statements? Please check the box that best indicates how much you agree (2011 Results).**

	Agree	Neutral	Disagree	I don't know	Response count
“How the land around my lake is managed has an impact on the water quality in my lake.”	<b>94.5% (121)</b>	3.1% (4)	0.8% (1)	1.6% (2)	128
“Pollution that gets into my lake slowly builds up over time.”	<b>89.2% (116)</b>	6.9% (9)	0.8% (1)	3.1% (4)	130
“My lake’s water quality will get worse in the future.”	<b>37.2% (48)</b>	29.5% (38)	20.2% (26)	13.2% (17)	129
“The water clarity (how deep you can see) in my lake has an effect on the value of my property.”	<b>79.1% (102)</b>	17.8% (23)	0.8% (1)	2.3% (3)	129
“My actions impact the water quality experienced by future generations.”	<b>89.9% (116)</b>	8.5% (11)	0.8% (1)	0.8% (1)	129
Answered question					131
Skipped question					0

Results are notable in that respondent knowledge and awareness of key water quality constructs is very high. However, there seems to be a lack of awareness of the possibility of change in water quality. In 2009, the majority did not appear to perceive that water quality might worsen over time. However, by 2011 there was a ten percent increase in the number of respondents who expressed awareness that water quality could decline. There is also an increased belief in 2011 that water quality affects property values.

💧 Both data sets suggest that knowledge about water quality is already relatively high, and that responses across the board shifted in a positive direction from 2009 to 2011. Since awareness of the importance of water quality is already high, outreach and educational messages should build upon what people already know and are concerned about.

A second knowledge question explored respondent **knowledge about the environmental benefits of native shoreland buffers**, as well as preconceptions and attitudes toward buffers. Results are summarized in the table below.

*Table 6: How much do you agree with the following statements? Please check the box that corresponds with how much you agree. “Natural shoreland areas....” (2009).*

	Agree	Neutral	Disagree	I don't know	Rating averages	Response count
Prevent erosion	<b>76.2%</b> (276)	14.9% (54)	4.4% (16)	4.4% (16)	2.63	362
Protect water quality	<b>75.8%</b> (275)	14.6% (53)	3.6% (13)	6.1% (22)	2.60	363
Improves property appearance	22.5% (82)	<b>46.3%</b> (168)	26.2% (95)	5.0% (18)	1.87	363
Provide wildlife habitat	<b>79.7%</b> (291)	14.2% (52)	3.6% (13)	2.5% (9)	2.71	365
Provide fish habitat	<b>72.1%</b> (259)	17.8% (64)	5.6% (20)	4.5% (16)	2.58	369
Reduce shoreline maintenance	<b>52.5%</b> (188)	26.3% (94)	14.5% (52)	6.7% (24)	2.25	358
Obstruct lake views	30.6% (110)	<b>35.8%</b> (129)	27.5% (99)	6.1% (22)	1.91	360
Are a safety hazard	5.6% (20)	34.8% (125)	<b>52.9%</b> (190)	6.7% (24)	1.39	359
Increase nuisance bug and pest activity	<b>40.9%</b> (147)	31.5% (113)	18.4% (66)	8.2% (33)	2.04	359
Interfere with dock and lift removal/storage	<b>39.6%</b> (143)	31.6% (114)	22.7% (82)	6.1% (22)	2.05	361
Eliminate sandy beaches	32.3% (116)	<b>33.1%</b> (119)	25.3% (91)	9.2% (33)	1.89	359
Interfere with lake access	29.2% (105)	36.9% (133)	28.1% (101)	5.8% (21)	1.89	360
Answered question						367
Skipped question						16

This question was repeated in 2011, although EOTSWCD shortened the number of possible responses. Results are presented in the table below.

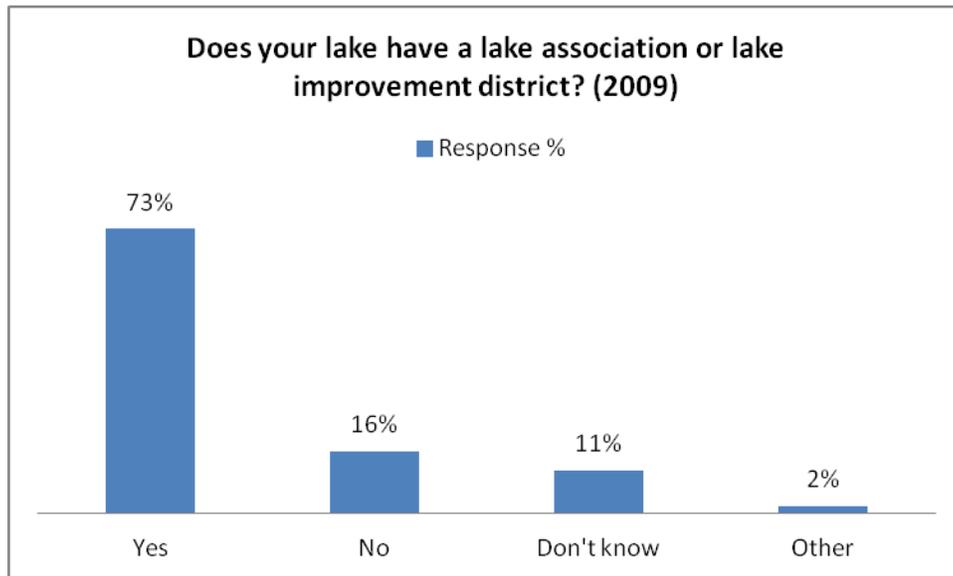
**Table 7: How much do you agree with the following statements? Please check the box that corresponds with how much you agree. “Natural shoreland areas...” (2011).**

	Agree	Neutral	Disagree	I don't know	Rating averages	Response count
Prevent erosion	<b>83.2%</b> <b>(104)</b>	8.8% (11)	4.8% (6)	3.2% (4)	2.72	125
Protect water quality	<b>84.1%</b> <b>(106)</b>	11.1% (14)	2.4% (3)	2.4% (3)	2.77	126
Provide wildlife habitat	<b>72.0%</b> <b>(90)</b>	23.2% (29)	2.4% (3)	2.4% (3)	2.65	125
Obstruct lake views	27.6% (34)	<b>47.2%</b> <b>(58)</b>	20.3% (25)	4.9% (6)	1.98	123
Interfere with dock and lift removal/storage	<b>41.6%</b> (52)	32.0% (40)	19.2% (24)	7.2% (9)	2.08	125
Eliminate sandy beaches	29.0% (36)	<b>34.7%</b> <b>(43)</b>	29.0% (36)	7.3% (9)	1.85	124
Interfere with lake access	30.9% (38)	<b>39.8%</b> <b>(49)</b>	22.8% (28)	6.5% (8)	1.95	123
Answered question						127
Skipped question						4

💧 Responses suggest that the majority of respondents are at least somewhat aware of the functions and benefits of natural shoreland areas. The majority of respondents know that natural shorelines prevent erosion, protect water quality, provide wildlife and fish habitat, and reduce shoreline maintenance. However, many also believe that natural shorelines have negative characteristics (obstruct lake views, interfere with docks and boat lifts, eliminate sandy beaches and interfere with lake access, etc.). This suggests that education and outreach should build upon the positive impressions of buffers, and focus on reducing concerns about perceived negative aspects.

**Awareness of lake associations** was fairly high in 2009. Seventy-three percent knew that there was a lake association for their lake, while sixteen percent said that there was not a lake association for their lake. Eleven percent responded “I don’t know,” and 2% replied “Other.” Results are summarized in the following table:

**Table 8: Awareness of Lake Association**



💧 The significance of this question is that lake associations are already familiar local organizations to shoreland property owners, and that most lakes do have an association or lake improvement district. This question was not repeated in 2011.

## Attitudes Questions

Questions were posed exploring respondents' links with Otter Tail lakes, and their **perceptions of water quality**. A ranking/scale question was "*Which of the following factors make Otter Tail County lake property particularly valuable to you?* Choose one answer for each of the following factors." Results for this question are summarized in Table 9 (2009) and Table 10 (2011) below. Highest response rates are in bold font.

**Table 9: Attitudes about the Value of Lakeshore Property in Otter Tail County (2009)**

	Very Important	Important	Somewhat Important	Not Important	Response Count
Scenic Environment	<b>55.3% (202)</b>	38.4% (140)	5.5% (20)	1.1% (4)	365
Clean Water	<b>76.4% (281)</b>	21.5% (79)	2.4% (9)	0.0% (0)	368
Affordability	39.1% (127)	<b>41.8% (136)</b>	12.9% (42)	6.2% (20)	325
Good Fishing	35.3% (126)	<b>37.3% (133)</b>	16.8% (60)	10.9% (39)	357
Convenience (close by)	26.1% (86)	<b>30.9% (102)</b>	21.5% (71)	21.8% (72)	330
Investment Potential	26.9% (106)	<b>39.0% (138)</b>	21.5% (76)	9.9% (35)	354
Family Ties	<b>39.5% (135)</b>	20.8% (71)	14.6% (50)	25.1% (86)	342
Answered question					378
Skipped question					11

**Table 10: Attitudes about the Value of Lakeshore Property in Otter Tail County (2011)**

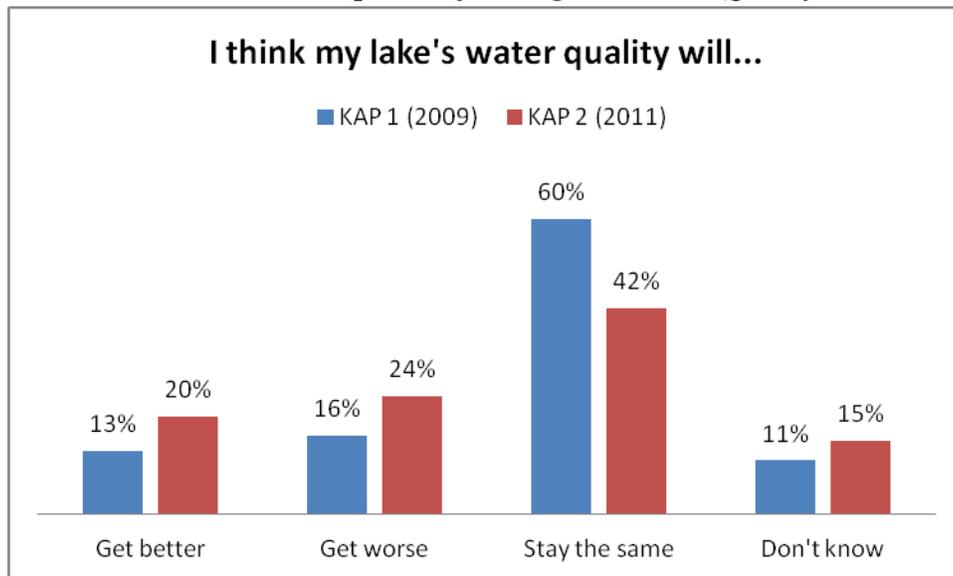
	Very Important	Important	Somewhat Important	Not Important	Response Count
Scenic Environment	<b>69.3% (88)</b>	24.4% (31)	5.5% (7)	0.8% (1)	127
Clean Water	<b>89.1% (115)</b>	10.1% (13)	0% (0)	0.8% (1)	129
Affordability	<b>45.7% (53)</b>	37.1% (43)	12.9% (15)	4.3% (5)	116
Good Fishing	40.5% (51)	<b>28.6% (36)</b>	22.2% (28)	8.7% (11)	126
Convenience (close by)	29.7% (35)	<b>36.4% (43)</b>	21.2% (25)	12.7% (15)	118
Investment Potential	29.2% (33)	<b>33.6% (38)</b>	25.7% (29)	11.5% (13)	113
Family Ties	<b>39.3% (46)</b>	23.1% (27)	16.2% (19)	21.4% (25)	117
Answered question					129
Skipped question					2

💧 Clean water received the highest value of all possible responses in both surveys, and suggests a very high level of concern for the majority of property owners. Of note, the importance of clean water increased by thirteen percent (from 76 to 89%) in the two year period. This was followed by scenic environment, which placed second at 55% in 2009 and 69% in 2011, a similar 13% increase in value. Affordability increased in 2011 by about 6%. This suggests that current and future education/outreach efforts emphasize the themes of highest importance to

property owners (clean water, environment and family times/legacy), possibly with a focus on environmental stewardship.

Respondents were asked in both surveys about their **perception about the condition of their lake's water quality**. In 2009, 13% thought that it was getting better, while 16% thought that it was getting worse. The majority (60%) felt that it was staying the same. Eleven percent didn't know. Respondents showed somewhat more uncertainty in the 2011 survey, with 20% responding that water quality would improve; 24% responding that it would get worse; 42% responding that it would stay the same; and 15% didn't know.

**Table 11: Perceptions of Changes to Water Quality**



In the second round survey, those who answered “Yes” were identified by EOTSWCD as respondents on lakes with positive biological trends (as measured by Secchi and chemistries, and the Douglas County Trophic State Index). There were also higher correlations for respondents on smaller lakes (where you can see across) and lower correlations with big lakes (*e.g.* West Battle).

💧 A large majority in both surveys, however, did not perceive that a change would occur to water quality in their lake, although this proportion dropped by 18% by 2011. This presents an opportunity for appropriate educational messages of trends in water quality, *e.g.* that water quality can and does change as a function of land use and how people use their shoreland areas.

A ranking/scale question was asked about factors that **determine the appearance of their shoreland area**. Respondents were asked to choose one answer for each of the following factors.

**Table 12: How Important are the Following Factors in Determining the Appearance of your Shoreline? (2009)**

	Important	Neutral	Not Important	I don't know	Rating Average	Response Count
Fish and Wildlife Habitat	<b>70.8 % (254)</b>	22.8 % (82)	5.8 % (21)	0.6 % (2)	2.64	359
Neighbor's Opinion/Appearance	31.1% (111)	<b>38.4% (137)</b>	30.0% (107)	0.6% (2)	2.0	357
Annual Maintenance	<b>56.5% (201)</b>	34.0% (121)	8.7% (31)	0.8% (3)	2.46	356
View of the Lake	<b>84.4% (309)</b>	12.8% (47)	2.2% (8)	0.5% (2)	2.81	366
Impact on Water Quality	<b>87% (314)</b>	11.6% (42)	0.8% (3)	0.6% (2)	2.85	361
Cost	<b>47.9% (172)</b>	42.9% (154)	7.8% (28)	1.4% (5)	2.37	359
Shoreline Erosion	<b>83.6% (301)</b>	12.5% (45)	2.8% (10)	1.1% (4)	2.79	360
Open Space for Access	<b>55.7% (187)</b>	31.8% (187)	11.9% (40)	0.6% (2)	2.43	336
Answered question						370
Skipped question						13

**Table 13: How Important are the Following Factors in Determining the Appearance of your Shoreline? (2011)**

	Important	Neutral	Not Important	I don't know	Rating Average	Response Count
Fish and Wildlife Habitat	<b>56.7 % (72)</b>	34.6 % (44)	5.5 % (7)	3.1% (4)	2.45	127
Neighbor's Opinion/Appearance	<b>38.0% (49)</b>	38.0% (49)	23.3% (30)	0.8% (1)	2.13	129
Annual Maintenance	<b>62% (80)</b>	34.1% (44)	3.1% (4)	0.8% (1)	2.57	129
View of the Lake	<b>90.0% (117)</b>	8.5% (11)	0.8% (1)	0.8% (1)	2.88	130
Impact on Water Quality	<b>85.4% (111)</b>	13.8% (18)	0.0% (0)	0.8% (1)	2.84	130
Cost	<b>52.4% (66)</b>	42.9% (54)	2.4% (3)	2.4% (3)	2.45	126
Shoreline Erosion	<b>88.3% (113)</b>	9.4% (12)	1.6% (2)	0.8% (1)	2.85	128
Open Space for Access	<b>54.0% (67)</b>	37.9% (47)	7.3% (9)	0.8% (1)	2.45	124
Steep slope limits access	24.0 (29)	<b>38.0 (46)</b>	28.9 % (35)	9.1% (11)	1.77	121
Answered question						131
Skipped question						0

In 2009 the highest ranked response concerning appearance of your shoreland area was *impact on water quality* (87%), followed closely by *shoreline erosion* (83%) and *fish and wildlife habitat* (71%). These highest-ranked choices all relate to environmental quality, with personal choice responses lagging behind respondents' concern for environmental quality. The personal choice responses were ranked as *view of the lake* (84%), *annual maintenance* (56%), *open space for access* (56%), and *neighbor's opinion/appearance* (31%).

By 2011, there were interesting changes in the highest values for these attitudinal responses. View of the lake was the highest ranked factor, and increased in importance from 84% in 2009 to 90% in 2011. The importance of shoreline erosion followed very closely, and increased from 84% in 2009 to 88% in 2011. The importance of fish and wildlife habitat as a factor in determining the appearance of respondent shorelines declined from 71% to 57%. Annual maintenance increased somewhat from 57% to 62%. Open space for access declined slightly from 56% to 54%. Cost increased slightly from 48% in 2009 to 52% in 2011. The importance of neighbor's opinions increased from 31% to 38%. In 2011, EOTSWCD added a question variable about the steep banks on some lakes, which ranked as an important factor for 24% of respondents.

