Lake Management Plan

for

Lake Six

Lake Six Lake Association, 2017

-For love of lakes

TABLE OF CONTENTS

Section 1: Overview

Goals without plans are just wishes

-Antoine de Saint-Exupery

LETTER FROM ORGANIZATION PRESIDENT:

In late 2015, the Lake Six Lake Association was invited to participate in the Initiative Foundation's Healthy Lakes and Rivers Partnership program along with three other Lake Associations in Otter Tail County. Under the coordination of Jen Kader (Freshwater Society) and with strong support from Darrin Newville (East Otter Tail Soil and Water Conservation District) representatives attended a day of training on lake ecology, strategic planning and communications.

Representatives of state and local agencies, as well as nonprofit organizations also attended the training sessions in order to offer their assistance to each group in developing a strategic Lake Management Plan. The Lake Six Lake Association was represented at the Healthy Lakes and Rivers Partnership training sessions by: Leanda Cheney, Greg Ogard, Sharyl Ogard, Dick Peterson, Marlene Peterson, Shawn Olson

Following the training sessions, each lake association held an inclusive community planning/visioning session designed to identify key community concerns, assets, opportunities, and priorities. The Lake Six Lake Association held this planning session on Friday, June 3rd 2016, facilitated by Jen Kader. About 50 people were in attendance, with about 40 percent of the participants describing themselves as year round residents. Details of the public input received at this session are provided within this plan.

This document is intended to create a record of historic and existing conditions and influences on Lake Six, and to identify the goals of the surrounding community. Ultimately it is meant to help prioritize goals, and guide citizen action and engagement in the priority action areas. While state agencies and local units of government have a vital role and responsibility in managing surface waters and other natural resources, this Lake Management Plan is intended to be an assessment of what we as citizens can influence, what our desired outcomes are, and how we will participate in shaping our own destiny.

This Lake Management Plan is also intended to be a "living document;" as new or better information becomes available. As we accomplish our goals or discover that alternative strategies are needed, it is our intent to update this plan so that it continues to serve as a useful guide to future leaders.

In discussing lake management issues it is impossible to avoid all scientific or technical terms. We have tried to express our goals, measures of success, and other themes as simply and clearly as possible, but have included a glossary of common limnological terms at the end of the plan to assist the reader. Limnology is the state of lake conditions and behavior.

Finally, we would like to recognize the Legislative-Citizen Commission on Minnesota Resources who, through the Environment and Natural Resources Trust Fund, made this round of the program possible. We would also like to thank Initiative Foundation, Don Hickman in particular

who was such an inspiring presenter and leader at the training, West Central Initiative who is providing the $5000 grant, and Freshwater Society for undertaking the Healthy Lakes and Rivers Partnership who facilitates the lake associations through writing the lake management plan process. A special thank you to Jen Kader from Freshwater Society who has answered so many questions and has been an outstanding facilitator, mentor and cheerleader as the Lake Six Management Plan comes to fruition. To all these organizations we are truly appreciative and grateful.

Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul.

-John Muir

Executive Summary

Brief Introduction to Lake Six Lake Association

Lake Six is a unique little lake in a county of over 1000 lakes. If in conversation, it is brought up that we have a cabin on Lake Six, people in the area say, "Oh, I've heard of that lake. It's suppose to be so clean and pretty." They are right, of course, and our mission and purpose is to keep it that way. The west side of the lake is crowded with lake residents and the east side is in a forest conservancy and left in its natural state. For Lake Six to remain pristine, it needs a guardian, a protector, and that would be the Lake Six Lake Association. That is not to say that residents who don't belong to the association are not good stewards because for the most part they are. But for the long term health of the lake, when it has many households on it, the lake needs an organization to advocate for it.

Lake Six has 50 lakeshore lots, almost all of them belonging to married couples, mostly with children or grandchildren. This year 42 households are members. The criteria for being a member is paying your dues of $25 a year. The percentage of association members is 84%, a statistic of which we are proud. Also, many of the properties on the lake are passed on from generation to generation. What a wonderful legacy to people who are on the lake and for the lake itself. Most of the people teach their children, grandchildren about ecology and nature using the wonderful, irreplaceable resource of Lake Six. People often times become environmentalists because of the time spent with their elders on the lake.

There are several reasons we are proud of our lake association

- **In 2014, the secchi disc reading in Lake Six was 41.5 feet!**
- **As noted earlier, we have consistently had over 80% membership over the last six years. Membership is determined by payment of dues at $25 per year. Lake Six residents are generally committed to the lake and its organization.**
- **Every year the association has an annual meeting / free breakfast where we enjoy each other's company and then discuss matters and vote on decisions related to the lake and our lives at the lake.**
- **Also there is an end of the season potluck picnic. This year a person that is not directly on the lake hosted the picnic. We were pleased because the organization broadened itself to not just include residents directly on the lake. Second tier landowners or those who don't have property directly on the lake shore should be included in the Lake Six community. Generally speaking, most people if they feel welcomed into a group start to feel kinship and ownership to the common interest, which in this case is Lake Six. In effect, they also become stewards of the lake.**
- **When "ice out " occurs, the dock crew gets busy with a 6 – 8 men who install their own docks and lifts along with elderly and disabled people's docks who have asked for that service. In late fall, the same group takes out docks and lifts.**

- **When new residents arrive at the lake, our Welcome Wagon committee gets busy with a basket of information, gifts, and homemade goodies**
- **Lake Six Lake Assn belongs to the Ottertail County Coalition of Lake Associations, Coalition of MN Lake Associations, MN Lakes and Rivers Advocates**
- **A small group of men also do water testing through RMB Labs during May –September to monitor water quality**
- **The "beaver crew" which monitors beaver activity as they like to build dams on the outlet from Lake Six flowing to Lake Seven.**

Other recent activity of the Association:

- **The main policy change: five years ago, the association wrote bylaws to help guide our association and give it purpose and direction. The bylaws have been very helpful when controversy and difficult questions arose.**
- **After many years of complaints about the culvert that leads water from Lake Six to Lake Seven, a group of Lake Six individuals convinced Hobart Township that a larger, newer culvert was needed. A new one was installed.**
- **A joint project with Lake Six and Seven, a private property owner from Lake Seven, and Hobart Township was the installation of a prominent large sign close to the public accesses of both lakes warning about Aquatic Invasive Species. So far both lakes are AIS free.**

WHAT DID THE COLLECTED INFORMATION FROM OUR RIPARIAN AND NON-RIPARIAN LANDOWNERS TELL US

A. What are the overarching issues that we face?

***Lake Six has an enviable position of a lake in protective status. It is consistently one of the top three lakes in Ottertail County for water quality based on clarity because of low algae growth. However, as new lake residents replace the older residents who were satisfied with the lake lots remaining natural, the newer residents are more apt to want a more "polished" look to their structures and lots. Thus, we have more impervious surfaces, more "grassy" lawns, less native buffers. The health of Lake Six is somewhat in jeopardy as more nutrients enter the lake due to increased use of fertilizer and loss of buffer zones. More residents seem to be using higher speed watercraft than in previous years. This negatively impacts the lake through increased erosion and turning up of shallow water.**

***Of course, the lake residents are very concerned about keeping all exotic species out of the lake. We have a minor infestation of invasive yellow irises, but lake residents like the irises as they are very pretty. In fact, uninformed lakeshore owners prefer having them and have been known to spread the yellow iris seed to other areas of their shorelines.**

***Ninety percent of the eastern shore of the lake is owned by Fair Hills Resort, more specifically the Kaldahl family. It has never been developed and currently is in a forest conservancy. It is always a worrisome question that the Kaldahls might sell their property, which would create more of the above concerns.**

B. What are the implications of these issues for Lake Six Lake Association?

Our mission statement is to "preserve and protect Lake Six for current and future generations." We take that very seriously and will do what is necessary to:

- **Maintain water quality as healthy or healthier than the present**
- **Within our power, keep out Aquatic Invasive Species**
- **Hopefully, we can play a part in keeping the privately owned east side of the lake in a forest conservancy**

C. What does the lake association need to do in response to these implications?

***<u>Increase membership</u>* –**

Our issue is not necessarily to increase membership as 80% of our lake residents are members now (by paying their dues), but to have them be <u>active</u> members. Right now, eighteen percent of the people on the lake donate their time for the good of the lake or the association. To increase the number of volunteers, we sent out an email / letter where we had 30 ways to volunteer. We had some people respond, so now we have 25% of our lake residents being volunteers.

***<u>Increase finances</u>* –Our treasury is funding what we are doing currently, but as we plan for the future the money we have will probably not be enough. The $5000 that we receive for writing our Lake Management Plan will certainly be a tremendous bonus. However if we plan a major project or an unforeseen issue occurs, then we would need some outside help. To increase the value of the grant dollars we could collaborate with EOTSWCD who ialso has some funding sources that we could possibly tap into.**

<u>Build Partnerships –</u>

-Currently we have a strong relationship with East Ottertail Soil and Water Conservation District (EO SWCD). Eight different property owners on Lake Six have had rain gardens, shoreline buffers, and coir logs planted and installed. The property owners pay 25 percent while the Legacy Grant of MN pays the other 75 percent. We hope to increase that number as long as the grant is available. We have a cordial, good working relationship with Lake Seven to collaborate with on different projects and events.

-Marlene Peterson, the president of the Association, is also a part of the executive board of Ottertail County COLA (Coalition of Lakes Association). Besides being environmental director, she is networking with other lake associations on behalf of Lake Six.