💧 For both surveys, water quality remains a very high concern for most respondents, as does habitat and erosion control. However, these attitudes appear to be changing with time. Also, several questionnaires contained written comments in 2011 about steeply sloped lots on bluffs, or shallow lots. EOTSWCD should consider developing specialized shoreland messages for owners of bluff and sloped properties.

Next, an attitudinal scale question was posed that explored the **willingness and motivation of respondents to alter their shorelines**. Respondents were asked to choose one answer for each of the following factors. The results are summarized in Tables 14 and 15 below.

**Table 14: “I would be willing to make changes to my shoreline area to...” (2009)**

	Yes	Maybe	No	I don't know	Response count
Improve water quality	<b>69.7% (251)</b>	24.4% (88)	3.3% (12)	2.8% (10)	360
Protect water quality	<b>67.2% (242)</b>	25.0% (90)	5.3% (19)	2.5% (9)	360
Provide fish habitat	<b>48.2% (171)</b>	35.5% (126)	12.1% (43)	4.5% (16)	355
Provide wildlife habitat	<b>46.6% (165)</b>	35.0% (124)	14.1% (50)	4.2% (15)	354
Reduce maintenance	<b>48.3% (171)</b>	33.9% (120)	13.6% (48)	4.2% (15)	354
Improve lake views	<b>42.5% (15)</b>	32.3% (114)	21.5% (76)	3.7% (13)	353
Reduce erosion	<b>69.5% (251)</b>	21.90% (79)	5.8% (21)	2.8% (10)	361
Protect my investment	<b>69.1% (250)</b>	24.0% (87)	4.1% (15)	2.8% (10)	362
Reduce maintenance costs	<b>51.6% (182)</b>	32.0% (113)	12.2% (43)	4.2% (15)	353
Answered question					368
Skipped question					15

This question was repeated in 2011, with responses summarized in Table 15 below:

**Table 15: “I would be willing to make changes to my shoreline area to...” (2011)**

	Yes	Maybe	No	I don't know	Response count
Improve water quality	<b>55.9% (71)</b>	33.9% (43)	7.1% (9)	3.1% (4)	127
Protect water quality	<b>68.2% (88)</b>	24.0% (31)	6.2% (8)	1.6% (2)	129
Provide fish habitat	35.4% (45)	<b>43.3% (55)</b>	18.1% (23)	3.1% (4)	127
Provide wildlife habitat	27.0% (34)	<b>44.4% (56)</b>	26.2% (33)	2.4% (3)	126
Reduce maintenance	<b>46.9 (60)</b>	37.5% (48)	10.2% (13)	5.5% (7)	128
Improve lake views	<b>45.3% (58)</b>	35.9% (46)	16.4% (21)	2.3% (3)	128
Reduce erosion	<b>73.2% (93)</b>	20.50% (26)	3.9% (5)	2.4% (3)	127
Protect my investment	<b>77.3% (99)</b>	19.5% (25)	3.1% (4)	0.0% (0)	128
Reduce maintenance costs	<b>49.6% (63)</b>	40.20% (51)	6.3% (8)	3.9% (5)	127
Answered question					131
Skipped question					0

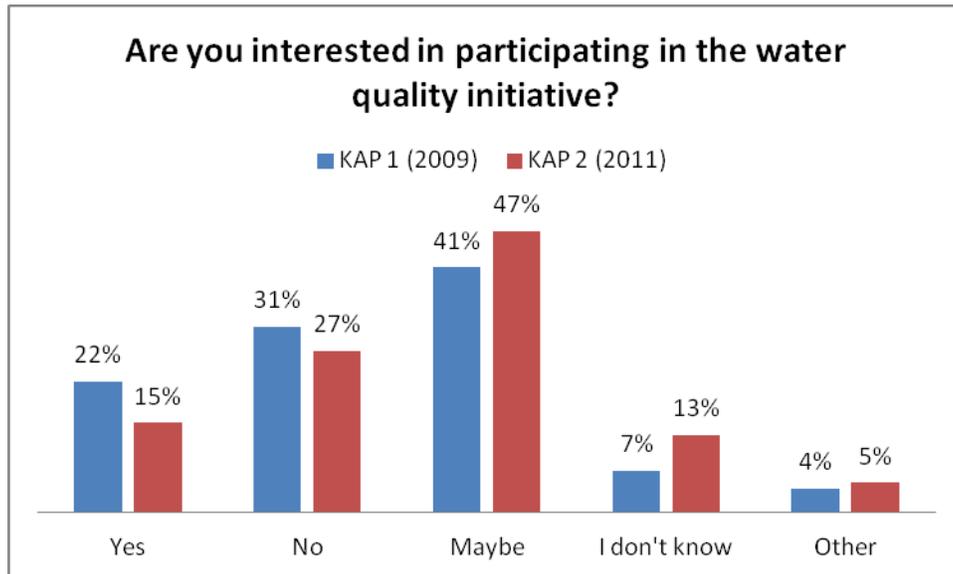
In 2009, four factors ranked almost identically: improve water quality (69.7%); reduce erosion (69.5); protect my investment (69.1%); and protect water quality (67.2%). These were followed by a second cluster of factors that ranked as second in importance: reduce maintenance costs (51.6%); reduce maintenance (48.3%); provide fish habitat (48.2%); provide wildlife habitat (46.6%); and improve lake views (42.5%).

In 2011, the top four factors split as follows: protect my investment (77.3%); reduce erosion (73.2%); protect water quality (68.2%); and improve water quality (55.9%). This later factor declined by fourteen percentage points. The secondary highest-ranked factors realigned to: reduce maintenance costs (49.6%); reduce maintenance (46.9%); improve lake views (45.3%); provide wildlife habitat (44.4%); and provide fish habitat (43.3%).

💧 The 2011 factors suggest a decline in the importance of water quality in the two-year period, and an increased sensitivity to cost and protection of investments in lakeshore property, possibly reflective of macro-economic trends.

A question was posed about respondent **willingness to participate in a water quality initiative** (the NSBI). In 2009 22% responded “Yes;” 31% replied “No;” 41% replied “Maybe, I need more information;” and 7% said “I don’t know.”

*Table 16: Willingness to Participate in the NSBI*



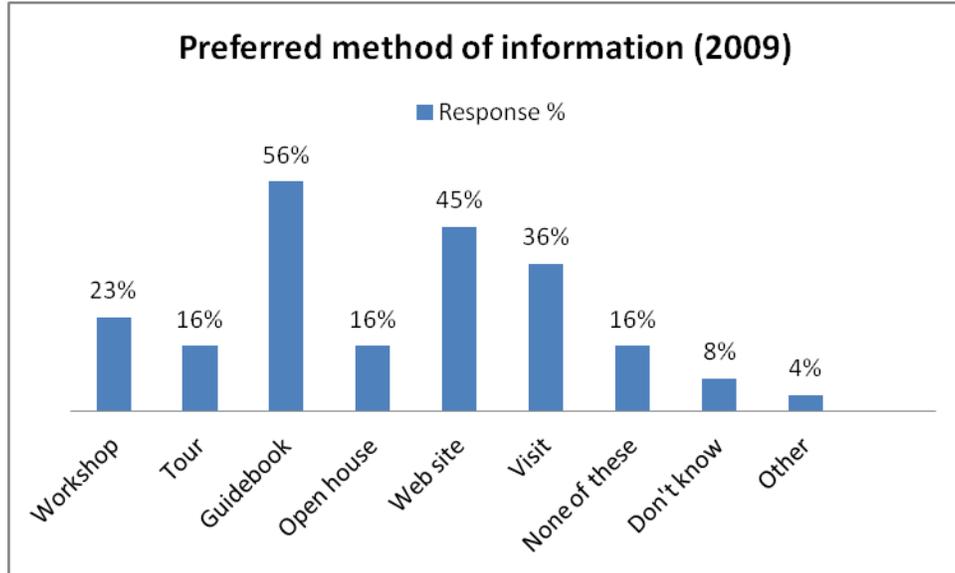
EOTSWCD observed that there was more adoption on headwater lakes than on flowage and pass-through lakes. Pickerel is almost a headwater lake. At Lake Seven, thirty percent of population are now expressing interest in participating. Although the NSBI is ending, the EOTSWCD staff member is submitting proposals to continue the education and outreach aspects of buffer installation. The shoreland technician is no longer designing buffers because there are too many requests and no funding for implementation. Demand is increasing by word of mouth.

💧 In 2011, willingness to participate seemed to decline, with somewhat more uncertainly expressed by the “Maybes” and “I don’t know.” In 2011, 15% replied affirmatively; 26% replied “No;” 47% responded “Maybe, I need more information;” and 13% replied “I don’t know.” The reason for this trend is unclear at this time, and may warrant further investigation either in focus groups or a discussion with local lake associations.

Although the NSBI is ending, the EOTSWCD staff member is submitting proposals to continue the education and outreach aspects of buffer installation. The shoreland technician is no longer designing buffers because there are too many requests and no funding for implementation. Demand is increasing by word of mouth.

Next, a key check-all-that-apply question examined respondent **preferences for obtaining shoreland buffer information** in the first-round survey. Responses are summarized in the following table:

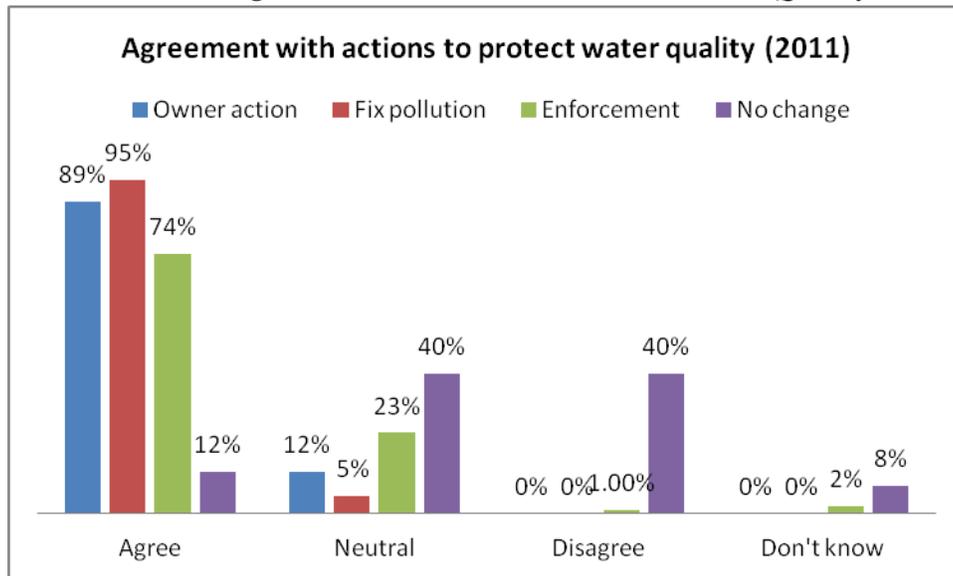
**Table 17: Preferred Method of Information about Shoreland Buffers (2009)**



💧 The highest expressed preference was for a shoreland buffer guidebook. Based upon this data, EOTSWCD developed a shoreland guidebook in 2010 which was tested in a focus group setting, then distributed to NSBI participants in the high and medium touch groups. This question was not repeated in 2011.

An attitudinal question was posed about **actions needed to protect water quality** was added to the 2011 survey by the EOTSWCD. Results are shown in the following table:

**Table 18: Agreement with Actions to Protect Water Quality**



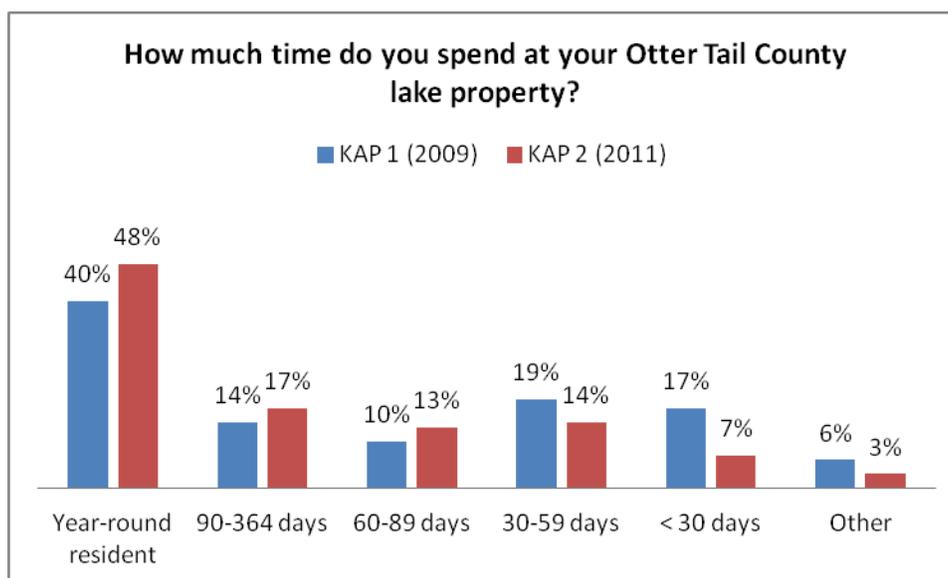
The question posed was “*To protect our lakes’ current water quality...Please check a box for each statement that indicates how much you agree.*” Options were “Each owner needs to act on their own land”; “The most polluting sources need to be fixed”; “Current regulations need to be enforced”; and “No changes need to be made.” This question was not asked in 2009.

💧 Responses suggest a strongly active rather than passive attitudinal stance with regard to protecting water quality in lakes. There was strong agreement and no disagreement that owners need to take action, that pollution needs to be fixed, and little disagreement that regulations should be enforced. Less than 12% of respondents felt that no changes need to be made.

## Practices Questions

A screening question was posed in 2009 to determine the **length of time spent at respondents' lakeshore property**. Forty percent of respondents were year-round residents, while fourteen percent were at their property between 90-364 days/year. Ten percent were at their property between 60 and 89 days/year. Nineteen percent were at their property between 30 and 59 days/year. Seventeen percent were there less than thirty days/year. This question was repeated in 2011. Results are seen in Table 19 below:

*Table 19: Breakdown of Full-time and Seasonal Property Owners*

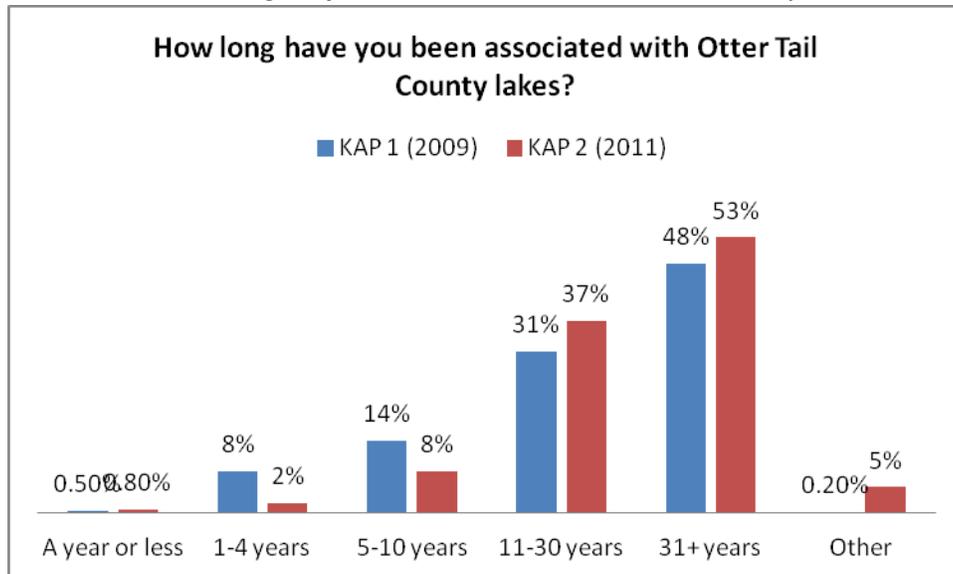


💧 This indicates that there are more seasonal than full-time residents in the survey sample. However, the two-year trend is that more property owners have become full-time residents, possibly reflecting the older demographic of the survey sample. In addition, longer-term seasonal respondents (90-364 days) and between 30-89 days are staying longer than two years ago. Seasonal property owners may have different priorities and preferences than full-time residents although this will require further investigation (it was not possible to stratify the KAP study samples due to loss of the first-round database). EOTSWCD may determine that two different education and outreach strategies are needed.

A **legacy question** was posed of the survey sample: “How long have you been associated with Otter Tail County lakes (ex: visited, owned or been in family)?” In 2009, forty-eight percent replied that they have been associated with EOT lakes for 31 or more years. Another thirty-one

percent have been associated with EOT between eleven and thirty years; and fourteen percent between five and ten years. Eight percent replied one to four years; and 0.5% a year or less.

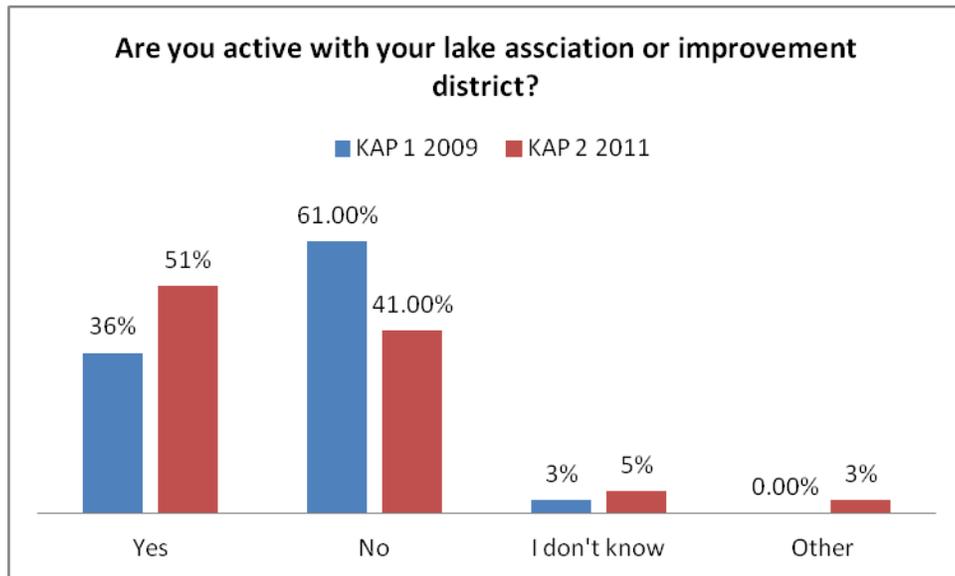
**Table 20: Length of Association with Otter Tail County Lakes**



💧 In 2011, those associated with EOT lakes 5-10 years declined somewhat, but the percent for those over eleven years increased. This may possibly be the result of a generational shift in property ownership, although the real cause is unknown. Nevertheless, it is clear that the majority of respondents have family ties to their lake properties that are probably multi-generational. When combined with expressed concern for water quality, there is possibly a very strong environmental stewardship ethic existing in the sample. Current and future educational and outreach messages should build upon these points.

A question was posed in both 2009 and 2011 asking respondents if they were active in their lake association or improvement district. In 2009, 35.5% replied affirmatively, and in 2011 that number climbed to 51%. In 2009, 61% replied “No,” but the “No’s” declined to 41% in 2011.

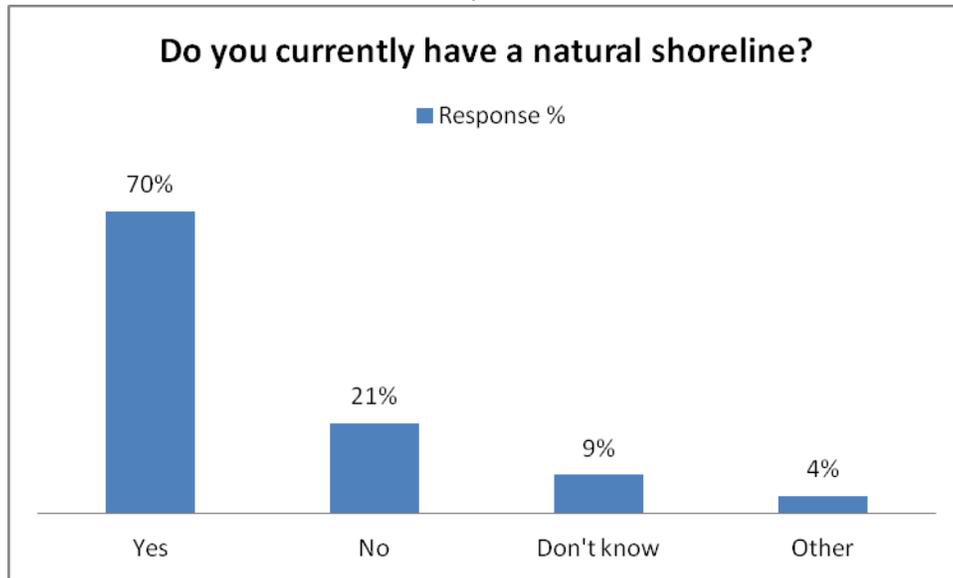
**Table 21: Participation with Lake Association**



💧 There is a trend toward increased participation in lake associations. When combined with the question about sources of information, lake associations are clearly important sources of information and activities for lakeshore property owners. This presents an opportunity for the EOTSWCD to collaborate with local lakeshore associations on education, outreach and other water quality initiatives.

In 2009, respondents were asked if they currently had a **natural shoreland area** on part or all of their shoreline. The results were as follows:

**Table 22: Do You Currently Have a Natural Shoreline?**

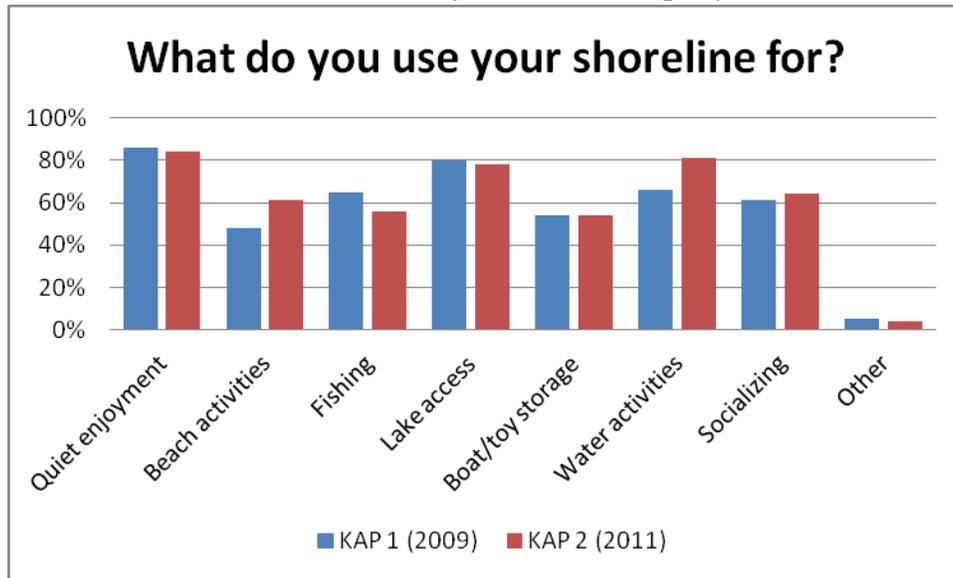


Seventy percent ( $n = 263$ ) reported in 2009 that they currently have a natural shoreline on part or all of their shoreline. Twenty-one percent ( $n = 77$ ) reported that they do not have a natural shoreline. Nine percent ( $n = 34$ ) were not sure. Seventy-four percent ( $n = 274$ ) are not planning on adding or enhancing a natural shoreland area on their shoreline; while nine percent ( $n = 35$ ) responded affirmatively. Seventeen percent ( $n = 62$ ) were not sure.

💧 There were a number of comments written on the questionnaires that suggested uncertainty about what constitutes a “natural” shoreline. Respondent perceptions about natural shorelines were not explored in this KAP study, but may warrant further exploration in the future. This question was not repeated in 2011.

A check-all-that-apply question was posed about **how respondents used their shoreline**. 2009 responses included quiet enjoyment (86%); beach activities (48%); fishing (65%); lake access (80%); boat/toy storage (54%); water activities such as swimming (66%); and socializing with friends and neighbors (61%). These figures were fairly stable in the 2011 survey, as can be seen in Table 23.

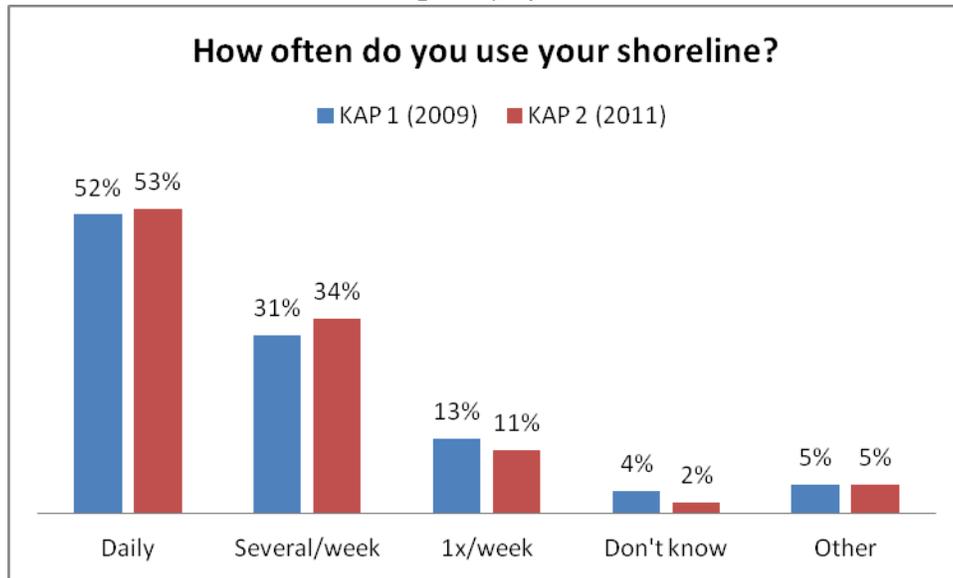
*Table 23: Uses of Shoreland Property*



💧 Shoreline usage appears to be relatively stable, with slight increases in 2011 for “beach activities” and “water activities.” Use of the shoreline for fishing declined somewhat. These factors might influence acceptance of shoreland buffers for some property owners. EOTSWCD might consider promoting shoreland buffer projects in a manner that the project does not interfere with preferred uses.

The KAP study explored **frequency of shoreline use**. In 2009, half (52%) of all respondents reported using their shoreline area daily. Thirty-one percent use the shore several times/week, and thirteen percent once a week or less. Four percent responded “I don’t know,” and five percent listed “Other.” These numbers were relatively stable in 2011, as seen in Table 24 below:

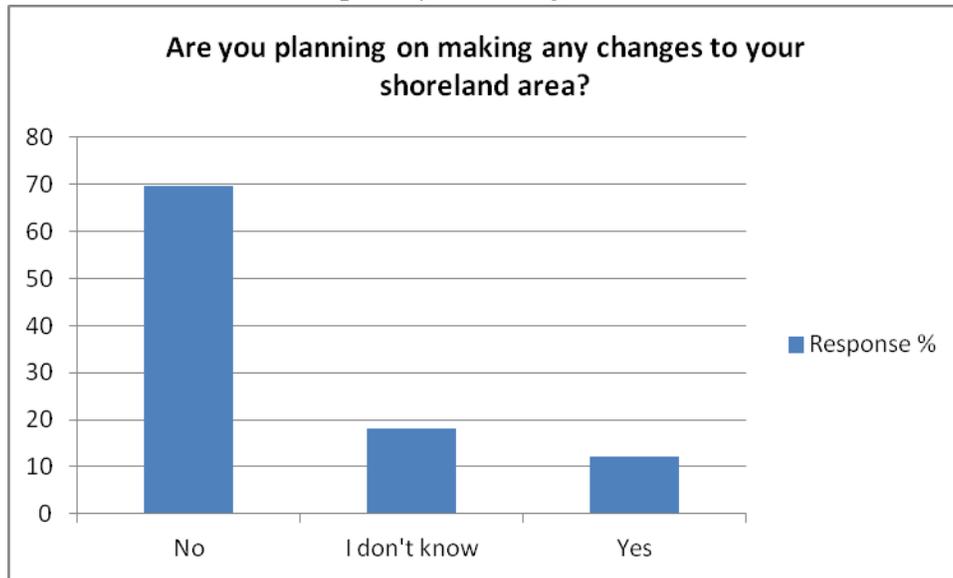
*Table 24: Frequency of Shoreline Use*



💧 The majority of property owners use their shoreland areas on a daily basis.

Respondents were asked in 2009 whether they were planning on **making any changes to their shoreland area**. The following results were obtained:

**Table 25: Propensity to Change Shoreland Areas**



💧 Sixty-nine percent responded “No;” eighteen percent replied “I don’t know,” and twelve percent responded “Yes.” This question was not repeated in 2011. About one-third are considering changes, and may be receptive to shoreland conservation messages. Nearly 20% are uncertain, and their reasons may warrant further exploration.

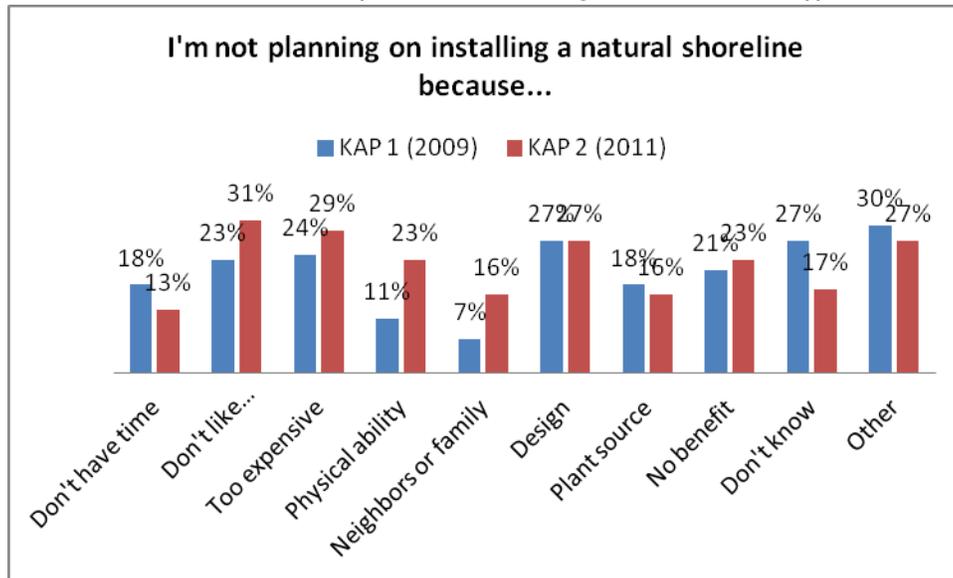
A follow-up **constraints question** was posed of those responding “No” to the question “I’m not currently planning on adding or enhancing a natural shoreline on my property because...” The results were very mixed in 2009, showing a wide range of constraints for respondents:

- Eighteen percent said that they didn’t have the time.
- Twenty-three percent didn’t like the appearance of a natural shoreline.
- Twenty-four percent thought it would be too expensive.
- Eleven percent reported having physical limitations.
- Seven percent thought that their neighbors or family might disagree.
- Twenty-six percent said that they were not sure how to design a shoreline buffer.
- Eighteen percent did not know where to get plants and materials.
- Twenty-two percent said that “there is no benefit to me.”

However, the most frequently checked response to this constraints question was “Other” (30%), followed by “I don’t know” (27%). There is no opportunity to explore the comments provided for the “Other” category because unfortunately the 2009 EOT survey data is no longer available.

💧 That 27% of respondents answered “I don’t know” suggests that there is more to the constraints story than represented by the above numbers, and that there may be considerable uncertainty and possibly unfamiliarity about the concept of shoreland buffers.

**Table 26: Reasons for Not Installing a Shoreland Buffer**

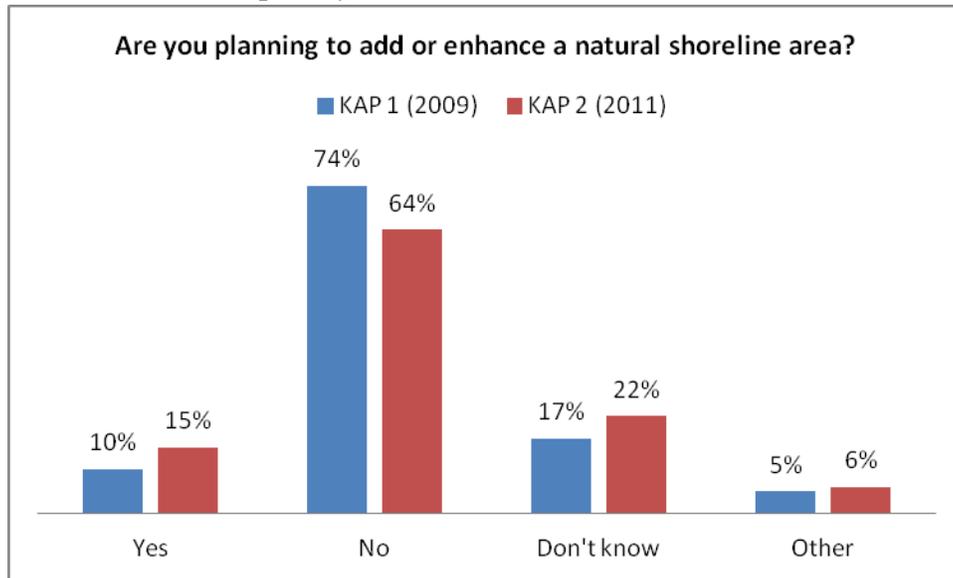


In 2011, the most frequently reported barrier reported was “I don’t like the appearance” (31%); followed by expense (29%); not sure how to design a shoreland buffer (27%); my physical ability limits me (23%); there is no benefit to me (23%); my neighbors or family may disagree (16%); I don’t know (17%); I’m not sure where to get plants or materials (16%); and lack of time (13%). 27% responded “Other.”