-Also by attending Hobart Township meetings on occasions, the lake association is hopefully in good standing with the township board.

-We have partnered with Freshwater Society for the writing of the Lake Management Plan. They are knowledgeable about many different resources we could tap in

-A very important step for the lake residents and the lake assn. is to continue to build a friendly relationship with the Kaldahls who own the east side of the lakeshore. The original owners have retired, and their children now own it. We need to find as many ways as possible for them to see us in a positive light.

-As time goes on and we become less insular, we will be looking for more partnerships.

Increase visibility –

***Presently, there are two yearly newsletters with emails sent as needed.**

***We have Tshirts and hats for sale with our logo**

***In the future, we plan on creating a facebook page**

***We definitely need to be more visible, but the personality of our small lake does not trend toward high visibility**

D. WHAT ARE THE NEXT STEPS?

Desired outcomes

As a result of educating the lakeshore owners, we hope to reduce nutrient flow into the lake, stabilize the shoreline, and prevent further erosion, thus retaining the healthy clear waters of Lake Six

Through vigilance, education, signage, monitoring, and good luck we hope to prevent aquatic invasive species (AIS) entering into Lake Six and control the yellow iris.

It is necessary for the lake residents to have common goals for the lake and believe in the mission statement of the lake association. With that in mind, we hope to increase membership and active involvement in the lake association.

The east shore remains in a nature conservancy and undisturbed.

The ultimate goal of the lake association is to preserve and protect Lake Six. Therefore, the long term success of the lake association needs to be secured.

Without the wildlife and lake vegetation, the lake is a "dead" body of water. We must protect wildlife and their habitat in and on the shores of Lake Six.

As stewards of the lake, we need to be invested in taking care of the lake. However, multi-generation families, friends, citizens using the DNR access to enter the lake will hopefully enjoy, appreciate and ultimately understand what the lake has to offer: habitat, recreation, memories, beauty, transcendence that only nature can bring. Thus, we need to educate and guide people on appropriate and safe recreational activities on Lake Six.

When people come to the lake, it is important for them to enjoy the experience and want to come again and again. To do that, there should be a high "quality of life" that encourages people to take care of the one ingredient that is essential for them being at the lake: a healthy Lake Six

WHAT IS NEEDED FOR LONG TERM SUCCESS?

The outside agencies that will help us to gain and sustain our goals include Ottertail County COLA, RMB Labs, Chris Vinton, DNR enforcement officer, and other relevant members of the DNR, executive committee of Lake Seven, Jen Kader and Freshwater Society, East Ottertail Soil and Water conservation District, other participants of Healthy Lakes and Rivers Partnership who are writing lake management plans, and Hobart Township Board.

Ultimately, the long term success of the Lake Six Lake Management Plan falls on us, the residents of the lake and its leadership, who have to be willing to work together toward our common goals.

Section 2: Plan Detail

History and purpose of Lake Six Lake Association

A. Lake Six Lake Association is committed to pristine Lake Six located 10 miles southeast of Detroit lakes, MN and 4.5 miles west of Frazee in Ottertail County. Lake Six is part of the Ottertail and ultimately Red River Watersheds.

B. The lake association was formed on Labor Day, 1985. Right now there are 43 lake households that are part of the association. Since there are only 50 residences, that would make membership in Lake Six Lake Association at 86%.

History of Lake Six Lake Association

Lake Six Lake Assn was established on Labor Day, 1985, 31 years ago. According to the minutes of that first meeting, the association was established "to make improvements which will benefit its property owners." Annual dues was $5. The first president was George Frenzel and the secretary / treasurer was Jerry Price. One of the first orders of business was to keep the outlet ditch open near the culvert going to Lake Seven. This was urgent to keep the lake level from being too high. Another pressing issue was to assign fire numbers and to resurface the road. It is interesting to note that in the following years after the basic structure and the pressing infrastructure problems were addressed and solved, many of the issues that we have today are the same as they were 20 -30 years ago. Some of these are keeping the Lake Six Rd clean, water levels, the outlet to Lake Seven clear, invasive species, public access use and misuse, speedboat regulations.

In 1992, Marvin Mindermann was elected president and he held that office for 18 years! A remarkable feat. He had many achievements, but his most impactful accomplishment was "persuading" nine lake residents to install septic systems. The secchi disc reading went from 11 feet to 24 feet over a span of 3 years! Remarkable. The current leadership is doing their best to follow in Marvin's footsteps and be as strong an advocate for Lake Six as he was. In 2010 he was the first to receive the Ottertail County Coalition of Lakes Associations (COLA) Volunteer of the year Award.

Through the many years that Lake Six has been populated, it has always has been defined as of one of the cleanest, clearest lakes in all of Minnesota. So whether it was or wasn't written down, the leaders of the lake even before the association was formed always had an interest in keeping the lake pristine and make life better through its organized efforts for the people living on the lake.

To that end, our current lake association reflects that purpose through our mission statement and goals.

MISSION STATEMENT

To preserve and protect Lake Six for current and future generations.

PURPOSE AND GOALS

1. **To promote and protect the water quality of Lake Six. Continue to monitor the tropic status of the lake through regular water testing.**

2. **To maintain natural habitat conducive to loons, fish, etc.**

3. **To prevent aquatic invasive species from entering Lake Six.**

4. To promote safe and responsible boating practices.

5. To educate lakeshore residents and other users on beneficial lakeshore stewardship practices.

6. To encourage respect for one's lakeshore neighbors – their property, their interests, activities, etc.

7. To encourage a sense of community among the residents

8. To actively oppose indiscriminate development or overdevelopment of the lakeshore or access thereto which could lead to overuse or improper use of the lake and deterioration of its quality, including, but not limited to, the negative impact that such development would have on lakeshore property owners.

9. To actively support the Minnesota Lakes and Rivers Advocates and other lake associations in all matters that will promote the conservation of water quality and supply.

****ALL OF WHAT WE DO AS A LAKE ASSOCIATION RELATES TO THE MISSION STATEMENT OR GOALS.**

Our Membership Provides Several Services.

We have a "dock crew" which takes docks and lifts in and out every year. For those who are not physically able to be part of the crew and want their docks put out in the spring and taken in during fall, the dock crew gladly does it. After it is done, there is a lunch where the crew enjoys time together.

In addition, we have a "beaver crew" which watches over the outlet to Lake Seven. During spring and fall the beaver like to build dams that hinders the flow of water to Lake Seven, thus raising the water levels in Lake Six. This can be quite a job because the dams can be torn down in one day and rebuilt by the beaver overnight. We also hire a trapper in the fall who traps several of them, but of course, more move in the following spring.

We have a welcome wagon person(s) that welcomes new people on the lake.

A basket is given to them which has the book, *A Citizen's Guide to Lake Protection*, a copy of the newsletter, lake directory, important phone numbers, other useful information, a hat and a kitchen towel with the lake Six logo on it, and some homemade goodies. In the future an up to date copy of the MN Boating Guide and Fishing Regulations will also be provided.

In the spring and fall two men take care of the loon's nest. The idea of a swan's nest has been discussed which would add to the diversity of the wildlife plus adding to the beauty of the lake.

From May through September we have our TSI crew that checks chlorophyll, phosphorus, and the secchi disc reading of the lake. This service is vital to monitoring the

health of the lake. The TSI readings started in 1996 and for the last twenty years we have been able to see trends on the lake.

Socially, the lake association sponsors breakfasts and picnics for the residents to get together and visit.

Every year at the annual meeting / breakfast, a speaker presents information that is directly related to Lake Six. In the past we've had a scuba instructor who shared what's beneath the surface, DNR fishery officer, AIS prevention agent, tent caterpillar expert, master gardener who specializes in rain and pollinator gardens, lake buffers. Hopefully our lake residents become more educated of the science of what is happening on Lake Six and all lakes, and to build an awareness of what is occurring in the larger world around our lake but yet still relevant to it.

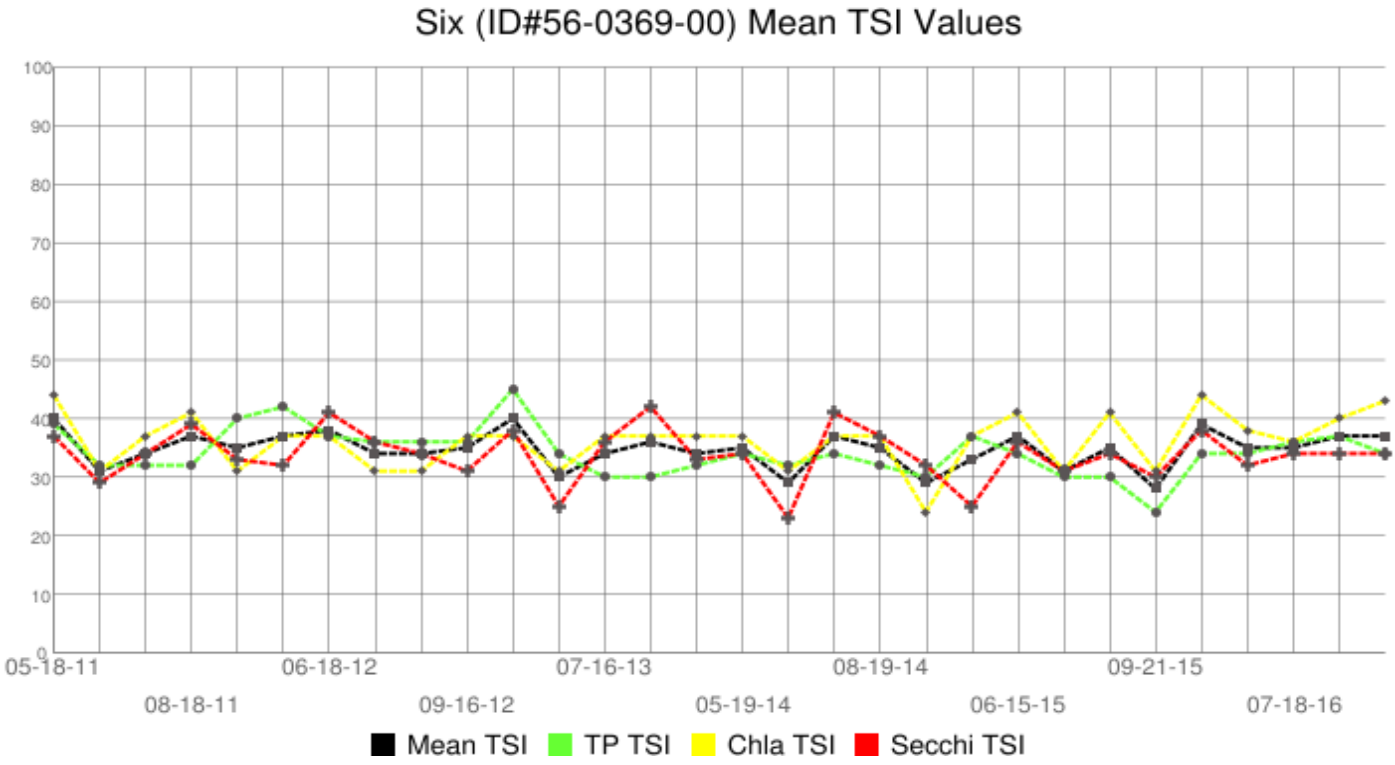
The association does not operate in a closed little world of the Lake Six community. We belong to other organizations, formal and informal to help us and in turn we help them. Lake Six belongs to MN Lakes and Rivers Advocates, Ottertail County Coalition of Lakes Associations, strongly tied to East Ottertail Soil and Water Conservation District, and informally connected with Lake Seven Lake Association.

The leadership is strong and committed to the lake, its residents, and the association. The most current elected leaders have written bylaws, newsletters, attend different meetings and conferences, organize social events along with official meetings, take care of lake business, help to solve problems, provide a forum for lake residents to express their opinions, inform and educate residents on lake ecology, and generally watch over what is happening in, on and around Lake Six.

RMB Laboratories report concerning Water Quality

The below graph shows the Yearly TSI readings for the summer seasons of 2011 through 2016. The Trophic State Index (TSI) is a classification system designed to "rate" individual lakes based on the amount of "biological productivity" occurring in the water. Using the index, one can gain a quick idea about how healthy a lake is by its TSI number. It is always important to remember the lower the number of the TSI reading, the more desirable the lake is for people.

Specifically the line graph shows the phosphorous, chlorophyll, and secchi disc reading which are the three components of a lakes TSI reading.



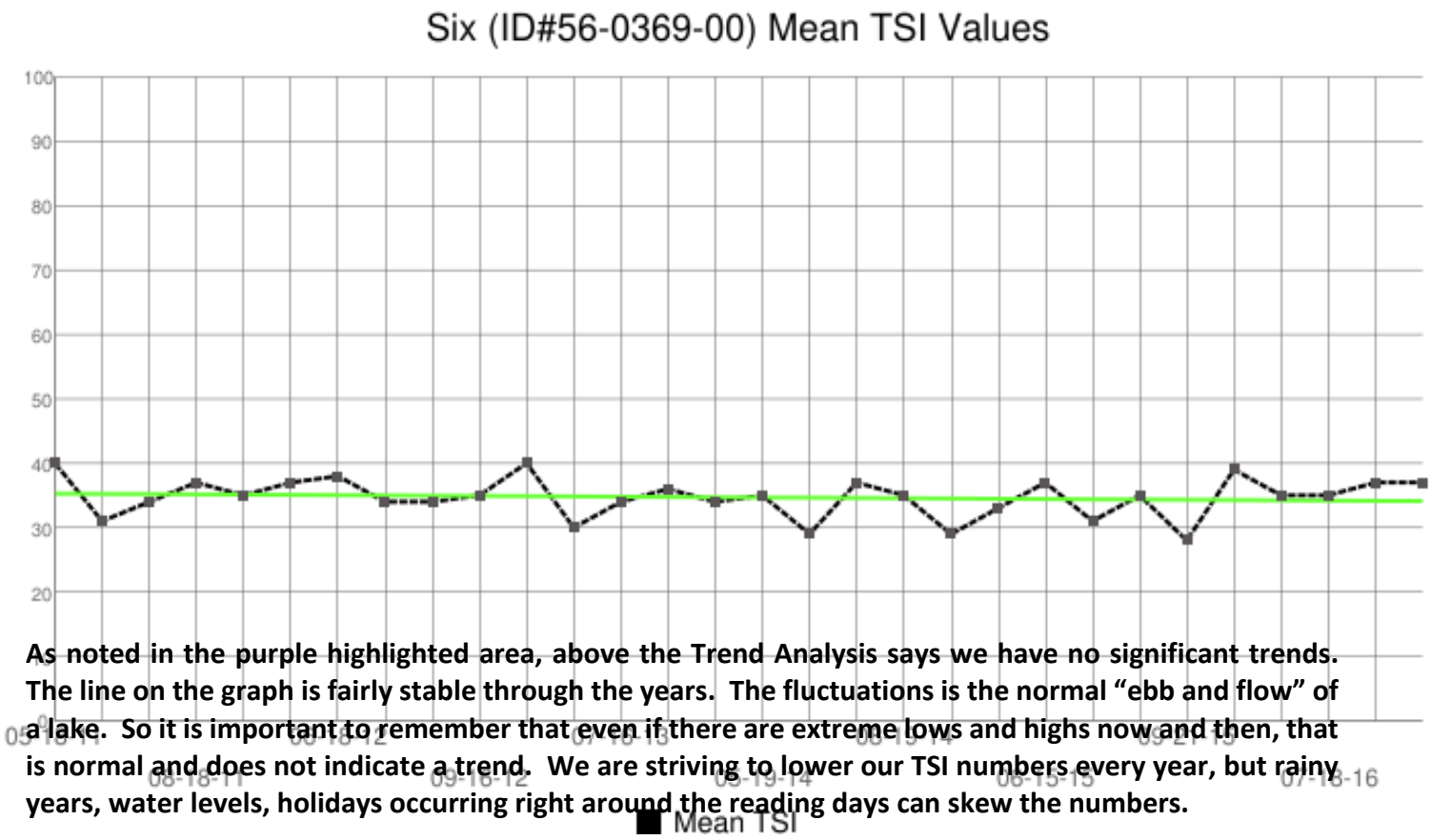
TSI RANGE	TROPHIC STATUS	CHARACTERISTICS
-40	Oligotrophic	Clean lake
41-50	Mesotrohic	Moderate amount of algae growth
50-70	Eutrophic	Persistent algae growth
70+	Hyper-eutrophic	Extreme algae problem

Our best component of the TSI reading is our secchi disc readings through the years.
It appears our weak area is the relatively higher amount of chlorophyll in the water which is produced from nutrients that wash into the lake. Therefore it is essential that lake residents understand how phosphorus and nitrogen are nutrients and fertilizers which feed lawns bordering lakes but also when washed into the lake feed lake plants and algae. The lake plants do just fine without being fertilized!

Trend Analysis Report

County	MN Lake ID	Lake	Site	Data Evaluated	Date Range	Data Source
Otter Tail	56-0369-00	Six	203	Mean TSI	05-18-2011 - 09-19-2016	RMB

No significant trend exists.



As noted in the purple highlighted area, above the Trend Analysis says we have no significant trends. The line on the graph is fairly stable through the years. The fluctuations is the normal "ebb and flow" of a lake. So it is important to remember that even if there are extreme lows and highs now and then, that is normal and does not indicate a trend. We are striving to lower our TSI numbers every year, but rainy years, water levels, holidays occurring right around the reading days can skew the numbers.

The trend for Lake Six is to be an oligotrophic lake that is defined as clean and wonderful for water activities such as swimming and boating.

Aquatic Vegetation

Aquatic plants or "weeds" are often not a desirable part of the lake but are absolutely necessary for freshwater ecosystems. Here are some of the things they provide for the lake.

Aquatic plants provide habitat for small animals such as insects, snails that are food for fish and water waterfowl. Sturdy bulrushes and cattails are building materials for many types of birds' nests. Also mammals such as muskrats use them for building their homes and dens.

Submerged plants give cover and protection for baby fish, turtles and salamanders from predatory birds and fish. Since the plants are rich in food supply, they make an ideal nursery for baby fish and some waterfowl. (such as the loon)

Emergent plants and submerged aquatic vegetation prevent shorelines and lake bottom erosion due to wave action from boats, storms, etc. Aquatic plants also can soak up and break down polluting chemicals. They can use nutrients that would otherwise feed algae, consequently improving water clarity. If you have a diverse native plant community, the lake is less susceptible to invasive, exotic plants.