💧 In general, the “reasons not to install” increased. It would be very useful to further examine these responses by checking respondent understanding of what constitutes a natural shoreline, as well as cross-checking the actual condition of respondent shorelines. There were very many comments written provided by respondents. In 2011 nineteen respondents (15%) added a comment that they already have a natural shoreline. Three respondents noted that they have added riprap. One person noted that they purchased their property for its sandy beach and they don’t want to change. Four people noted that their lot dimensions are too shallow for a buffer, and one has property on a bluff with little runoff. A few others mentioned that their property is for sale, or that there is an issue with the township board.

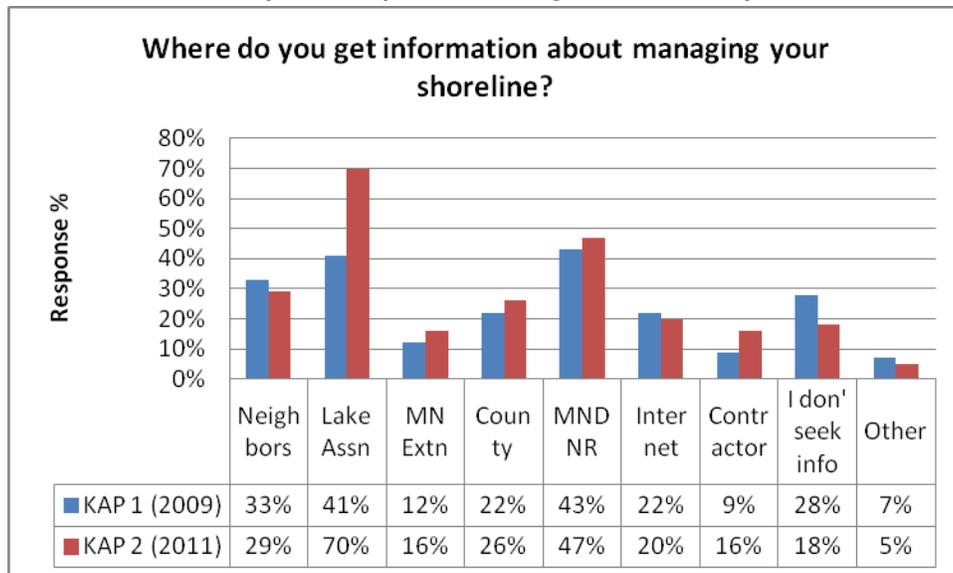
A similar question was posed in both surveys asking whether respondents were planning on **adding or enhancing a natural shoreline area** on their shoreline (check-all-that-apply). The following results were obtained:

**Table 27: Propensity to Add or Enhance a Natural Shoreland**



Residents were asked where they **obtain information about shoreline management** in both pre and post surveys. The following results were given (this was a check-all-that-apply question):

**Table 28: Preferences for Obtaining Shoreland Information**



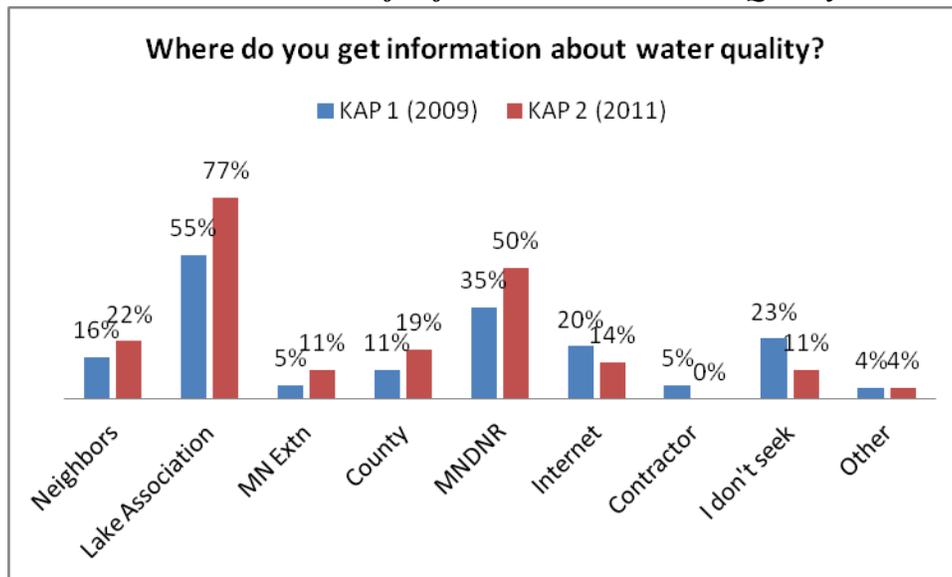
In 2009, respondents in Otter Tail sought shoreline management information most often from the DNR (43%), followed closely by their lake association (41%). They also sought information from their neighbors (33%); MN Extension (12%); county government (22%), the Internet (22%); or a rip rap contractor (9%). Twenty-eight percent did not seek shoreland management

information. In 2011, lake associations were the most frequently mentioned source of information at 70%, followed by MNDNR 47%), neighbors (29%), the Internet (20%), MN Extension and riprap contractors (both at 16%). Eighteen percent did not seek information. This was a check-all-that-apply question.

💧 These findings reinforce the growing importance of lake associations as sources of information for property owners.

Respondents were then asked about **sources of information about water quality**, also in a check-all-that-apply question. The following results were obtained:

**Table 29: Sources of Information about Water Quality**

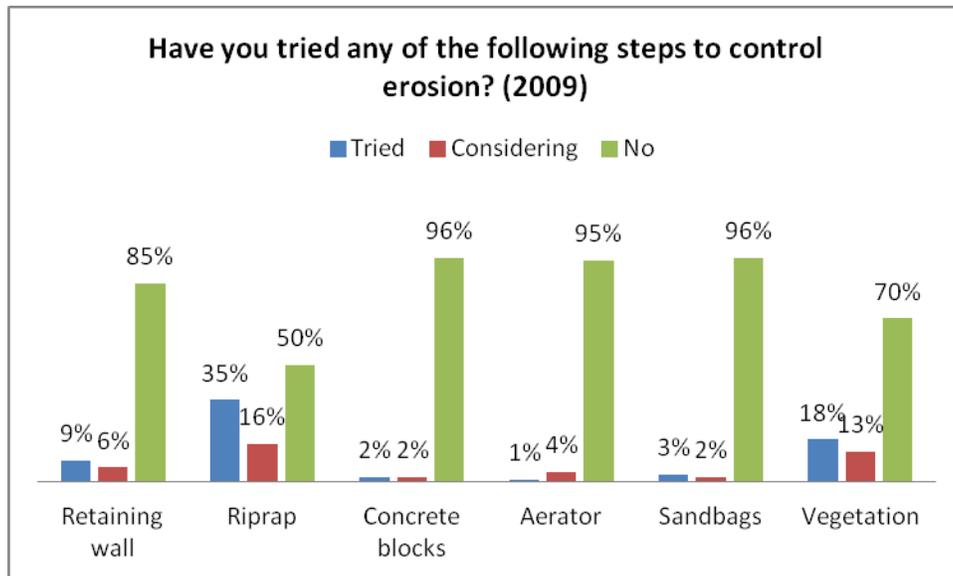


In 2009, respondents most often sought information from their lake association (55%), followed by MNDNR (35%), the Internet (20%), neighbors (16%), county government (11%), MN Extension (5%) and contractors (5%). 23% did not seek water quality information, and 4% responded (“Other). In 2011, respondents most often sought information from their lake associations (77%), MNDNR (50%), neighbors (22%), county government (19%), the Internet (14%) and MN Extension (11%). 11% did not seek information, none sought information from contractors, and 4% responded “Other.”

💧 The results of these two questions (Tables 28 and 29) on sources of information show clearly that they are increasingly the “go to” resource on both water quality and shoreline management information. Would a promotional piece be designed or delivered differently if there is a purposeful partnership with lake associations?

In the first-round survey, respondents were asked whether they had already tried to **control erosion** on their property, or whether they had considered doing so. This was posed as a check-all-that-apply question. The results are summarized in the table below.

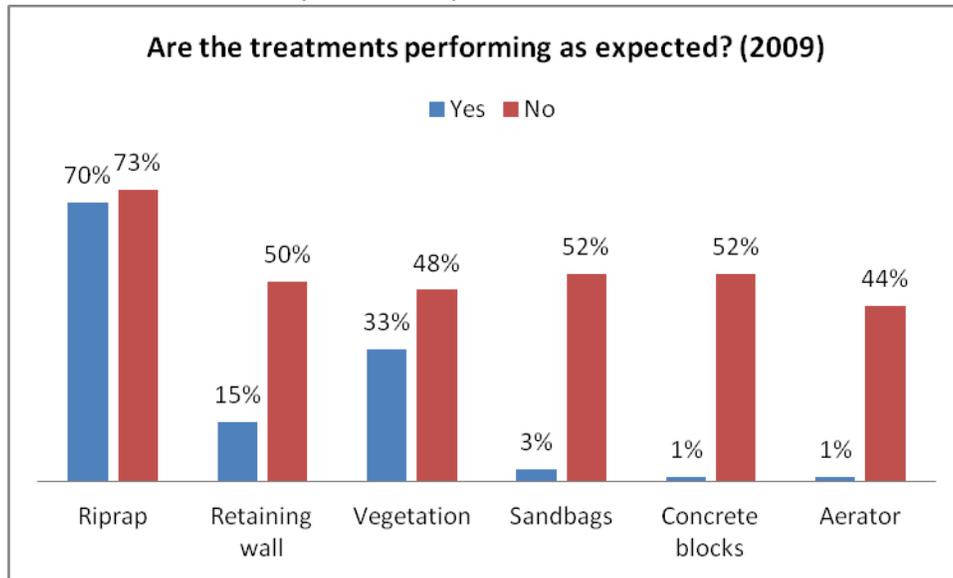
*Table 30: Erosion Control*



💧 A total of 227 various treatments had been tried by respondents in 2009. Of the treatments listed rip rap was the most common, followed by adding vegetation/plants and retaining walls. This question was not repeated in the 2011 survey.

A follow-up question was then posed of respondents who had already attempted some type of **shoreland erosion control**, asking whether they were satisfied with the treatment. This was posed as a check-all-that-apply question. Results are summarized in the table below.

**Table 31: Performance of Erosion Control Treatments**



💧 The majority of respondents are not satisfied with their erosion control treatments. None of the treatments are performing better than respondent expectations. Riprap is the only treatment that approaches a positive performance, followed by vegetation and retaining walls. This presents an opportunity for the EOT SWCD to demonstrate the erosion control potential of shoreland installations.

### **Interim Implementation Activities**

EOT staff conducted a number of implementation, education and outreach activities in the interim period between the two KAP studies. EOT implemented a high/medium/low incentives structure on the target lakes and for county-wide treatment. A partial listing includes:

- Developed incentives models
- Prepared workbooks and guide sheets for property owners
- Prepared shoreline restoration worksheets and guidebook to bridge the knowledge gaps identified during the first-round KAP study
- Presentations and workshops to civic groups and lakeshore associations
- Developed news articles for various media and websites
- Contracted with shoreland property owners to install and maintain buffers
- Implemented twenty-four buffer installations
- Developed lines of inquiry for focus groups
- Visited high touch sites and provided direct technical advice to property owners, including site plans and planting designs
- Hosted shoreline stabilization open houses

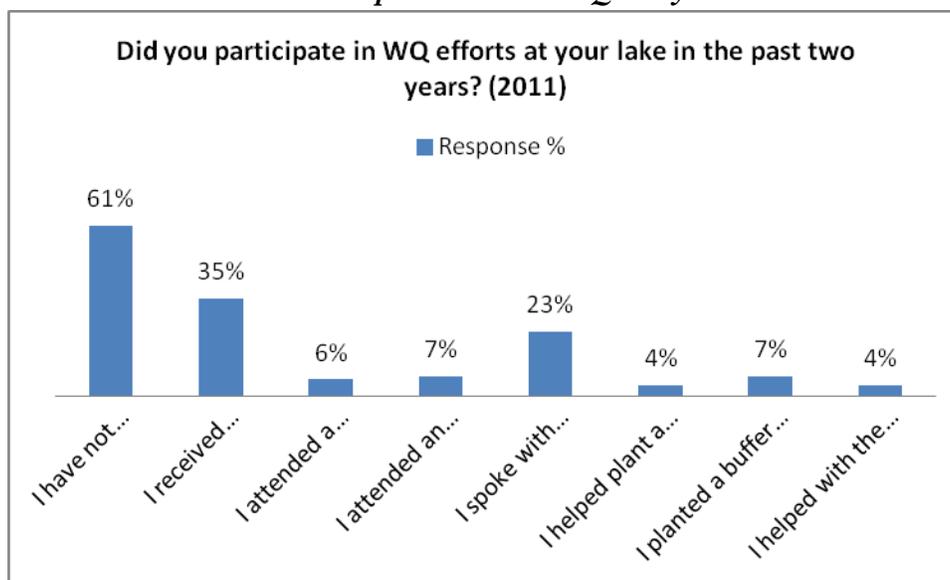
Details on these and other activities can be found in the final report prepared by the EOT SWCD, and are not summarized here.

## Efficacy Questions

A series of efficacy questions were designed by EOT staff and posed in the second-round survey (2011) to better understand respondents' receptivity to the incentives offered by EOTSWCD. The responses to these questions are summarized below.

The first efficacy question asked whether the respondent had **participated in water quality efforts** around their lake in the past two years (check all that apply). Responses are tabulated in Table 32 below.

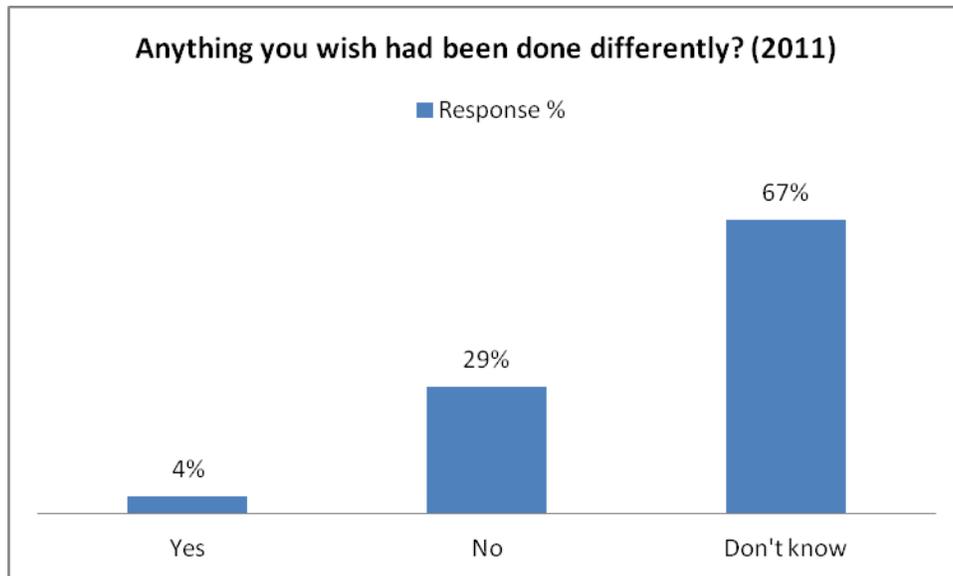
**Table 32: Participation in Water Quality Activities**



Most people (61%) had not participated. Of those that did, the most common response was “I received information about shoreline buffers and water quality,” followed by “I spoke with friends and neighbors about water quality.” Seven percent reported attending and open house, and installing a buffer on their own shoreline. Six percent attended a workshop on buffers. Four percent reported helping to install a buffer elsewhere, and another four percent reported having helped with the initiative. The most frequently reported “effort” was passive receipt of information, consistent with the “low touch” strategy. The second most frequently-reported “effort” was to speak with friends and neighbors about water quality. This may reflect the suspected importance of neighbor networking or peer-to-peer influence, although this needs further investigation.

Another efficacy question was a check-only-one-response asking whether **something should be done differently in the initiative**. Results are summarized below:

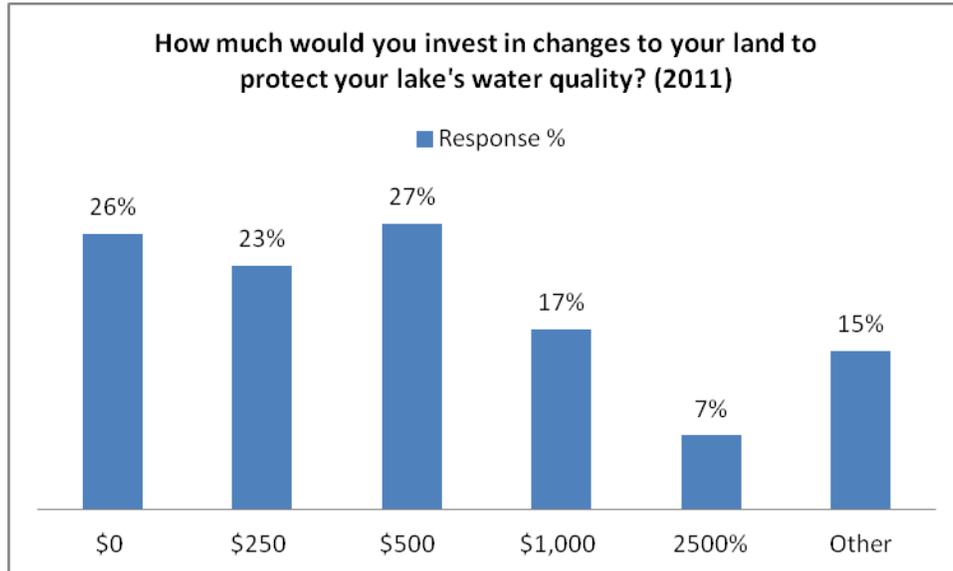
*Table 33: What Should be Done Differently?*



💧 Twenty-nine percent ( $n = 35$ ) seemed satisfied with their experience. However, the majority (67%,  $n = 81$ ) were uncertain, but the reasons are not clear and there were no comments available to provide insights. Of the four percent ( $n = 5$ ) responding that they wish things had been done differently, three people commented on the reasons. One respondent replied “Inform owners;” another replied “Not finished yet; and the third replied “Began contact with SWCD but did not hear back after I reworked plans (January 2011).”

Efficacy question #20 was a check-only-one-response question that asked “How much would you invest in changes to your land to protect your lake’s water quality? (Check only one response).” Results are given below.

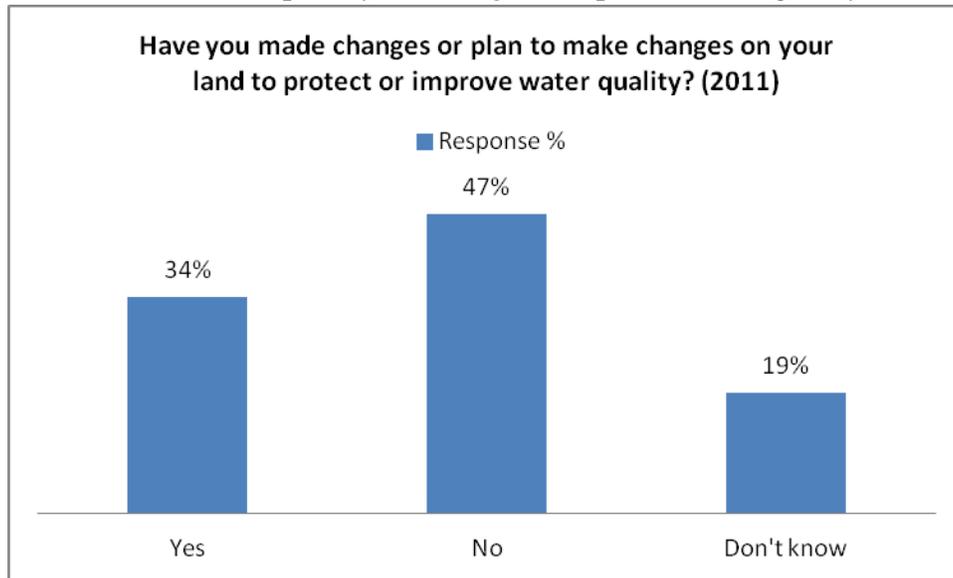
**Table 34: Willingness to Pay for Water Quality Protection**



💧 The median value was \$500 (27%), followed closely by \$0 (26%). Twenty-three percent were willing to pay \$250, and seventeen percent willing to pay \$1,000. Seven percent were willing to pay \$2,500. This suggests that the most acceptable amount would be under \$500. Although 48% of respondents said that cost was an important factor in determining the appearance of their shoreline (this increased to 52% in 2011), not one property owner adopted a buffer because of a cost share.

EOTSWCD staff also posed a question in the 2011 survey asking “Have you made or plan to make changes on your land to protect or improve water quality? Check only one response.” Results are summarized in the table below:

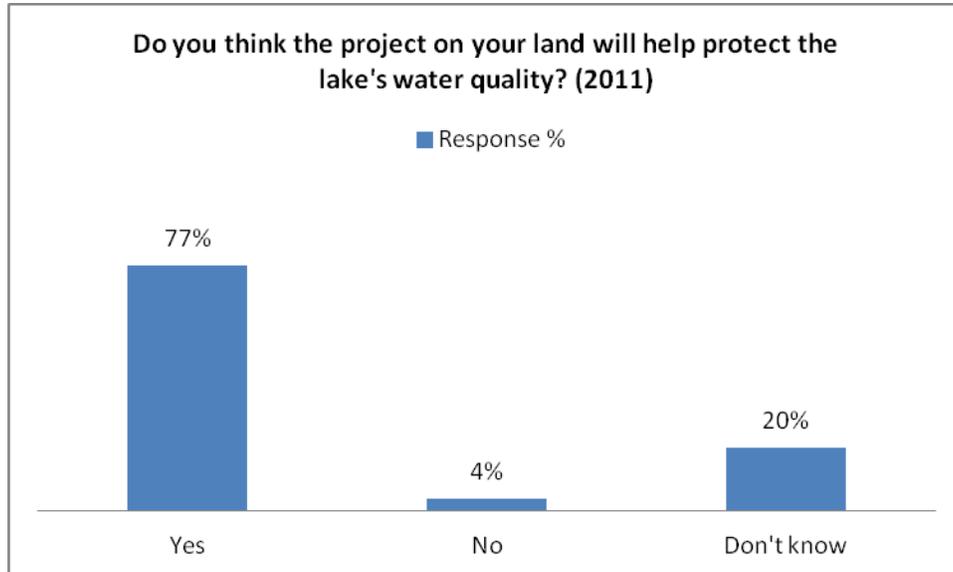
**Table 35: Propensity to Change to Improve Water Quality**



💧 Almost half ( $n = 61$ ) were not inclined to make changes, and about a third ( $n = 44$ ) were positively inclined. That almost one-fifth ( $n = 24$ ) of the respondents were uncertain warrants further investigation, because questions remain about “*how to move the ‘maybes.’*” There was not enough information gleaned from the responses to this question to understand the reasons for continued uncertainty on the part of many respondents.

A follow-up question asked: “Do you think that the project on your land will help protect the lake’s water quality? Check only one response.” Results are summarized in the table below:

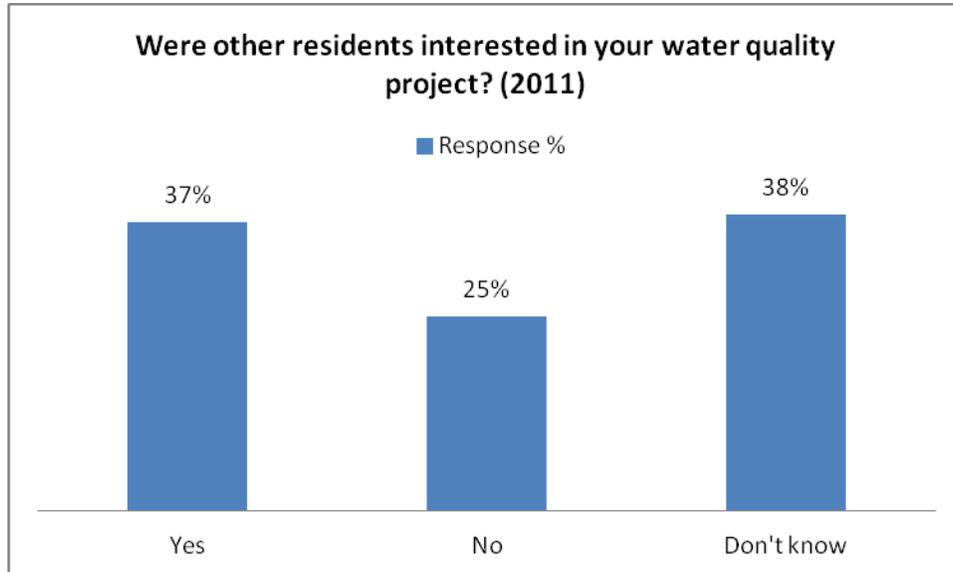
**Table 36: Perceptions of Project Effectiveness**



💧 A clear majority of NSBI project participants ( $n = 39$ ) felt that their project would help to protect water quality. Only 4% (two individuals) responded negatively, and provided no comments as to the reason. Twenty percent ( $n = 10$ ) were not sure, possibly because their projects were recently installed.

EOTSWCD then posed a question asking whether respondents noticed that other residents were interested in their water quality project. Results are summarized in Table 37 below:

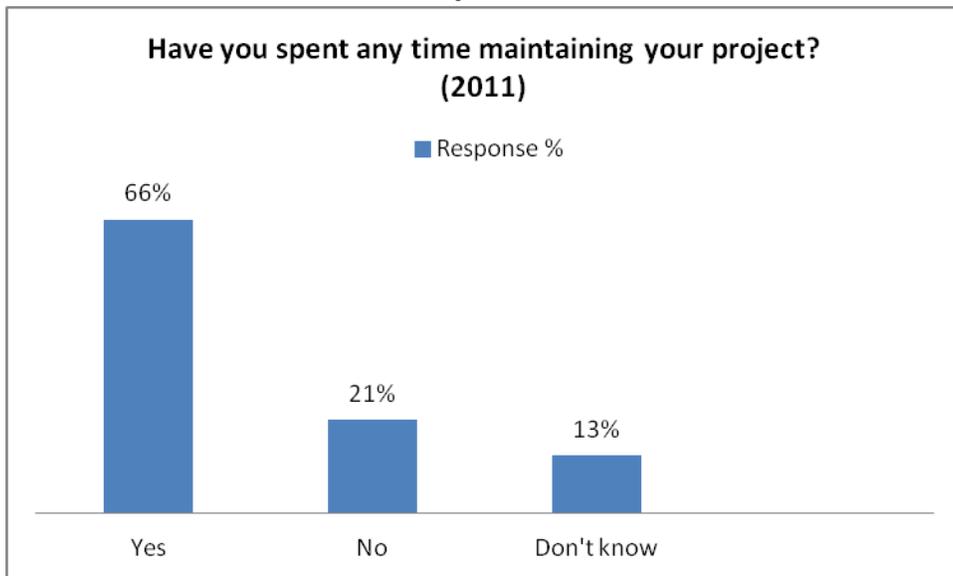
**Table 37: Interest in Respondents' Projects**



💧 Thirty-seven percent ( $n = 19$ ) responded positively, twenty-five percent said “No,” ( $n = 13$ ), and 39% ( $n = 20$ ) did not know. Further exploration into how neighbor-to-neighbor contact and communication about shorelines and water quality takes place, so that the SWCD can foster this process.

Next, respondents were asked whether they spent any time maintaining their project. Results are as follows:

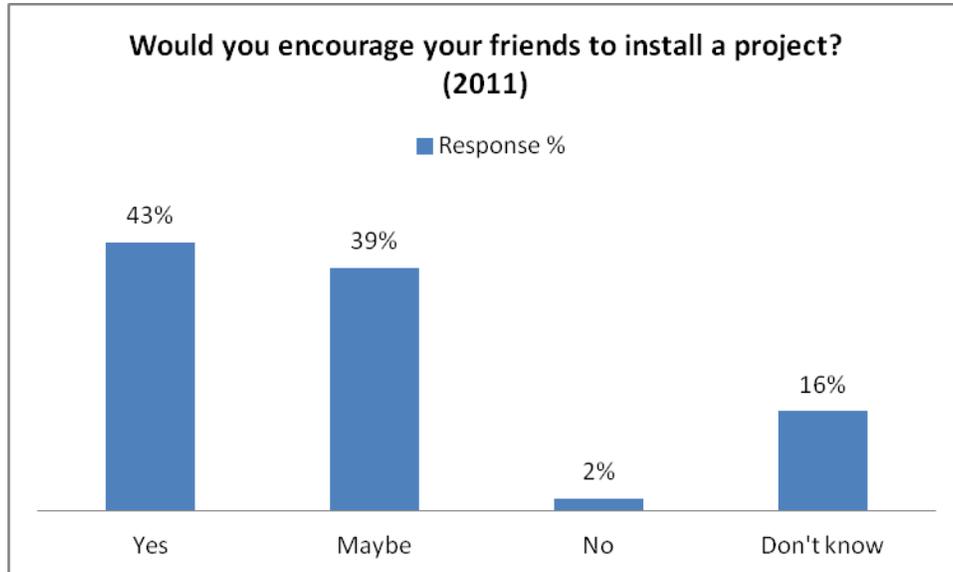
**Table 38: Project Maintenance**



💧 One-third of respondents ( $n = 31$ ) have maintained their project. There were few details provided by respondents, but this would be a fruitful area of future investigation. Adoption and maintenance of a recommended practice is a critical measure of project success, and identifying the factors that promote adoption and maintenance from each “touch” group would be useful.

Finally, respondents were asked if they would encourage their friends to install a project. Results are summarized below.

**Table 39: Recommendations for Buffer Installation**



Forty-three percent ( $n = 22$ ) responded positively, and thirty-nine percent ( $n = 20$ ) responded “Maybe.” Sixteen percent ( $n = 8$ ) were unsure. Only two percent (one individual) responded “No.” Again, the newness of the installations may be a factor in these responses.

## Discussion and Conclusions

The research results summarized in this report have been drawn from the following sources:

- a. Pre and post-KAP study data sets
- b. Informal interviews with key informants
- c. Analysis of written comments made by respondents on the survey questionnaires
- d. Unobtrusive observation of shorelines
- e. Verbal information provided by the EOTSWCD shoreland staff

To recap, the first KAP study conducted in East Otter Tail County was a county-wide sample, focusing primarily on the following audiences:

- a. Shoreland property owners with larger lots (> 120 feet of shoreline);
- b. Shoreline property owners in the 50-70 years of age demographic.

The second-round KAP study was a smaller sample drawn from the treatment lakes where the high, medium and low touch approaches had been carried out. We caution that the survey results should not be considered representative of all property owners in East Otter Tail County.

We believe that the social research in this project helped to answer the questions posed earlier on pages 5 and 9 of this report. First, we address the “big picture” questions posed on page 9.

● What motivates people to adopt and maintain a recommended practice? Why are some individuals inclined and others disinclined to adopt?

Some natural resources professionals are currently exploring these questions, often using various theories of adoption, behavioral change, innovation and diffusion, or social marketing. In the case of the East Otter Tail County NSBI project, we have found that public concern for water resources and knowledge about water quality is very high. Our research in Minnesota suggests that among individuals with some association with a specific water body (e.g. EOT lakes, Itasca lakes, Lake Superior and the Lester River, Como Lake in Saint Paul and elsewhere) express very strong affinity and concern for those water bodies. We understand from qualitative research and the KAP studies that local lakes are special to people, and property owners frequently have multi-generational association and deep affection for “our” lake. These values and expressed concern for lakes and water quality appears to motivate many to take action. There is also a sense of stewardship and a conservation ethic for many that may be reinforced by long-term family “legacy” of the majority of shoreland property owners in the EOT sample.

The social research uncovered negative impressions about shoreland buffers often held by property owners, in that buffers might affect lake access and view, followed by a number of lesser concerns (buffers might harbor mosquitoes and ticks, etc.). This information enabled EOT staff to customize and tailor its marketing about buffers to address those concerns of property

owners. This “customization” of information to address concerns, coupled with positive water quality messages, helped property owners to overcome their disinclination to adopt. The data identified those property owners who were willing to adopt (e.g. interested in installing a buffer), and identify the variance between the two groups (e.g. inclined v. disinclined).

For example, KAP data and key informant interviews highlighted that the photographic images on educational materials were not appealing to property owners. EOT staff realized that the photos used to illustrate buffers ignored concerns for access and view, and caused staff to take new photos of shoreland installations. There was an unexpected negative reaction to the images of restored buffers that were presented to respondents that showed a “wall of vegetation” accompanied by a discussion that described the wonderful wildlife habitat and water quality benefits that it created. From their perspective, however, a tangled weed patch blocking the view of the lake that was full of bugs, bees and maybe skunks is not something that helped to sell a shoreline restoration.



*Photo 2: 2008 outreach photo showing a “wall of vegetation”*

## That “Up At The Lake” Feel



*Photo3: 2008 outreach photo showing a blocked view of the lake*

KAP data revealed the need to change the promotional materials and formats, including the photos used to illustrate shorelands, lakes and buffers. EOT staff recognized the divergence between images used to promote buffers and respondent preferences in the KAP data. Staff took new photos, replacing vegetation-centered photos with broad views of the lake (*e.g.* sky, lake and horizon in 60% of the frame). The old photos had no variation in plant height, and were focused entirely on a “wall of vegetation” with no image of water or shore. The new photos show docks, shoreline, wave height, sky, etc.

EOT staff also began offering different types of buffer options with more appealing names (*e.g.* cottage garden, prairie style). The change in image style and content also gave property owners a choice in the buffer style, height of vegetation, degree of lake access and other aspects. When presented with images showing a lower profile, and a colorful “tamed” native buffer restoration, that they could imagine more like a garden (78% of Itasca respondents enjoyed gardening), there was a much more eager response -- or at least a less negative one!



*Photo 4: After the first-round KAP study, promotional photos showed a clear view and access to the lake, and reduced the shoreland buffer to a smaller percentage of the photo frame.*

The social data from the KAP study on preferred sources of information clearly showed a strong preference for a shoreland buffer guidebook, website and personal contact with a shoreland professional. EOT responded to these preferences by preparing a new guidebook, posting the new educational materials on the EOT website, and by creating a new engagement structure to facilitate direct contact with property owners.



*Photo 5: Prairie-style buffer*

● How do we know what impact the NSBI project had on property owners? What are the social impacts, results and outcomes?