That said, however, too much of a good thing is not necessarily a good situation. Too many aquatic plants can impede swimming and boating. A balance between the two is a worthy goal. However, people have different interests and opinions about how that balance should look like. Nevertheless, the lake should remain as undisturbed as possible, but the lake is meant for recreation, as well. It is important to note that aesthetics is not a determinant in whether a lake has too much aquatic vegetation.

Also, the unwanted exotic, invasive plants such as Eurasian milfoil, Starry Stonewort, Curly Leaf Pondweed, Flowering Rush, Purple Loosestrife pose serious problems to our lakes. They will choke out native plants and lessen diversity in the underwater plant community. Sometimes the exotic plants grow so quickly they form a mat on top of the lake. Once introduced into the lake they are almost impossible to eradicate. To manage them can cost tens of thousands of dollars a year! Obviously, an ounce of prevention is worth a pound of cure with invasive species.

There were two sources of information that were found that identifies and gives the location of aquatic vegetation communities . One was from a pdf file from MN DNR website *entitled Minnesota Biological Survey List of Plant Species Observed at Lake Six.* It listed a diverse group of plants under these categories:

> **Submerged plants (plants with most leaves growing beneath the water surface) Northern Watermilfoil, 6 different types of pondweed, intermediate bladderwort**

Floating-leaf plants (plants with leaves that float on the water surface) yellow and white water lily, three types of pondweed

Emergent plants (plants with leaves extending above the water surface) Bottle-shaped sedge, common reed grass, Broad-leaved, Hard-stem bulrush, Broad-leaved cattail

Shoreline plants (plants associated with the wetland habitat) Swamp milkweed, Porcupine like sedge, Common boneset, Yellow flag, Reed canary grass, Willow, Yellow iris (which is an invasive)

The other source of information (which was incomplete) was from the 2013 RMB Laboratories Lake Assessment that said "emergent plants like hardstem bulrush and cattails are located in various areas throughout the lake."

There are no "site specific assets" on the lake, but there is a master gardener on Lake Seven who could be consulted. Books, magazine, pamphlets could be made available to lake residents. We also own the book "Lake Plants You Should Know: A Visual Field Guide" It is spiral bound and laminated which allows for taking it out on the lake and using the scanned images of the actual plants. The book also shows invasive species plants so they could be identified.

Most definitely our stronger asset is East Ottertail Soil and Water Conservation District. They have already provided seven different lakeshore owners with rain gardens, buffer zones, native planting gardens. Through the use of grants our residents are able to afford these native plant gardens and buffers. Possibly in the future, some of the grant money could help defer the cost of the 25% that the lakeshore owner needs to pay or a stipend of $100 to help pay for plants. The lakeshore assn could work with the SWCD to suggest other ways to encourage lake residents to apply for grant dollars from the EOTSWCD.

Wildlife

The "Blue Book," *Developing a Lake Management Plan* notes that:

> "Minnesota's lakes are home to many species of wildlife. From our famous loons and bald eagles to muskrats, otters, and frogs, wildlife is an important part of our relationship with lakes. In fact, Minnesota's abundant wildlife can be attributed largely to our wealth of surface water. From small marshes to large lakes, these waters are essential to the survival of wildlife.
>
> The most important wildlife habitat begins at the shoreline. The more natural the shoreline, with trees, shrubs and herbaceous vegetation, the more likely that wildlife will be there. Just as important is the shallow water zone close to shore. Cattail, bulrush, and wild rice along the shoreline provide both feeding and nesting areas for wildlife. Loons, black terns and red-necked grebes are important Minnesota birds that are particularly affected by destruction of this

vegetation. Underwater vegetation is also important to wildlife for many portions of their life cycle, including breeding and rearing of their young."

The MN DNR also recognizes the unique importance of shallow lakes:

> "Minnesota's diverse wildlife populations are influenced in large part by our state's abundant water resources. While all lakes support wildlife needs, it is the shallow water zone, characterized by aquatic plants and generally less than 15 feet deep, that provides the most important wildlife habitat."

The littoral zone, generally the first 15 feet of lake water, is the near shore area where sunlight penetrates all the way to the bottom and allows aquatic plants to grow. Littoral zones are critical for wildlife habitat, water quality and erosion control that are all important for a lake to have a healthy ecosystem.

The primary agency charged with the management of Minnesota's wildlife is the Department of Natural Resources, Division of Fish and Wildlife, Wildlife Section. For Lake Six, the DNR Area Wildlife Manager is:

Don Schultz, 1509 First Ave North, Fergus Falls, MN 56537, (218) 739-7576 x228

Lake Six is blessed with many different types of wildlife from eagles to chipmunks. It is typical of many lakes in the area where we enjoy our loons. Most years we have one mating pair. Two loons nest platforms are put out every year, but we only one pair. Most years we have a baby, but sometimes the egg(s) don't hatch or are eaten by animals. A swans' nest platform has been suggested in the hopes a mating pair of swans would make Lake Six their home. They would add diversity and beauty to the lake. After some research, though, apparently geese like to take over those nests. So that is delayed until there is more research done. Also, ducks are enjoyable to watch as they swim around the lake with the ducklings in a straight row behind the parent.

Of course, we have our nuisance wildlife. It needs to be remembered the lake is a natural place and these animals use the shoreline as their homes. Raccoons are considered pests on the lake because they like to eat bird food put out in the feeders. Not only do they eat the bird food they knock over the feeders and leave their scat behind. Geese can be a headache as well. They leave their droppings on docks, rafts, etc. The lake residents have been encouraged to plant shoreline buffers because the geese don't like to climb through the tall vegetation on the buffers. Beavers, our very tenacious hardworking "engineers," are a problem. It is hard not admire them, but they cut down trees to build their dams that are built on the stream leading out of Lake Six to Lake Seven. Our beaver crew tries to keep up with the beavers by tearing up their dams, but they are very persistent and rebuild them. We do hire a trapper for a longer term solution.

Turtle of all sizes have been spotted swimming and sunning on tree branches hanging over the lake . Also we have a blue and white heron that grace our docks and shorelines for much of the summer along with ducks and swans. In the data collected from the vision meeting where the residents were able to have a voice in the future of Lake Six and its community, people commented the most about wildlife and protecting their habitats.

Status of the fisheries

The following is copied from the Standard Lake Survey Report which was completed July 7, 2015

"Walleye is a primary management species in Lake Six. Walleye abundance was in the normal range for this type of lake. Walleyes ranged in length from 12.7 to 22.4 inches with an average length and weight of 16.6 inches and 1.6 pounds. Walleyes attain an average length of 14.7 inches at 4 years of age. An abundant Northern Pike population exists. Pike ranged in length from8.7 to 31.9 inches with an average length and weight 20.2 inches and 1.8 pounds, Northern pike attain an average length of 21.5 inches at five years of age. A balanced Largemouth Bass population is present. Bass reproduction is consistently good. Bass ranged in length from 7.4 to 13.5 inches with an average length of 11.1 inches. Largemouth Bass attain an average length of 11.0 inches at four year. Bluegill abundance historically fluctuated due to inconsistent reproduction. Bluegill abundance in this survey was within the normal range for this type of lake. Thirty-one percent of the bluegills were 7.0 inches or greater in length. Bluegills attain average length of 7.0 inches at seven years of age.

July 2013 survey of fisheries…

> **Northern pike** – above average
> **Walleye** – Average. Lake Six is stocked with walleyes in odd years. The DNR tries to use fingerlings or larger to avoid the predation by northern pike.
> **Yellow perch** – Provide primary forage for walleye and northern pike.
> **Blue gill** – down slightly
> **Large mouth bass** – down slightly
> **Black crappie** – higher numbers
> **Yellow bullhead** numbers skyrocketed. Not necessarily bad as they are an indication of good water quality.
> **White sucker -** Spawning along shoreline provides forage for pike and walleye.
> **Black bullhead** numbers down which is an indication of good water quality]

…Anglers can maintain or improve the quality of their fishing experience for all species in Lake Six by practicing selective harvest. Selective harvest encourages the release of medium to large fish while allowing the harvest of the more numerous, smaller fish for eating. Releasing medium to large fish ensures that the lake will have enough spawning aged fish and will also provide anglers with opportunities to catch larger fish in the future."

There are game fish in Lake Six, although some fisherman disagree. I jest to them, "You just have to be a good enough fisherman to catch them!"

Exotic Species

Lake Six has been fortunate to have no invasive species as of 2013 when RMB Labs finished a lake assessment. Since then, there is such an awareness of aquatic invasive species that most lake residents are vigilant in not introducing them into the lake. The lake association through the newsletters, a small billboard warning about AIS at the public access, email notifications about newly infested lakes in the area are educating and keeping the public alerted to exotic species.

There are high traffic lakes that are within twenty miles that are confirmed with exotic species. There is no official plan as to what the lake association would do, if unwanted species are discovered. Presently, the lake association is in a protective stance to keep exotics out. The lake residents have a phone number on a refrigerator magnet that they can call if they think they found AIS. If it is actually an exotic species, then the DNR will go into action to possibly keep them from spreading all around the lake. However, if there are several spots on the lake where they are discovered, then it is probably too late. Vigilance is the key action to keep them from entering the lake. To be vigilant the public and lake residents need to be informed about them, and always realize the danger and consequences of transporting them into an uninfested body of water.