Summarizing the outcomes of the high, medium and low touch strategies, the following patterns of adoption and maintenance took place:

**“High-touch”** (frequent and direct on-site contact by shoreland specialists, with multiple options for adoption including buffer installations, free labor and other options, guidebooks, multiple messengers, site visits, joint installations, and peer to peer contact).

**Sites:** Lake Seven (14 adoptees of 70 parcels; 11 are awaiting cost share through Clean Water).

Adoption rate (percentage that adopted the BMP): 20%

**“Medium-touch”** (less frequent contact, but with some site visits, joint installation, guidebooks at site visits, and peer to peer contact).

**Sites:** Pickerel Lake (11 adoptees of 250 parcels)

Adoption rate (percentage that adopted the BMP): 4%

**“Low-touch”** (no direct contact with the property owner, who received a newsletter only. Property owners were given guidebook and asked to contact their neighbors (peer to peer)).

**Sites:** West Battle (2 adoptees of 490)

Adoption rate (percentage that adopted the BMP): .004%

The “high touch” strategy clearly demands more time and resources on the part of County staff. *The high-touch strategy was most effective, with a 20% adoption rate.* The medium-touch approach was more effective than the low-touch approach, but had a considerably lower adoption rate (4%) than the high-touch strategy. *We conclude that the low-touch approach was least effective, with an adoption rate of less than 1%.*

*Concerning the efficacy of financial incentives, while all property owners were offered cost shares, not one property owner adopted a buffer treatment solely on the basis of being offered a financial incentive.* Of those that did not adopt, many reported already having a natural shoreline, or cited other reasons as noted in the results section above.



*Photo 6: EOTSWCD staff with a “high-touch” NSBI participant*

● Are the customary financial incentives offered by state and local agencies sustainable? Do people maintain the practice after the incentives end?

The KAP research illuminated many issues and opportunities that prompted EOT staff to elaborate a response structure that met respondent needs. However, the County had a capacity

gap in that there are hundreds of lakeshore property owners in the defined demographic and only one full-time shoreland professional to meet their needs. It was necessary to strike a balance between staff capacity and the need to provide outreach and education to a large number of dispersed clients on multiple lakes. In addition, the same staff member was responsible for several other grants and projects taking place simultaneously. The NSBI tested the resource limits of the EOT staff, which responded by:

1. Adopting the Itasca County community model (described in the Itasca County NSBI report) based on peer-to-peer communication to spread shoreland conservation messages.
2. Maximizing personal contact per technical service hour on the ground by:
  - b. working with groups in workshops, and mall group site visits. This also builds community connections;
  - a. the initial property owner contacted was asked to convey message among groups of neighbors.

*Property owners will almost always accept a financial incentive, but they will readily adopt a buffer without it.*

There are many other Minnesota counties with similarly limited resources. Given the adoption rates noted above, ***the customary engagement model of offering financial incentives to foster buffer adoption should be questioned.*** Property owners will almost always accept a financial incentive, but they will readily adopt without it. ***We see financial incentives as an unnecessary and ineffective opportunity cost that could be used in a more efficacious way if invested in the engagement mechanism shown to be most effective (direct contact with a natural resources professional).*** Caution is warranted, however, in that these findings may not translate to other demographics, especially to lower-income areas. Further research is needed in this regard.

The higher-touch models tested in the NSBI have been shown to be more effective in terms of improving respondent knowledge, and in terms of adoption of recommended practices and treatments. In this light, resources dedicated to cost-shares might be better utilized if invested in trained natural resources professionals who can interact directly with property owners. The opportunity costs and overall cost-effectiveness of this recommendation should be further explored.

At this point in time, we cannot assess the long-term efficacy of buffers installed with cost-shares (that is, will people maintain the practice after the incentive ends). While no one installed a buffer on the basis solely of receiving a financial incentive, many installed for other reasons but took the incentive anyway. Not enough time has passed to assess longer-term behavior of those accepting cost-shares.

● How can education and outreach strategies be designed according to local needs for better impact?

The question has been raised about “what does a healthy shoreline give back to landowners?” Focusing on what ‘services’ and benefits a healthy shoreland area provides can significantly change the traditional education piece. EOT landowners reported that their property was particularly valuable to them because of its clean water (98%) and scenic nature (94%). Of somewhat lesser importance were affordability (81%), good fishing (73%), and family ties to the area (40%).

The most valuable part of the social research for EOT staff was uncovering dimensions that lakeshore property owners would respond to, and that shoreland staff had previously not known. Previously, there was a tendency to “tell everyone everything about buffers” and that staff would give a lot of extraneous information without knowing what those concerns were. For example, previously educational messages might state “buffers will attract bees and butterflies,” but the owner might be allergic to bees or dislike bugs. Staff was repeating the same information and presentation with every encounter, without customizing the content to meet the interests and needs of the property owner.

Since doing the social research, staff now approach such encounters differently. First, staff ask about concerns, then provide appropriate information. Staff have the ability to tailor content and messages to address concerns. Staff now refine how they work with people on site, and tailor the message according to expressed concerns and interests. Before, the SWCD was not addressing expressed concerns. “Our outreach was not designed to reach respondents; it was built around OUR values and perceptions of plants.” ***This new approach puts the property owner and his/her perspective at the forefront of the encounter, and centers on a listening-responding form of communication.***

● How can we, as natural resources professionals, foster civic engagement?

This is an area of active discussion among many state and local agencies, and several are making strides with new models and approaches. This is especially the case for watershed planning and the TMDL process.

The NSBI project has shown that the use of basic social science research tools, and application of resulting data, can contribute to the understanding of public preferences, concerns and needs. The KAP study data provided the NSBI team with social information that was useful in identifying constraints, motivating property owners, highlighting preferences (especially

“Don’t just drum everything out, but rather customize the message. This results in a greater rate of adoption.”

Steve Henry, EOT Shoreland Specialist

for treatments that people are likely to dislike), and selecting likely options and venues for public participation. The data helped to define the appearance and content of educational materials, and provided staff with insights into what property owners would most likely respond to.

With a better understanding of the priorities and concerns of property owners, the EOT SWCD staff were able to change their engagement approach from a top-down conventional delivery system to be much more responsive, people-centered model. Engaging property owners and lake associations in peer-to-peer knowledge dissemination was also an important step that helped to maximize scarce County resources while fostering civic engagement. This strategy was successful in that *spontaneous adoption began to occur beyond the prescribed parameters of the project*, in that shoreland gaps on Pickerel Lake began to fill in, as property owners adopted buffers on their own. By the end of the EOT NSBI (September 2011) homeowners on nonparticipating lakes actively sought out the county shoreland specialist when visiting Pickerel Lake, expressing their interest in participating.

### Social Research Applied to the NSBI

On page 5 of this report, a series of questions were posed specifically for the EOT NSBI project. We now answer each of those questions in turn.

*Not one person installed a buffer on the basis of being offered a cost-share or financial incentive in East Otter Tail County. Concern for water quality and clean water were the more motivating factors.*

● Which incentives should be offered to residents?

THE EOT SWCD staff determined that a “suite” of incentives should be offered to participants through the high, medium and low touch strategies. Different incentives packages were offered depending upon the lake, as outlined in Table 1 (page 8).

● What is the acceptability of cost-share to residents?

While most residents took the cost-share, this was not the reason that people adopted and maintained a new practice. Not one person installed a buffer on the basis of being offered a cost-share or financial incentive, according to EOT SWCD staff. Concern for water quality and clean water were the more motivating factors.

● What are perceptions of property owners of a naturalized shoreline?

The KAP study raised the possibility that property owners do not share a common understanding or perception of a natural shoreline. It is likely that this situation is widespread, and we recommend that further exploration be done on people’s perceptions about natural shorelines.



*Photo 7: Sand blanket (rear) and shoreland restoration (foreground)*

● How to move the “maybes” (e.g. those individuals that say they might be interested in participating)?

The EOT NSBI experience suggests that the best way to move the “maybes” is a combination of the following:

- a. Medium to high-touch presence and contact with shoreland professionals, who first listen and then respond after hearing the concerns of property owners.
- b. Redesign of education and outreach materials that presents a variety of appealing treatment options and choices, and that allays concerns about the negative aspects of buffers (insects, view, lake access).
- c. Social reinforcement and networking that is lake-focused (e.g “our” lake), and that features neighbor-to-neighbor activities and lake associations.

● Which low-touch incentives will move the “maybes?”

The low-touch incentives resulted in a very low adoption rate (< 1%). The incentives included only a newsletter and (for some) a guidebook. The medium touch approach resulted in a 4% adoption rate, and the high touch approach resulted in a 20% adoption rate. We conclude that neither low-touch incentives nor financial incentives (cost shares) are effective in moving the “maybes.” County resources invested in these low-touch incentives would be better utilized if invested instead in the engagement effort (e.g. trained staff and outreach/education).

● What kind of information do the “maybes” need?

The EOT NSBI educational materials and content were designed based upon KAP data (*e.g.* common concerns, view, cost, appearance, access, etc.). The new buffer guidebook was designed with phased information and timelines, as well as the adage “read it, write it, say it.” The guidebook cover featured images of clean water and scenic environment, corresponding to values of legacy, stewardship and future generations. The educational information in itself may not be sufficient; it needs to be delivered by a respected professional, and reinforced with peer-to-peer messaging.

● Which treatments or “offerings” (incentives and otherwise) do people prefer?

The social research provided new information that enabled EOT staff to design a range of offerings that fit well with the high, medium and low touch approach. The research results also aided staff to define outreach strategies so as to maximize personal contact with natural resources professionals (a key preference). A combination of customized “offerings,” along with a high degree of “touch” and social interaction, is likely to be most acceptable to lakeshore property owners.

## Recommendations

The following recommendations are offered based upon the experience of the NSBI in East Otter Tail County.

1. Consider the timing and frequency of meetings for project participants. EOT staff recommend spacing out meetings to give people something to look forward to, to get feedback and fresh information, to share experiences, and to provide continued opportunities for interaction.
2. On messaging: package messages with a view to shifting perceptions from “I don’t need to act because my actions will have no impact” or “I don’t need to act because I don’t need to act.” Residents on Otter Tail Lake with several rivers do not perceive that their actions have any impact. Property owners need to understand that water quality can change, and that their actions can make a difference.
3. Training. In the case of East Otter Tail County, the most difficult part of doing social research was to set aside the conventional model for shoreland buffer projects, and to interpret results without the tendency to interpret from one’s own “silo.” The research data challenges ideas and “buzz” from key informants, and also challenges long-standing ideas and opinions of shoreland professionals. EOT staff were able to make quantitative changes to the program that were *not* based on preconceived notions. They were able to adopt and utilize the social research tools with some training and coaching, with very good results. We recommend that training and coaching in basic social science research (especially the KAP study method) be provided to any new EOT staff working with water quality projects, and to other Minnesota counties interested in shoreland conservation. WRC staff are currently working on training materials, which should become available in 2012.
4. Further research. There are a number of areas outlined in this report where further research would be useful. Much of this can be accomplished by key informant interviews or focus groups. Some of the areas where further research would be useful include perceptions of what constitutes a natural shoreline; whether full-time owners have different priorities than seasonal residents; and further work on how to foster neighbor-to-neighbor or peer-to-peer networking about buffer adoption.

In addition, the majority of respondents with prior shoreland erosion control projects (*e.g.* riprap, retaining walls, aerators, sandbags, etc.) state that their treatments are not performing as expected. This may present an opportunity for future buffer installation, and may warrant further investigation and possible new opportunities for shoreland naturalization.

5. Invest in staffing. We conclude that property owners are more receptive to adoption and maintenance of shoreland buffers when they have direct access to a natural resources professional. Clearly, county staff must organize their time and resources to reach the maximum number of people, and collaborating with lakeshore associations, volunteers and peer-to-peer networks are important means of doing so. Budgetary resources that currently are dedicated to financial incentives (such as cost-shares) should be reconsidered because cost-shares were shown in this case to be ineffective. We recommend that those budgetary resources instead be invested in shoreland professionals using a medium to high touch civic engagement strategy, as efficacy will be maximized.

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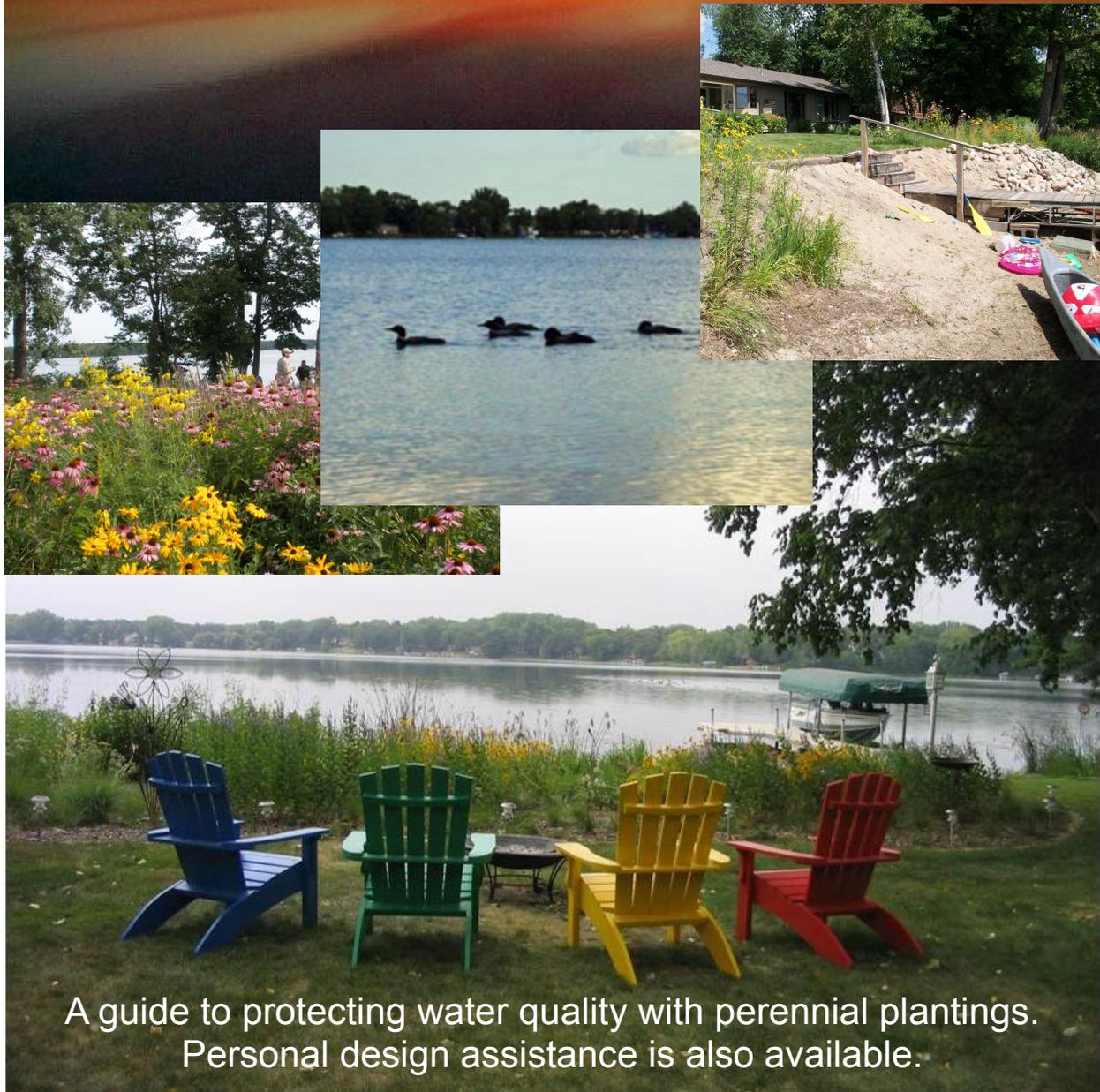
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# Otter Tail County Lakeshore Landscaping Manual



A guide to protecting water quality with perennial plantings.  
Personal design assistance is also available.

Partial funding for this project was provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

We are fortunate here in Otter tail County to enjoy lakes with good water quality and scenic views. Growing up with bountiful resources of water, fish, and wildlife is a blessing many of us enjoyed and hope to preserve for future generations. This guidebook is intended to help you design and install native wildflower plantings to protect and improve water quality in your lake, stream, or neighborhood. Deep rooted native vegetation absorbs and purifies both surface runoff and shallow groundwater reducing the amount runoff reaching the lake and the pollutants the runoff carries..

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*Nutrients carried from residential areas to Otter Tail County lakes have increased significantly from 1993 to 2009 . [www.land.umn.edu](http://www.land.umn.edu) 2.*

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### Picking the Right Spot

Plantings that catch down-spout discharge or surface runoff have a direct impact on water quality. These plantings can be in road ditches, between buildings, or on slopes.

The deep roots of native plants capture, purify, and utilize large amounts of water.

Converting natural areas to lawn has been shown to more than triple annual runoff. 3.



Lakeshore plantings attract and support fish, birds, and butterflies by providing food and cover. Deep roots stabilize the soil while absorbing and purifying rainfall. Plantings on slopes near the lake combine both benefits and eliminate hard to manage areas. Naturally screened areas of your shoreline are excellent locations for native wildflowers.

Contact the Shoreland Specialist at (218)-346-4260 ext.3

## Pick a Garden Style

The style of garden you prefer has a large influence your planting. Plant choices, height layouts, site preparation, and annual maintenance vary based on garden type. Height profile is also a personal preference that can be built into a planting.