Background

"Exotic" species -- organisms introduced into habitats where they are not native -- are severe world-wide agents of habitat alternation and degradation. A major cause of biological diversity loss throughout the world, they are considered "biological pollutants."

Introducing species accidentally or intentionally, from one habitat into another, is risky business. Freed from the predators, parasites, pathogens, and competitors that have kept their numbers in check, species introduced into new habitats often overrun their new home and crowd out native species. In the presence of enough food and favorable environment, their numbers will explode. Once established, exotics rarely can be eliminated.

Most species introductions are the work of humans. Some introductions, such as carp and purple loosestrife, are intentional and do unexpected damage. But many exotic introductions are accidental. The species are carried in on animals, vehicles, ships, commercial goods, produce, and even clothing. Some exotic introductions are ecologically harmless and some are beneficial. But other exotic introductions are harmful to recreation and ecosystems. They have been caused the extinction of native species -- especially those of confined habitats such as islands and aquatic ecosystems.

The recent development of fast ocean freighters has greatly increased the risk of new exotics in the Great Lakes region. Ships take on ballast water in Europe for stability during the ocean crossing. This water is pumped out when the ships pick up their loads in Great Lakes ports. Because the ships make the crossing

so much faster now, and harbors are often less polluted, more exotic species are likely to survive the journey and thrive in the new waters.

Many of the plants and animals described in this guide arrived in the Great Lakes this way. But they are now being spread throughout the continent's interior in and on boats and other recreational watercraft and equipment. This guide is designed to help water recreationalists recognize these exotics and help stop their further spread.

Eurasian watermilfoil (*Myriophyllum spicatum*)

Eurasian watermilfoil was accidentally introduced to North America from Europe. Spread westward into inland lakes primarily by boats and also by waterbirds, it reached Midwestern states between the 1950s and 1980s.

In nutrient-rich lakes it can form thick underwater stands of tangled stems and vast mats of vegetation at the water's surface. In shallow areas the plant can interfere with water recreation such as boating, fishing, and swimming. The plant's floating canopy can also crowd out important native water plants.

A key factor in the plant's success is its ability to reproduce through stem fragmentation and runners. A single segment of stem and leaves can take root and form a new colony. Fragments clinging to boats and trailers can spread the plant from lake to lake. The mechanical clearing of aquatic plants for beaches, docks, and landings creates thousands of new stem fragments. Removing native vegetation crates perfect habitat for invading Eurasian watermilfoil.

Eurasian watermilfoil has difficulty becoming established in lakes with well established populations of native plants. In some lakes the plant appears to coexist with native flora and has little impact on fish and other aquatic animals.

Likely means of spread: Milfoil may become entangled in boat propellers, or may attach to keeps and rudders of sailboats. Stems can become lodged among any watercraft apparatus or sports equipment that moves through the water, especially boat trailers.

Other Midwestern Aquatic Exotics

Curly-leaf pondweed (*Potamogeton crispus*) is an exotic plant that forms surface mats that interfere with aquatic recreation. The plant usually drops to the lake bottom by early July. Curly-leaf pondweed was the most severe nuisance aquatic plant in the Midwest until Eurasian watermilfoil appeared. It was accidentally introduced along with the common carp.

Flowering rush (*Botumus umbellatus*) is a perennial plant form Europe and Asia that was introduced in the Midwest as an ornamental plant. It grows in shallow areas of lakes as an emergent, and as a submersed form in water up to 10 feet deep. Its dense stands crowd out native species like bulrush. The emergent form has pink, umbellate-shaped flowers, and is 3 feet tall with triangular-shaped stems.

Purple loosestrife (*Lythrum salicaria*) is a wetland plant from Europe and Asia. It was introduced into the East Coast of North America in the 1800s. First spreading along roads, canals, and drainage ditches, then later distributed as an ornamental, this exotic plant is in 40 states and all Canadian border provinces.

Purple loosestrife invades marshes and lakeshores, replacing cattails and other wetland plants. The plant can form dense, impenetrable stands which are unsuitable as cover, food, or nesting sites for a wide range of native wetland animals including ducks, geese, rails, bitterns, muskrats, frogs, toads, and turtles. Many are rare and endangered wetland plants and animals and are also at risk.

Purple loosestrife thrives on disturbed, moist soils, often invading after some type of construction activity. Eradicating an established stand is difficult because of an enormous number of seeds in the soil. One adult plant can disperse 2 million seeds annually. The plant is able to re-sprout from roots and broken stems that fall to the ground or into the water.

A major reason for purple loosestrife's expansion is a lack of effective predators in North America. Several European insects that only attack purple loosestrife are being tested as a possible long-term biological control of purple loosestrife in North America.

Likely means of spread: Seeds escape from gardens and nurseries into wetlands, lakes, and rivers. Once in aquatic system, moving water and wetland animals easily spreads the seeds.

Reed Canary Grass (*Phalaris arundinacea)* is considered a major threat to natural wetlands as it out competes most native species and presents a major challenge in wetland mitigation efforts.

Planted throughout the U.S. for forage and erosion control since the 1800s, it forms large, single-species stands, with which other species cannot compete. Invasion is associated with disturbances, such as ditch building, stream channeling sedimentation and intentional planting and if cut during the growing season a second growth spurt occurs in the fall.

Rusty crayfish (*Orconectes rusticus*) are native to streams in the Ohio, Kentucky, and Tennessee region. Spread by anglers who use them as bait, rusty crayfish are prolific and can severely reduce lake and stream vegetation, depriving native fish and their prey of cover and food. They also reduce native crayfish populations.

Starry Stonewort (*Nitellopsis obtuse*) is a grass-like form of algae that are not native to North America. The plant was first confirmed in Minnesota in Lake Koronis in late August of 2015. Plant fragments were probably brought into the state on a trailered watercraft from infested waters in another state.

It is similar in appearance to native grass-like algae such as other stoneworts and musk-grass. Native stoneworts and musk-grass are both commonly found in Minnesota waters. Starry stonewort can be distinguished from other grass-like algae by the presence of star-shaped bulbils.

Starry stonewort can interfere with recreational and other uses of lakes where it can produce dense mats at the water's surface. These mats are similar to, but can be more extensive then, those produced by native vegetation. Dense starry stonewort mats may displace native aquatic plants.

Like all plants, starry stonewort may grow differently in different lakes, depending on many factors. At this time, we cannot predict how it might grow in any one Minnesota lake. It is believed to be spread from one body of water to another by the unintentional transfer of bulbils, the star-like structures produced by the plant. These fragments are most likely attached to trailered boats, personal watercraft, docks, boat lifts, anchors or any other water-related equipment that was not properly cleaned.

Zebra Mussels (*Dreissena polymorpha*) Zebra mussels and a related species, the Quagga mussel, are small, fingernail-sized animals that attach to solid surfaces in water. They can cause problems for

lakeshore residents and recreationists and present a threat to the ecological integrity of lakes a rivers by potentially disrupting food chains and crowding out native species.

Zebra mussels can be a costly problem for cities and power plants when they clog water intakes. Zebra mussels also cause problems for lakeshore residents and recreationists. They can attach to boat motors and boat hulls, reducing performance and efficiency; attach to rocks, swim rafts and ladders where swimmers can cut their feet on the mussel shells; and clog irrigation intakes and other pipes.

Zebra mussels also can impact the environment of lakes and rivers where they live. They eat tiny food particles that they filter out of the water, which can reduce available food for larval fish and other animals, and cause aquatic vegetation to grow as a result of increased water clarity. Zebra mussels can also attach to and smother native mussels.

6. **Land Use and zoning**

The water quality of a lake or river is ultimately a reflection of the land uses within its watershed. Martin County Soil and Water Conservation District recognizes the multiple areas that impact water health including residential development, agriculture and shoreline management. The Martin County Local Water Plan was created by the SWCD in partnership with Martin County Planning and Zoning to evaluate the multiple sources of decreasing water quality and propose programs to address those challenges. The priorities listed in the plan include:

- **Surface Water Quality**
    - To improve the water quality of surface waters in East Otter Tail County by reducing or minimizing the amount and extent of contaminants entering surface waters.
    - Example Action Items : Provide technical assistance to shore land owners on water quality projects. Assist with feedlot runoff projects providing technical assistance and financial assistance when available to projects that meet criteria.
- **Ground Water Quality and Quantity**
  To improve and protect the quality and quantity of groundwater resources in East Otter Tail County by minimizing or reducing the amount and extent of contaminants entering the groundwater resources, and ensuring that there will be a stable and adequate source of useable water for municipal, industrial and agricultural purposes.
- **Development Pressure**
  To protect the natural resources of Otter Tail County by reducing or minimizing the impacts of ongoing and future development within the county.
- **Soil Erosion**
  Promote best management practices that reduce soil losses through wind and water erosion to below 2T (T is a technical abbreviation for tolerable soil loss).
- **Wildlife Habitat**
  To protect and preserve wildlife habitat and wetlands from conversion to cropland and urban development, and promote the re-establishment of wildlife habitat.

- **Sustainable Agriculture**To assist agricultural producers in maintaining productivity through the use of conservation practices that protect and preserve our natural resources and maintain a sustainable agricultural base in the county.
- **Education Promotion**
  Promote soil and water conservation through an effective information and education program to the residents, seasonal property owners, schools, and elected officials in Otter Tail County.
- **Funding/Partnering/Administration**
  Provide assistance to the public through the most efficient use of public funds and administration of programs, and maintain and develop a strong working relationship with other resource agencies.

The specific impacts to a lake from various land uses vary as a function of local soils, topography, vegetation, precipitation and other factors. However, one of the most important ways that citizens can work to positively impact their local waters is through ensuring that prudent local zoning ordinances are in place.

Many zoning regulations are based upon the Shoreland Management Act and/or the Minnesota Department of Natural Resources (DNR) classification of a given lake. The DNR has classified all lakes within Minnesota as General Development (GD), Recreational Development (RD), or Natural Environmental (NE) lakes, and assigned a unique identification number to the lake for ease of reference. Counties in turn have used these classifications as a tool to establish minimum lot area (width and setbacks) that is intended to protect and preserve the character reflected in the classification. It should be noted that counties will often make local ordinances more strict than the minimum standards set by the DNR.

On any shoreland the permissible density and setbacks for virtually all new uses are determined by the lake or river classification standards established by the Department of Natural Resources. Otter Tail County has three categories for defining development around area lakes: Natural Environment, General Development, and Recreational Development. **Lake Six is classified by Otter Tail County as a Recreational Development Lake**.

Natural Environment lakes are generally small, often shallow lakes with limited capacities for assimilating the impacts of development and recreational use. They often have adjacent lands with substantial constraints for development such as high water tables, exposed bedrock, and unsuitable soils. These lakes, particularly in rural areas, usually do not have much existing development or recreational use.

Recreational Development lakes are generally medium-sized lakes of varying depths and shapes with a variety of landform, soil, and ground water situations on the lands around them. They often are characterized by moderate levels of recreational use and existing development. Development consists mainly of seasonal and year-round residences and recreationally-oriented commercial uses. Many of these lakes have capacities for accommodating additional development and use.

General Development lakes are generally large, deep lakes or lakes of varying sizes and depths with high levels and mixes of existing development. These lakes often are extensively used for recreation

and, except for the very large lakes, are heavily developed around the shore. Second and third tiers of development are fairly common. The larger examples in this class can accommodate additional development and use.

Below are zoning standards associated with each of you lakes. Please note that this chart does not represent all the zoning requirements that are involved with land use and property development.

You will want to contact the Otter Tail County Zoning staff to determine the zoning district and the specific regulations that apply to your property.

	General Development (Lake Lida, Wall Lake)	**Recreational Development** (Big McDonald, Lake Six)
Structure Setback from OHWL	75 ft	100 ft
Water Frontage/Lot Width	100 ft	150 ft
Lot Area*	20,000 ft^2	40,000 ft^2
Buildable Area	8,400 ft^2	8,400 ft^2
Sewage Treatment Area	2,500 ft^2	2,500 ft^2

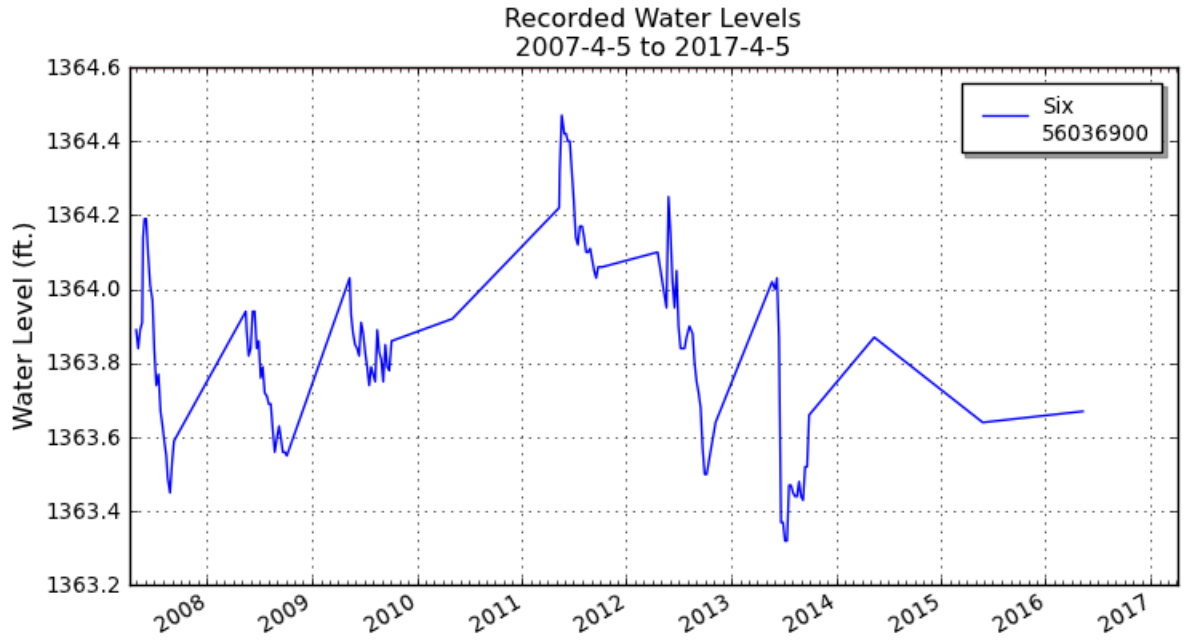
**Setbacks are measured from the Ordinary High Water Level (OHWL)*
***excluding public road right-of-ways, bluffs, wetlands, and land below the OHWL of public waters*

Please Note: Otter Tail County is in the process of revising their shoreland ordinance. As you make plans, be sure to check in with the Otter Tail County Land and Resource Management Department for any updates.

Many lakes have numerous properties that are considered to have "vested rights" or were developed prior to the establishment of these restrictions. In general, these pre-existing uses are allowed to remain unless they are identified as a threat to human health or environment, or are destroyed by natural, accidental causes or in association with significant renovation.

Additional questions may be directed to:

Bill Kalar, Land & Resource Management Director
Phone: 218-998-8095
Email: bkalar@co.ottertail.mn.us
Location: 540 Fir Ave. W, Fergus Falls, MN 56537



Lake Six Water Level Report

Water Level Data
Period of record: 06/25/1948 to 05/10/2016
# of readings 368
Highest recorded: 1364.47 ft (05/21/2011)
Lowest recorded: 1362.87 ft (09/08/1970)
Recorded range: 1.6 ft
Last recording 1363.67 ft (05/10/2016)
Ordinary High Water Level (OHWL) elevation: 1364.6 ft
Datum: MSL 1912 (ft)

Historical and Existing Conditions

Lake Six is comprised of 193 acres, so is considered a small lake with 3.3 miles of Shoreline. It has no inlet and is the headwaters of several lakes and is spring-fed. There is one unnavigable outlet to Lake Seven. It is defined as an oligotrophic lake. (clear water conditions with excellent recreational opportunities)

The maximum depth is 140 feet with 1/3 of lake 15 or less. The average depth is 71 feet.The bottom of the lake is primarily sand and gravel. The immediate ecoregion is Northen Lakes and Forest Region which contain the clearest of lakes.

Land use and zoning on Lake Six follow the Shoreland Management Ordinance of Ottertail County. There are no extra restrictions and many would say that Ottertail County has some of the most restrictive ordinances in the state.

In 1982 there were 22 seasonal homes and 19 permanent homes for a total of 41 homes, In 1997 there were 23 seasonal homes and 21 permanent homes for a total of 44 homes. In 2016 there are 35 seasonal homes and 16 permanent homes. As you can see, the trend is definitely toward seasonal residences and permanent residences are declining.

After doing some research and contacting Bill Kahler, head of Land and Resources Department of Ottertail County, there is no comprehensive County Plan for land use. Although there is a water Management Plan for Ottertail County in effect from 2009 – 2019.

Lake Six is a mix of new, modern year-round homes to a more rustic quaint cabins to mobile homes. There are probably not any substandard homes on the lake. It is a mix of upscale to modest dwellings. Upscale homes next to older, simple homes are not uncommon.

Our waste treatment is taken care of through individual septic systems whether they are contained septic tanks or drain fields. As of now everyone has one of these two types of systems on the lake. It is unknown though if they are all updated or up to code.

We have one non-residential land use. On the southwest corner of the lake, there is lot owned by Camp Cherith, a Christian camp mostly for girls. They use the lot only for their water activities, and the camp itself is about 3 miles away. They are an asset to our lakeshore as they are learning about how the environment and gaining an appreciation for lakes and nature in a beautiful setting.

The northwest and southwest areas of the lake have steep hills that potentially could be an area for soil erosion. They are also more vulnerable to runoff from shoreline development. There are no point stormwater discharges and non point would be developed lots with the non-permeable areas as well as roofs. We are fortunate not to have feedlots or row crop farming in the lakeshed.

One-half of the land around Lake Six is owned by the Kaldahl family who have put it in a forest conservation easement. They have owned the property for many years and are true environmentalists. Hopefully they have the financial resources to keep the land and not to develop it. Adjacent to the camp is a protected wildlife refuge owned by the DNR. There are many different types of vegetation that range from submerged, to floating leaf, to emergent, to shoreline plants. The diversity in the wildlife ranges from fish, turtles, muskrats, beavers, ducks, and more.