### o Cottage Garden

- Groupings of flowers in a mulch base with accent and border grasses.
- Requires weeding and mulch replenishment .
- Can be very structured.
- Easier to manage for a planned result.

### o Prairie Garden

- Mixed or clustered flowers in a short grass base with border grasses.
- Good site preparation is necessary.
- Weeding can be reduced to an annual mowing and removal of perennial weeds.
- Better for water quality.



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## Pick Your Plant Heights

- |         |        |                |        |
|---------|--------|----------------|--------|
| o Knee  | 2 feet | o Belly button | 4 feet |
| o Thigh | 3 feet | o Shoulder     | 5 feet |

If you have room taller plants add structure to your planting attracting more wildlife. Many taller plants are vigorous bloomers and don't reach full height till after mid-summer. Shrubs often have early blossoms, berries, and excellent fall colors.

Building height into your planting adds visual impact from

Contact the Shoreland Specialist at (218)-346-4260 ext.3

## Costs

Native plantings generally cost around \$2.00 per square foot. Bluff plantings can cost an extra \$0.50 per square foot. Shoreline plantings can cost an extra \$5 to \$15 per foot of shoreline.

Cost share funding may be available; typically 75% of a projects eligible cost can be reimbursed to the homeowner after completion of their project.

Cost sharing requires a signed and approved contract prior to project installation to be eligible for funding. Funds may be available from a variety of grants, projects include Raingardens, Shoreline Plantings, and Sealing Abandoned Wells.

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## Typical Timeline

July	Select your planting area. Develop your design template.
August	Attend an Open House or call the County Shoreland Specialist
October	Submit your project for cost sharing.
January	Receive a letter indicating your cost share status.
February	Submit your plant and material orders.
Early April	Pick a planting day, make arrangements for labor assistance.
Late April	Mark your planting area.
Early May	Apply herbicide to the area.
Late May	Re-apply herbicide to the area.
Early June	Rake the area, seed, install erosion controls, place plants and install. Projects typically take 3 people one day to install.
Late June	Submit "Paid" receipts and volunteer time voucher for cost sharing.
Late July	Receive cost share check.

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*"Landowner's have been very interested in having Conservation Corps Young Adult Crews come to prepare and install their project. It's a win-win for the homeowner and the crew."*

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## Permits

Your project may require permitting.

Otter Tail County Land & Resource permits are required if any soil will be moved within 100' of the lake. Contact (218)-998-8095

MN DNR permits are required to plant aquatic vegetation or spray herbicides on aquatic vegetation Contact DNR Aquatic Plant Management at (218)-755-3959 for more information. Other permitting agencies include but are not limited to City, Township, or Watershed District.

Vegetation conversion alone usually does not require permit but always check before beginning any projects.

Contact the Shoreland Specialist at (218)-346-4260 ext.3

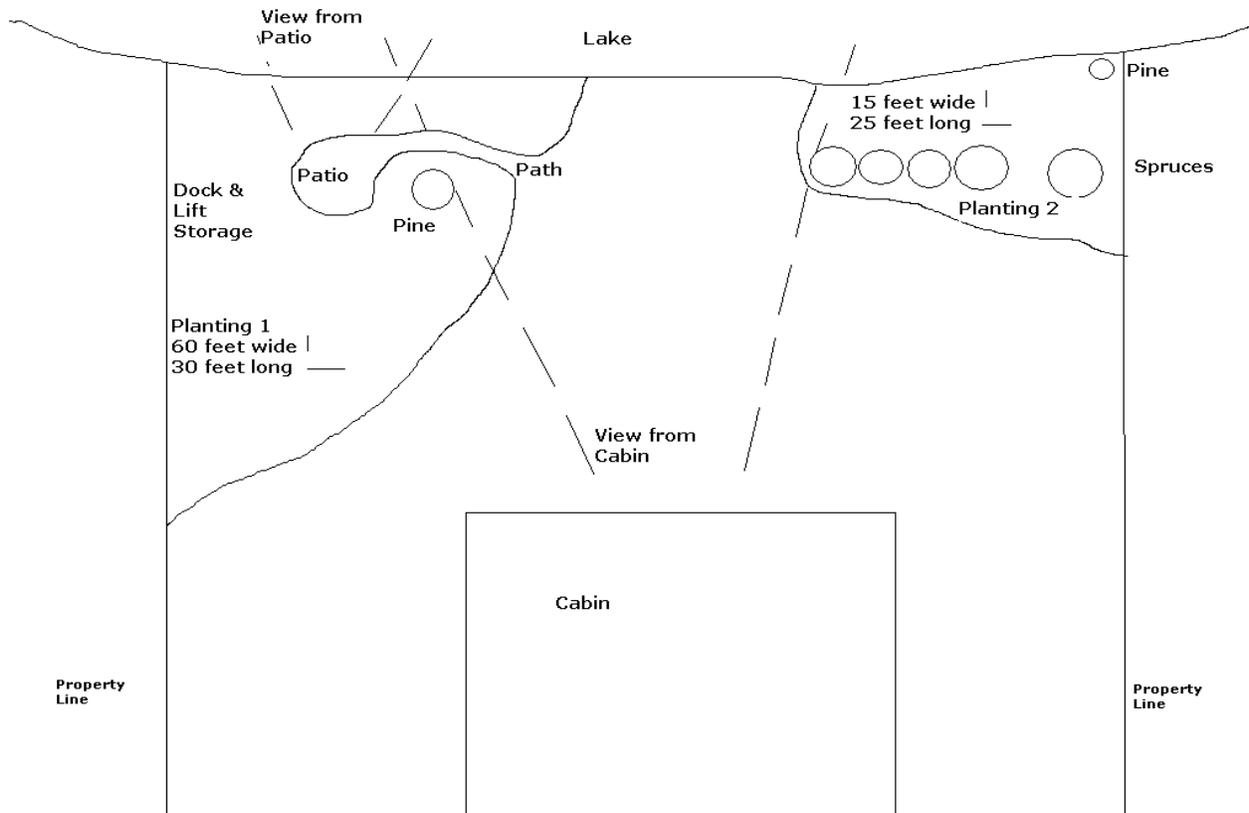
## Choose Your Elements

- Dock or lift storage area
- Sitting Area
- Privacy Screen
- Birdhouse/Birdbath
- Rock feature
- Lake Access Area
- Path
- Sand Area
- Accent Planting
- Shrub Planting

---

## Start Your Sketch

Sketching your lot on a sheet of paper will allow you to visualize how your elements and varied plant heights fit into your landscape. Sketches can be simple or take considerable time. Marking areas of excessively wet or dry soils, steep slopes, viewing lines, and shade on your sketch simplifies the plant selection process.



Now with your sketch you can:

Select your own plants and materials.

Attend a local Design Openhouse

Contact OT Shoreland Specialist for personal assistance.

For more info visit [www.eotswcd.org](http://www.eotswcd.org) or call (218)-346-4260 ext3

Contact the Shoreland Specialist at (218)-346-4260 ext.3

## Site Preparation

Preparing your site is similar to preparing any perennial bed. In general all existing vegetation must be killed before re-establishing native flowers and grasses. Applying a lake friendly Roundup formulation (Eraser AQ, Killz All Aquatic, Rodeo) is most effective and doesn't harm water quality if label directions are followed. Two applications ten days apart are very effective. Wait a minimum of seven days before disturbing the site. For Cottage gardens spread a layer mulch four inches thick on top of the dead vegetation. For Prairie gardens rake the site vigorously immediately before scattering the short grass seeds then cover with an erosion control blanket. Erosion control blankets retain moisture improving germination and growth.

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## Maintenance

### First Two Years

Water immediately following seeding and planting. Watering seeds and small seedlings after sprouting is critical in sandy soils. Plan to water 1/2 inch daily, preferably in the morning, for the first few days or until plants are germinating and growing well. Once plants are established water is only needed if prolonged dry periods occur.

### **80% of the first year's growth in your planting will be root growth!**

Perennial natives will eventually out-compete annual weeds that sprout from seed.

The best method is to repeatedly trim weedy vegetation to 6 to 8 inches with a weed-whacker. This should be done every few weeks or when the weed species reach 10-12 inches in height.

Remove clippings immediately if they cover the native seedlings. This will discourage weed growth, remove shade, and allow native seedlings to grow.

### Year Three and Beyond

No watering or weeding should be necessary except for extreme drought conditions or stubborn invasive weed problems. Leave vegetation in place in the fall and through the winter months.

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## Disclaimer

These instructions are for plantings in areas with gentle slopes and no active erosion. Projects that include work on steep slopes, eroding areas, or shoreline plantings require professional assistance. Design assistance is available from a variety of sources including local individuals, County Soil and Water Conservation Districts, the University of Minnesota Extension, and Minnesota DNR.

Contact the Shoreland Specialist at (218)-346-4260 ext.3

Otter Tail County Favorites by the Otter Tail County Shoreland Specialist  
 All of the flowers and grasses listed tolerate dry soils, except those labeled Wet.

	Bloom	Season	and	Color		
	May	June	July	August	Sept	Oct
<b>Short 1-2feet</b>						
<a href="#">Pasque Flower</a>	x					
<a href="#">Prairie Onion</a>			x	x		
<a href="#">Dotted Blazing</a>			x	x	x	
<a href="#">Prairie Pussytoes</a>	x	x				
<a href="#">Thimbleweed</a>		x	x			
<a href="#">Prairie Blue-eyed Grass</a>	x	x				
<a href="#">Harebell</a>		x	x	x	x	
<a href="#">Prairie Smoke</a>	x	x				
<a href="#">Prairie Alumroot</a>	x	x	x			
<a href="#">Hoary Puccoon</a>	x	x				

**Short Spreading**

<a href="#">Prairie Spiderwort</a>	x	x	x			
<a href="#">Canada Anemone</a>	x	x	x			
<a href="#">Upland White Aster</a>		x	x	x	x	
<a href="#">Golden Aster</a>		x	x	x		

**Medium 2-3 feet**

<a href="#">Lg. Flw. Beardstongue</a>	x	x				
<a href="#">Larkspur</a>		x	x			
<a href="#">Lead Plant</a>		x	x	x		
<a href="#">Button Blazing Star</a>			x	x	x	x
<a href="#">N. Leaf Coneflower</a>		x	x			
<a href="#">Purple Prairie Clover</a>		x	x	x		
<a href="#">Butterfly Milkweed</a>		x	x	x		
<a href="#">White Prairie clover</a>		x	x	x	x	
<a href="#">Whorled Milkweed</a>			x	x	x	
<a href="#">Heart-leaf Golden Alex.</a>	x	x				
<a href="#">Long Head Coneflower</a>		x	x	x		
<a href="#">Showy Goldenrod</a>				x	x	x

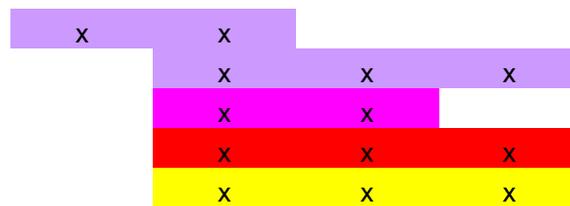
**Medium Spreading**

<a href="#">Prairie Phlox</a>	x	x	x			
<a href="#">Hoary Vervain</a>		x	x	x	x	
<a href="#">Silky Aster</a>					x	x
<a href="#">Bedstraw</a>		x	x			
<a href="#">Prairie sage</a>		x	x	x		
<a href="#">Prairie Coreopsis</a>		x	x	x		
<a href="#">Old Field Goldenrod</a>				x	x	x

Contact the Shoreland Specialist at (218)-346-4260 ext.3

**Tall Clumps 4-5 feet**

- [P. Purple Coneflower](#)
- [Prairie Blazing star](#)
- [Showy Tick Trefoil](#)
- [Bergamot](#)
- [Yellow Coneflower](#)



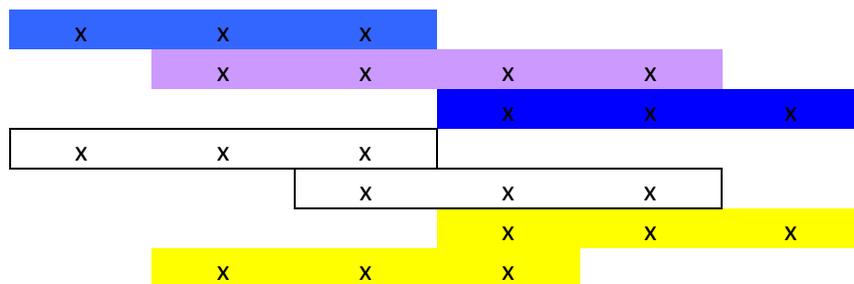
**Tall Spreading**

- [Smooth Blue Aster](#)
- [Sky Blue Aster](#)
- [Mountain Mint](#)
- [Heath Aster](#)
- [Stiff Goldenrod](#)



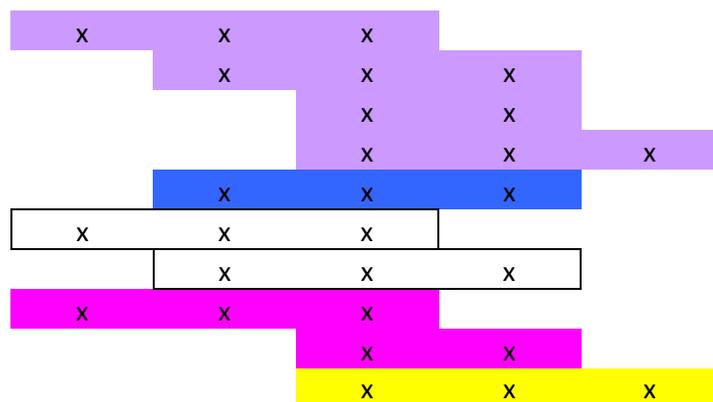
**Wet Short**

- [Blue flag Iris](#)
- [Monkey Flower](#)
- [Bottle gentian](#)
- [Canada Anemone](#)
- [Wild Mint](#)
- [Marsh Marigold](#)
- [Fringed Loosestrife](#)



**Wet Tall**

- [Joe Pye weed](#)
- [Common Ironweed](#)
- [Meadow Blazing star](#)
- [New England Aster](#)
- [Blue Vervain](#)
- [Culvers Root](#)
- [Boneset](#)
- [Swamp Milkweed](#)
- [Obedient plant](#)
- [Sneezeweed](#)



**Grasses**

- [Blue gramma](#)
- [June Grass](#)
- [Side-oats gramma](#)
- [Little Bluestem](#)
- [Green Needle](#)
- [Northern Drop-seed](#)
- [Switch grass](#)

Ht.	
1'	Lawn Alternative, can form a sod, very short. General Base Grass.
1.5'	Comes up early, forms nice seed head display. Good for edging.
1.5'	Comes up rapidly, short loose bunches. General Base Grass.
2'	Very Good stabilizer for dry soils, excellent summer & fall color. Edging species.
2'	Greens up early. Common in our area especially on bluffs with Side Oat's Grama.
2.5'	Beautiful flowing mounds. Greens up early. Great for edging.
4'	Very strong root system. Interesting seed heads.

Contact the Shoreland Specialist at (218)-346-4260 ext.3

<a href="#">Indian grass</a>	4'	Forms a loose sod. Generally a co-dominant grass.
<a href="#">Big Bluestem</a>	4'	Very Good stabilizer for semi-moist soils, bunch grass.
<b>Shrubs</b>		
	<b>Ht.</b>	
<a href="#">Red Osier Dogwood</a>	6'	Very strong stabilizer in sandy to dark soils.
<a href="#">Gray Dogwood</a>	4'+	
<a href="#">Meadow Sweet</a>	4'+	
<a href="#">New Jersey Tea</a>	3'	
<a href="#">Ninebark</a>	6'+	
<a href="#">False Indigo</a>	4'	Excellent Stabilizer for Gravelly, Sandy Banks. Delicate leaves on an open
<a href="#">High Bush Cranberry</a>	6'+	Nice winter berries, great bird shrub. Early bloomer, variegated leaves.
<a href="#">Black Chokeberry</a>	5'	Produces many edible berries.

## Resources

Visit the DNR maintained list for current information in your area.  
<http://www.dnr.state.mn.us/gardens/nativeplants/suppliers.html>

### Erosion Control Products

Brock White Company [www.brockwhite.com](http://www.brockwhite.com) (800)-487-9256  
 Natural Shore Technologies [www.naturalshore.com](http://www.naturalshore.com) (612)-703-7581

### Native Plant Nurseries

Morning Sky Greenery [www.morningskygreenery.com](http://www.morningskygreenery.com) (320)-795-6234  
 Prairie Moon [www.prairiemoon.com](http://www.prairiemoon.com) (866)-417-8156  
 Prairie Restorations [www.prairieresto.com](http://www.prairieresto.com) (763)-383-4342

### Design Assistance

Otter Tail County Shoreland Specialist [www.eotswcd.org](http://www.eotswcd.org) (218)-346-4260 x3  
 MN DNR Shoreland Habitat Program [www.dnr.state.mn.us](http://www.dnr.state.mn.us) (320)-634-4573  
 MN Extension [www.extension.umn.edu](http://www.extension.umn.edu) (218)998-5787

Visit [www.BlueThumb.org](http://www.BlueThumb.org) for a comprehensive listing of additional resources.