A very important piece of this lake management plan is finding our philosophical stance on how we feel about major issues affecting the lake and will we even be aware of the issues. For example, if the land on the east side of the lake would be turned into a golf course, what would be our stance? What if the DNR decided to pave the public water access,

how would we react? First, obviously, the lake association would have to know what would be happening!! So first, it is vital that we as an association reach out to the organizations that can keep us informed about important decisions directly affecting Lake Six. Otherwise, we might not be a "player "in what is happening on or around the lake. In the action plan, we will specify who we will reach out to, who will be the contact person, and what is the deadline. The second important piece is what will be our stance. It should not be dictated by emotions, what other people are thinking, personalities and opinions. Rather there should be a firm stance based on science and principles. We as a lake association have decided that would be our mission statement and our nine goals that are a part of the bylaws would be the fulcrum around which we take our stance.

7. Public Water Access

Research has shown that Minnesotans rely heavily upon public access sites to access lakes and rivers. A 1988 boater survey conducted by the University of Minnesota showed that three-fourths of the state's boat owners launch a boat at a public water access site at least once a year. In addition, over 80 percent of boat owners report using public water access sites for recreation activities other than boating.

The primary agency responsible for pubic water accesses in Minnesota is the Minnesota Department of Natural Resources, Trails and Waterways Unit. They are responsible for the acquisition, development and management of public water access sites. The DNR either manages them as individual units or enters into cooperative agreements with county, state, and federal agencies, as well as local units of government such as townships and municipalities. The DNR's efforts to establish and manage public water access sites are guided by Minnesota Statutes and established written DNR policy. The goal of the public water access program is free and adequate public access to all of Minnesota's lake and river resources consistent with recreational demand and resource capabilities to provide recreation opportunities.

According to Minnesota Department of Natural Resources Fisheries Survey, there is one public access on Lake Six.

Lake Six's public access is on its very south end and gets a moderate amount of traffic. It has nine parking spaces which is appropriate for the size of the lake. No one seriously speaks of having the public access removed or closed because all of Minnesota's lakes are public waters unless there is only one riparian owner. Also it seems self-centered to not want to share the lake with non-lakeshore owners. However, if the visitors to the lake do not recognize the lake as a place that needs to be conserved and treated with care, then they will not be the most welcome. Being not welcome might be shown by a gentle reminder to having the local authorities called to stop the illegal behavior.

What has been done to constructively manage the public access is

At least once a year on a busy weekend, having a person at the access to remind people to *Clean, Drain, Dry.* Next year lemonade and cookies may be served so they see the inspector as an ally against aquatic invasive species.

Through the cooperation of Lake Six and Lake Seven, a large bright sign was paid for and installed on private land that warned about AIS. The Hobart Township board was notified that it would not be on the road right-of-way.

There are several signs posted: loon habitat nesting area, scuba divers, Aquatic Invasive Species sign saying that we are a non-infested lake. Unfortunately these signs manage to "disappear" or fall off the sign holder. Unfortunately, when you contact the DNR, they are often busy with larger issues, so often times it is in the hands of the lake association to take care of problems. Yet, the DNR is very restrictive in what can be done on the access, so it can be very frustrating when there is a problem, people want to solve it, but are told it can't be done. But the DNR who can do it, often times can't. In defense of the DNR, they are understaffed. What often times is done, is compromise with the DNR and the lake association. As long as what is being done to take care of the access is not obtrusive, it is overlooked. Often times our access can have garbage which can lead to bigger problems. . What the lake association is not doing is cleaning up after people. That seems to ask a lot of volunteers to clean up garbage. In lieu of that, a large garbage receptacle is going to be placed at the access and once a week, the local garbage people will empty that. Also a sign will be added to the sign holder asking people not to litter. Hopefully, these ideas work in maintaining and managing the public access.

9. Organizational Development and Communication

in 1985 Lake Six Lake Association was formed with these items on their agenda:

Establishing and maintaining the water level of the lake as well as the outlet to Lake Seven

Obtain proper fire protection

Develop better roads

Get cable TV

Organize social events

Thirty-one years year later we have cable TV and fire protection. We are still working on the water level and the Lake Seven Outlet. One of the quality of life goals now is to enforce the speed limit on our well maintained road. Of course, socialization is as important now as back then as we have in our action plan, having picnics and potlucks.

In this span of time our organization has grown from 20 to 42 members. The officers then were men, now they're all women. Our goals and priorities presently focus more on ecology than anything else. As years have gone by, lake lots have become more of an extension of year round houses in towns and cities. The rustic little cabins without much change to the lot has changed. That isn't necessarily a bad thing, but the environment does suffer and as a lake association it is our job to preserve the lake and its environs while still enjoying a high quality of life at the lake.

The leadership of the association is the same as it was back in 1985: president, vice president, secretary, and treasure. Our dues are $25. For the 2016 year, 86% of the people are members. It is hard to attain a higher membership number than that as some people just don't like to join organizations. Even though the membership number is very high, the number of people who attend our social events and meetings could be improved. Most of the attendees are full time residents and older people. I think younger working people come to the lake for the weekend and want to freely enjoy themselves. We need to find a way to reach these younger working people with young children who come on a Friday night and leave on a Sunday.

One comment and compliment is that people are happy for all the communication they receive about the lake. It may be to order Lake Six T-shirts, about the death of one our neighbors, another warning about AIS, or simply a beautiful sunrise picture.

Benchmarking

At this time, the lake association is not in the process of benchmarking. When this Lake Management plan is completed, we then can examine closely the goals we want to benchmark, identify indicators to measure if we really are making progress, then set a standard for those indicators (a benchmark), then track them over a designated period of time, and finally analyze the results to see if we have met our benchmarks. If not find out why, or celebrate our success.

For example: According to our action plan is the goal: to establish and maintain a strong, active lake association

Action item: Increase membership and active involvement in the lake association

Send an email survey or SAS postcards trying to determine why people don't attend the annual meeting and what might entice them to attend

-Our goal would be to increase the number of people to come to the annual meeting

-Indicator is the average number of people who came the last ten years

-A benchmark would be to increase the number of people by 20%

-Follow the action plan of sending out emails and SAS envelopes

-Follow the wishes of the people to make it more enticing to attend the meetings if they are reasonable

-Count the number of people who come to the meeting for the next two years.

-See if we gained 20% more attendees

-If we don't reexamine the problem or celebrate more people coming

Generally speaking, that is how we would benchmark important priority goals. For us to be an effective organization, it is key that we benchmark our goals.

Summary of Visioning/Planning Session

The raw data gathered from the visioning meeting which is found in the appendix. The comments were made and written down in small groups during the breakout session. Comments were organized into categories.

Our visioning session was held on a Friday night, June 3rd. The leadership felt it was good turnout being that we have 56 riparian owners on Lake Six. One disappointment was there were very few seasonal people who attended. That is in keeping with the turnout for all events on Lake Six. One of our goals is to try to engage them more.

<u>Our priority themes are</u>

- **Shoreline Stabilization**
- **Strong Lake Association**
- **Water Quality and Clarity**
- **Aquatic weed management**
- **Aquatic invasive species**
- **Public Access and Use of Lake**
- **Wildlife Habitat and Preservation of Natural Spaces**

Success would look like this if the above priorities are worked on, bench marked, and then evaluated

- **Most shorelines would have native plant buffer zones.**
- **The Lake Six Lake Association would still be operational with its mission statement and goals serving as its philosophical base**
- **Our water quality and clarity would stay at an average 36 TSI or lower for a five year period.**
- **There is a variety of lake weeds, but not so many they overwhelm fisherman and swimmers**
- **No Aquatic Invasive Species in the lake!**
- **A clean, well maintained public access where people are considerate of others and their interests**
- **People using the lake, resident and non-resident, are respectful of each other and their recreational activities**
- **There is diverse wildlife on the lake: fish and other water life, birds, insects, water mammals, etc. The nuisance animals are controlled, but not eliminated for they are a part of the ecosystem**

Community and organizational assets are

- **Our lake association**
- **Lake Seven Lake Association who can be our collaborative partner**
- **Freshwater Society**

- **East Ottertail Soil and Water Conservation District**
- **The other three lake associations that were part of the Healthy Lakes and Rivers Partnership: Lake Lida, Big McDonald Lake, and Wall Lake**
- **Ottertail County COLA**
- **Hobart Township Board**

As mentioned earlier, it is essential for the success of our shared goals that all lake residents including seasonal, those newer to the area, and year round, need to be on board. Past outreach efforts have shown to be a challenge, something that needs to be addressed.

More research needs to be done on lake weeds. There has to be a healthy balance of not having a weed choked lake vs maintaining an optimal habitat for the wildlife. The public access is a controversial issue, but we need to reach out to the DNR and other lakes as to how they manage their public access problems. The age old problem of speed boats vs nonspeed boat people has to be addressed. More research needs to be done as to *if and how* speed boats create a water clarity problem. Then if they do, we need to research what speedboats should not be doing to make the lake less healthy (a worse TSI score)

Who is going to be doing this research has not been decided yet, but it will be important that we partner with the DNR and SWCD to address boat speeds and lake weeds respectively.

Action Plan Introduction

Following is the Action Plan which is the functional, accountable part of the lake management plan. The action plan is comprised of goals, action items, timeline, budget, and people in charge of getting the jobs done. This is where the work gets done. The rest of the Lake Management Plan is the history, philosophy, science, and facts that are all essential to the process.

Our mission statement and goals were adopted by the lake membership four years ago. Consequently, the following paragraph demonstrates how the five priorities of the action plan dovetail into the mission statement and the goals.

First the mission statement is to preserve and protect Lake Six for current and future generations.