### Other great resources

**Lakescaping for Wildlife and Water Quality** (C.L. Henderson, C.J. Dindorf, F.J. Rozumalski, 1999 MN DNR) is a book showing techniques to prevent shoreline erosion and restore wildlife, habitat, wildflowers and clean water. **Retail Price: 19.95**

**Restore Your Shore** (2002, MN DNR) is a sequel to the lakescaping book. This instructional CD-ROM presents ideas to use in protecting and restoring natural shorelands. 400 native plants on a searchable database. Visit the Restore Your Shore website at <http://www.dnr.state.mn.us/restoreyourshore/index.html>

## 1. Introduction

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This survey was developed by a partnership between the Otter Tail County Soil and Water Conservation Districts, Otter Tail County Land and Resource, the University of Minnesota, Minnesota Extension, and Minnesota DNR. Your answers will be influential in directing the future of shoreland stewardship programs statewide so please answer all questions completely, this survey should take approximately 20 minutes to complete. Please ensure your survey is returned by June 4th.

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This survey is in booklet form with questions on the back of some pages, please check to ensure you have answered all the questions. The survey can also be completed on line at [www.eotswcd.org](http://www.eotswcd.org) by clicking on the Survey button.

### **1. If you received a survey code please enter it now.**

## 2. Survey Questions

### 1. How much time do you spend at your Otter Tail County lake property each year?

Choose only one response.

- Year-round Resident
- 90 - 364 days
- 60 - 89 days
- 30 - 59 days
- Less than 30 days

Other (please specify)

### 2. How long have you been associated with Otter Tail County lakes? (ex. visited, owned, been in family)

Choose only one response.

- A year or less
- 1 to 4 years
- 5 to 10 years
- 11 to 30 years
- 31 or more years

Other (please specify)

### 3. Which of these factors make Otter Tail County lake property particularly valuable to you?

Check all that apply.

	Very Important	Important	Somewhat Important	Not Important
Investment Potential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family Ties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scenic Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Convenience (close by)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good Fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clean Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Affordability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

**The next several questions refer to shoreline area. This is the portion of your lot starting at the edge of the lake and extending 30 feet towards the house.**

**The next several questions refer to shoreline area. This is the portion of your lot starting at the edge of the lake and extending 30 feet towards the house.**

**4. What do you use your shoreline area for?**

**Check all that apply.**

- Quiet Enjoyment (reading, relaxing, wildlife viewing)
- Beach Activities (volleyball, grandchildren)
- Fishing
- Lake Access
- Boat/Toy Storage
- Water Activities (swimming)
- Socializing with Friends and Neighbors

Other (please specify)

**5. When you are at your lake property how often do you use your shoreline area?**

**Choose only one response.**

- Daily
- Several times a week
- Once a week or less
- I don't know

Other (please specify)

**6. How important are the following factors in determining the appearance of your shoreline?**

**Choose one response for each of the following factors.**

	Important	Neutral	Not Important	I don't know
Fish and Wildlife Habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neighbor's Opinion/Appearance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Annual Maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
View of the Lake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impact on Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoreline Erosion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open Space for Access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

**7. Are you planning any changes to your shoreline area?**

- No
- I Don't Know
- Yes, if yes what and why?

Other (please specify)

**8. "I would be willing to make changes to my shoreline area to ..."**

**Choose one response for each of the following factors.**

	Yes	Maybe	No	I don't know
Protect Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve Lake Views	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protect My Investment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce Maintenance Costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide Wildlife Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide Fish Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

**9. Have you tried or are you considering any of the following steps to control erosion on your shoreline?**

	Tried	Considering	No
Retaining Wall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rip Rap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concrete Blocks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Installed Aerator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sandbags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adding Vegetation/Plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

**10. If you have tried any of the options from QQuestion 8 are they performing as expected? Check all that apply.**

	Rip Rap	Retaining Wall	Vegetation Plants	Sand BAGs	Concrete Blocks	Installed Aerator
Yes	<input type="checkbox"/>					
No	<input type="checkbox"/>					

Other (please specify)

**11. Where do you get information about managing your shoreline area?**

**Check all that apply.**

- Neighbors
- Lake Association
- MN Extension
- County Government
- Minnesota DNR
- Internet
- Rip Rap Contractor/Landscaper
- I don't seek shoreline management information.

Other (please specify)

**12. Where do you get information about water quality?**

**Check all that apply.**

- Neighbors
- Lake Association
- MN Extension
- County Government
- Minnesota DNR
- Internet
- Rip Rap Contractor/Landscaper
- I don't seek water quality information.

Other (please specify)

**13. Does your lake have a Lake Association or Lake Improvement District?**

**Choose only one answer.**

- Yes
- No, Skip to Question 15.
- I Don't Know

Other (please specify)

**14. Are you active with your Lake Association or Improvement District?**

**Choose only one response.**

- Yes
- No
- I don't know

Other (please specify)

**15. I think my lake's water quality will...**

**Choose only one response.**

- Get Better (Cleaner)
- Get Worse (Greener)
- Stay the Same
- I don't know

Comments?

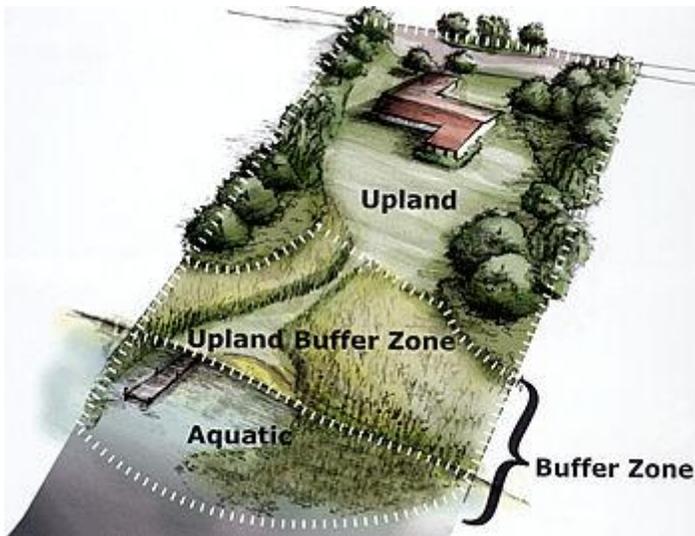
**16. How much do you agree with the following statements?**

**Please check a box for each statement that best indicates how much you agree.**

	Agree	Neutral	Disagree	I don't know
"How the land around my lake is managed has an impact on the water quality in my lake."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Pollution that gets into my lake slowly builds up over time."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"My lake's water quality will get worse in the future."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"The water clarity (how deep I can see) in my lake has an effect on the value of my property."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

**This image defines a natural shoreland buffer area/zone for the next questions.**



**17. Do you currently have a natural shoreland area on part or all of your shoreline?  
Choose only one answer.**

- Yes
- No
- I don't know.

Other (please specify)

**18. Are you planning on adding or enhancing a natural shoreland area on your shoreline?  
Choose only one response.**

- Yes, skip to question 19.
- No
- I don't know.

Other (please specify)

**19. I'm not currently planning on adding or enhancing a natural shoreland area on my property because...**

**Check all that apply.**

- I don't have time.
- I don't like the appearance.
- It is too expensive.
- My physical ability limits me.
- My neighbors or family may disagree.
- I'm not sure how to design a natural shoreland buffer.
- I'm not sure where to get plants or other materials.
- There is no benefit to me.
- I don't know.

Other (please specify)

**20. How much do you agree with each of the following statements?**

**Please check a box for each statement that best indicates how much you agree**

**"Natural shoreland areas ..."**

	Agree	Neutral	Disagree	I don't know
Provide Wildlife Habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interfere with Lake Access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase nuisance Bug & Pest Activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are a Safety Hazard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide Fish Habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protect Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interfere with Dock and Lift Removal/Storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eliminate Sandy Beaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obstruct Lake Views	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce Shoreline Maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improves a Property's Appearance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prevent Erosion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

A water quality initiative is underway in your area assisting shoreland owners stabilizing their shorelines and reducing runoff with native plantings. The next questions are related to this effort.

**21. Are you interested in participating in the water quality initiative?**

**Choose only one response.**

- Yes, if yes how?
- No
- Maybe, I need more information.
- I don't know

Other (please specify)

**22. If you are interested in more information which of the following methods would you prefer?**

**Check all that apply.**

- A guidebook
- A neighborhood or Lake Association open house
- A tour
- A visit from a trained professional
- A Web Site
- An area workshop
- I don't know.
- None of these would interest me.

Other (please specify)

### 3. Closing

Thank you for completing the survey. Your answers will be important in guiding outreach and education in Otter Tail County.

If you would like more information or have comments or concerns call 218-346-4260 ext.3 to contact Steve Henry at the East Otter Tail Soil and Water Conservation District or visit the web at [www.eotswcd.org](http://www.eotswcd.org) for email addresses.

Survey summaries will be available after analysis from the Soil and Water Conservation Districts in Perham and Fergus Falls. Electronic copies can be obtained by contacting Steve Henry at the East Otter Tail Soil and Water Conservation District.

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Choose only one response.

- Year-round Resident
- 90 - 364 days
- 60 - 89 days
- 30 - 59 days
- Less than 30 days

Other (please specify)

### 2. How long have you been associated with Otter Tail County lakes? (ex. visited, owned, been in family)

Choose only one response.

- A year or less
- 1 to 4 years
- 5 to 10 years
- 11 to 30 years
- 31 or more years

Other (please specify)

### 3. Which of these factors make Otter Tail County lake property particularly valuable to you?

Check all that apply.

	Very Important	Important	Somewhat Important	Not Important
Scenic Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clean Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Affordability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good Fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Convenience (close by)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investment Potential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Family Ties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

**The next several questions refer to shoreline area. This is the portion of your lot starting at the edge of the lake and extending 30 feet towards the house.**

**The next several questions refer to shoreline area. This is the portion of your lot starting at the edge of the lake and extending 30 feet towards the house.**

**4. What do you use your shoreline area for?**

**Check all that apply.**

- Quiet Enjoyment (reading, relaxing, wildlife viewing)
- Beach Activities (volleyball, grandchildren)
- Fishing
- Lake Access
- Boat/Toy Storage
- Water Activities (swimming)
- Socializing with Friends and Neighbors

Other (please specify)

**5. When you are at your lake property how often do you use your shoreline area?**

**Choose only one response.**

- Daily
- Several times a week
- Once a week or less
- I don't know

Other (please specify)

## 6. How important are the following factors in determining the appearance of your shoreline?

Choose one response for each of the following factors.

	Important	Neutral	Not Important	I don't know
Fish and Wildlife Habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neighbor's Opinion/Appearance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Annual Maintenance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
View of the Lake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Impact on Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoreline Erosion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open Space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Steep Slope Limits Access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

## 7. "I would be willing to make changes to my shoreline area to ..."

Choose one response for each of the following factors.

	Yes	Maybe	No	I don't know
Improve Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protect Water Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide Fish Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide Wildlife Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improve Lake Views	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protect My Investment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce Maintenance Costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

**8. Where do you get information about managing your shoreline area?**

**Check all that apply.**

- Neighbors
- Lake Association
- MN Extension
- County Government
- Minnesota DNR
- Internet
- Rip Rap Contractor/Landscaper
- I don't seek shoreline management information.

Other (please specify)

**9. Where do you get information about water quality?**

**Check all that apply.**

- Neighbors
- Lake Association
- MN Extension
- County Government
- Minnesota DNR
- Internet
- Rip Rap Contractor/Landscaper
- I don't seek water quality information.

Other (please specify)

**10. Are you active with your Lake Association or Improvement District?**

**Choose only one response.**

- Yes
- No
- I don't know

Other (please specify)

### 11. I think my lake's water quality will...

Choose only one response.

- Get Better (Cleaner)
- Get Worse (Greener)
- Stay the Same
- I don't know

Comments?

### 12. How much do you agree with the following statements?

Please check a box for each statement that best indicates how much you agree.

	Agree	Neutral	Disagree	I don't know
"How the land around my lake is managed has an impact on the water quality in my lake."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Pollution that gets into my lake slowly builds up over time."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"My lake's water quality will get worse in the future."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"The water clarity (how deep I can see) in my lake has an effect on the value of my property."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"My actions impact the water quality experienced by future generations."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

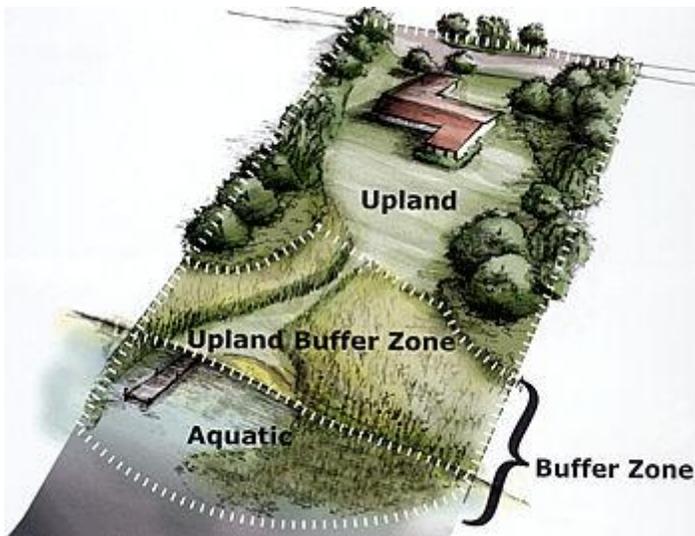
### 13. To protect our lakes' current water quality...

Please check a box for each statement that indicates how much you agree.

	Agree	Neutral	Disagree	I don't know
Each owner needs to act on their own land.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The most polluting sources need to be fixed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Current regulations need to be enforced.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No changes need to be made.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

This image defines a natural shoreland buffer area/zone for the next questions.



**14. How much do you agree with each of the following statements?**

**Please check a box for each statement that best indicates how much you agree**

**"Natural shoreland areas ..."**

	Agree	Neutral	Disagree	I don't know
Prevent Erosion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protect Water Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide Habitat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obstruct Lake Views	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interfere with Dock and Lift Removal/Storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eliminate Sandy Beaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interfere with Lake Access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

**15. Are you planning on adding or enhancing a natural shoreland area on your shoreline?**

**Choose only one response.**

- Yes, skip to question 19.
- No
- I don't know.

Other (please specify)

**16. I'm not currently planning on adding or enhancing a natural shoreland area on my property because...**

**Check all that apply.**

- I don't have time.
- I don't like the appearance.
- It is too expensive.
- My physical ability limits me.
- My neighbors or family may disagree.
- I'm not sure how to design a natural shoreland buffer.
- I'm not sure where to get plants or other materials.
- There is no benefit to me.
- I don't know.

Other (please specify)

**A water quality initiative is underway in your area assisting shoreland owners stabilizing their shorelines and reducing runoff with native plantings. The next questions are related to this effort.**

**17. Are you interested in participating in the water quality initiative?**

**Choose only one response.**

- Yes, if yes how?
- No
- Maybe, I need more information.
- I don't know

Other (please specify)

**18. Have you participated in any of the water quality efforts around your lake in the past two years? Check all that apply.**

- I have not participated.
- I received information about shoreline buffers and water quality.
- I attended a workshop.
- I attended an open house.
- I spoke with friends and neighbors about water quality.
- I helped plant a native buffer.
- I planted a native buffer on my property.
- I helped with the initiative.

Other (please specify)

**19. Is there anything you wish had been done differently in the initiative?**

**Choose only one response.**

- Yes
- No
- I don't know

If Yes please specify

**20. How much would you invest in changes to your land to protect your lakes water quality?**

**Choose only one response.**

- \$0
- \$250
- \$500
- \$1000
- \$2500

Other (please specify)

**21. Have you made changes or plan to make changes on your land to portect or improve water quality?**

**Choose only one response.**

- Yes, if yes what and continue to the following questions?
- No, if no stop here.
- I don't know.

If Yes please specify, or enter comments here.

**The following questions are only for for those individuals who made chang or plan to make changes on their land as part of the water quality effort.**

**22. Do you think the project on your land will help protect the lake's water quality?**

**Choose only one response.**

- Yes
- No
- I Don't Know

Other (please specify)

**23. Did you notice that other residents were interested in your water quality project?**

**Choose only one response.**

- Yes
- No
- I don't know

If yes how?

**24. Have you spent any time maintaining your project?**

**Choose only one response.**

- Yes
- No
- I don't know

Time spent

**25. Would you encourage your friends to install a project?**

**Choose only one response.**

- Yes
- Maybe
- No
- I don't know

Other (please specify)

**26. Which treatment group is this survey from?**

- County
- Lake 7
- Pickerel
- Unknown

### 3. Closing

Thank you for completing the survey. Your answers will be important in guiding outreach and education in Otter Tail County.

If you would like more information or have comments or concerns call 218-346-4260 ext.3 to contact Steve Henry at the East Otter Tail Soil and Water Conservation District or visit the web at [www.eotswcd.org](http://www.eotswcd.org) for email addresses.

Survey summaries will be available after analysis from the Soil and Water Conservation Districts in Perham and Fergus Falls. Electronic copies can be obtained by contacting Steve Henry at the East Otter Tail Soil and Water Conservation District.