- **Goal no 1 to preserve and protect the water quality is essentially saying the same thing;**
- **Goal No 2 to maintain a strong, active lake association provides the vehicle through which we protect our waters.**
- **Goal no.3 to preserve and protect wildlife and habitat broadens the definition of Lake Six not just as a body of water, but a home to fish and other wildlife. A whole ecosystem is being preserved and protected for people, animals, and the lake to exist in harmony.**
- **Goal no. 4 to promote appropriate and safe recreational activities has two desired outcomes: one to protect the lake and for people to enjoy themselves using the lake. Ideally, for the lake to remain as pristine as it was would be to allow no motors on the lake. However, this is not a private lake, so that will not happen. People must be guided and educated to not harm the lake or its wildlife.**
- **Goal no. 5 to promote a high quality of life does not directly fit the mission statement. Indirectly it does because lake residents are aware and newcomers have been informed how cherished Lake Six is. They then treat it accordingly.**

To synthesize our purposes and goals in our bylaws' goals # 1-7 and the action plan's goals in the LMP becomes redundant and also self-evident. However, taking a closer look at our bylaws 7 and 9 could be explained more closely.

- **Goal #7 - to encourage a sense of community among the residents. It is often said it takes a village to raise a child. It also means it takes a village to preserve and protect the lake. When we are united in a common cause, the odds of success multiply greatly. That is why a community spirit should be fostered in the lake residents.**
- **Goal #9 – to actively support the Minnesota Lakes and River Advocates, COLA, and other lake associations. State legislators, local units of government, voluntary organizations all have the power to make a difference. They can provide a wealth of knowledge, help and resources that can be tapped into for the well being of the lake and its lakeshore residents. To not support them is to look backwards and hope that everything stays the same or like it was. That is regressive thinking and puts the lake in jeopardy because things do change.**

TOP FIVE PRIORITIES FOR LAKE SIX MANAGEMENT PLAN

The steering committee for the Lake Six management plan has established the following focus areas based on the results of the visioning meeting held June 3, 2016: water quality, a strong lake association, wildlife habitat, safe use of the lake, and quality of life. The goals, action plan, timeline, and budget are detailed below.

GOAL No. 1: To preserve and protect the water quality of Lake Six for current and future generations.			
Person Leading	**Action Plan**	**Timeline**	**Budget**
	Action Item #1: Reduce nutrient flow into the lake, improve shoreline stabilization, and prevent erosion.		
M. Peterson S. Ogard	a. Educate residents at the annual meeting and through newsletters* about the importance of preventing direct runoff into the lake and stabilizing their shoreline through the use of rain gardens, rain barrels, and native buffers. Include information about cost sharing options for installation through EOT SWCD. *100% of property owners receive the newsletter.	Done/ On-going	Cost of newsletter: $90-100 annually from assoc. dues
M. Peterson	b. Promote and coordinate efforts with East Ottertail SWCD to provide cost sharing for property owners to install rain gardens, native buffers, or shoreline stabilization projects. Offer to pay all or a portion of the property owner's 25% cost share in areas of severe erosion.	DONE/On-going through 2018	Cost sharing from SWCD/HLRP grant funds
M. Peterson	c. Schedule a visit from SWCD to evaluate and make recommendations for several properties in one day.	Summer 2017 & 2018	No Cost
Lake Assn Officers	d. Provide incentives for property owners to install rain gardens and/or native buffers by offering gift cards (donated by businesses or Lake Six association) to a nursery which carries native plants. Present a "Certificate of Stewardship" to all property owners who complete a project, along with a gift card to a local nursery which carries native plants. Send article and picture to local media.	Annually	$400 HLRP grant funds

L. Cheney	e. Provide every resident with a copy of "A Guide to Lake Protection and Management" from the Freshwater Society. Include a cover letter from association officers and a copy of the action plan.	Annual Meeting June 2017	Books free from Freshwater Society
L. Cheney	f. Include an article in the annual newsletter about the benefits of installing rain barrels. Contact OTC Environmental Office/EOT SWCD about the availability and cost of rain barrels. Consider a cost sharing program for 2017-18 for purchase of rain barrels using HLRP grant money.	Summer 2017 & 2018	$70-170 per barrel. Possible cost share using HLRP grant $$

GOAL No. 1 (cont.): To preserve and protect the water quality of Lake Six for current and future generations.			
Person Leading	**Action Plan**	**Timeline**	**Budget**
M. Peterson	g. Schedule and invite residents to open house/pot luck events at sites where rain gardens/native buffers/shoreline restorations have been installed. Invite a rep from SWCD to be on hand to educate attendees. Include a list of properties with restorations projects in the annual newsletter.	Summer 2017 & 2018	No Cost
S. Ogard	h. Ask local media to write a story featuring shoreline restoration/native buffer/rain garden projects on Lake Six.	Late summer 2017	No cost
D. Durow	i. Lake residents will continue to monitor the outlet to prevent obstructions (debris and beaver dams) from slowing the flow of water and thus raising the level of the lake.	DONE/On-going	No Cost
L. Cheney	j. Check with septic inspectors about the cost of conducting septic system inspections on Lake Six. Consider a cost sharing program with residents.	90 days Summer 2017 & 2018	$200-320/property. Possible use of HLRP grant money
P. Puetz	k. Investigate the possibility of recruiting local youth groups or lake resident volunteers to provide labor for installing rain gardens and native buffers, especially for seniors unable to provide labor themselves.	On-going	No Cost

Person Leading	**Action Item #2: Continue to monitor the water quality of Lake Six so as to contribute to our understanding of the lake and to develop long-term trends.**	**Timeline**	**Budget**

Greg Ogard	a. Continue monthly water monitoring in conjunction with MPCA, CLMP, Otter Tail County COLA and RMB Lab.	Done/ On-going	$210 annually to OTC COLA from assoc. dues
Greg Ogard	b. Report and interpret results to residents through annual meeting and newsletters, educating them as to the significance of chlorophyll a, phosphorus, and Secchi disk readings and the role they play in maintaining water quality.	Completed at annual meeting 2016/ On-going every year	No Cost
Greg Ogard	c. Monitor and inform residents of long-term trends based on RMB Lab analysis.	Annually	No cost

GOAL No. 1 (cont.): To preserve and protect the water quality of Lake Six for current and future generations.			
Person Leading	**Action Item #3: Prevent the introduction of aquatic invasive species (AIS) into Lake Six and control those already present (yellow iris).**	**Timeline**	**Budget**
M. Peterson S. Ogard	a. Provide residents with a pictorial identification guide of various AIS and how they can be prevented. Distribute through annual newsletters or with the Freshwater Society guide mentioned above.	Done/On-going	Cost of newsletter: $90-100 annually from assoc. dues; Free brochures from DNR
M. Peterson	b. Check with MN DNR about posting AIS information at the public access.	Done	$100 from assoc. dues
Dick Peterson	c. Maintain the Clean, Drain, and Dry billboard installed by Lake Six and Lake Seven associations near the public access. Investigate the possibility of partnering with other organizations on AIS prevention to reach a broader audience.	On-going	No Cost at this point.
S. Ogard B. Anderson	d. Educate residents through the annual newsletter on the detrimental effects of yellow iris on native shoreline vegetation and the habitats for pollinators and other wildlife. Recruit volunteers to dead head yellow iris along the shoreline to prevent its spread. (Some residents state the yellow iris is preventing shoreline erosion and don't want it sprayed.)	Summer 2017 On-going	No Cost

Lake Six Association decision	e. Research the possibility of establishing a "set-aside" fund for combating AIS if the need should arise (i.e. charitable fund through WCI). Use OTC COLA as a resource to identify possible funding for AIS prevention.	Long Term	To be determined by association vote annual meeting 2017.
M. Peterson	f. Contact other lake associations who have had to combat infestations of AIS in recent years to find out what they have learned. Invite a representative of one of them to speak at the annual meeting.	Summer 2017	No cost or small honorarium
S. Ogard M. Peterson	g. Contact DNR about setting up a rapid response plan if AIS is discovered. Provide residents with a magnet with contact information of who to call if they suspect AIS.	90 days	$20 from association dues
D. Peterson	h. Construct and install zebra mussel detection devices in various locations around the lake.	Summer 2017	$50 HLRP grant

GOAL No. 2: To establish and maintain a strong, active lake association.			
Person Leading	**Action Item #1: Increase membership and active involvement in the lake association.**	**Timeline**	**Budget**
L. Cheney & P. Puetz	a. Develop and distribute a directory of all lake residents. Include a parcel map.	Summer 2017	$200 HLRP grant
M. Peterson	b. Establish a welcome wagon committee to welcome new residents and to provide them with information about the lake association and educational materials on lake stewardship. Include the LMP Executive Summary, Action Plan and "A Guide to Lake Management and Protection" mentioned in 1e.	Spring 2017	No cost.
M. Peterson K. Hanson	c. Increase the number of social events on the lake from one per year to three to encourage a sense of community. Make one event an appreciation event for volunteers and lake stewards.	Summer 2017 & 2018	$100 annually; association dues and HLRP grant
M. Peterson	d. Establish sub-committees for various projects so it is easier for members with special skills to be able to contribute (i.e. incorporation, forest tent caterpillars, welcome wagon, public access monitoring).	Done: FTC/incorporation; Others on-going	No Cost

S. Ogard	e. Send an email survey (SAS postcards to those without email) to lake residents with a list of opportunities for which they might volunteer.	Done	$10 for postcards and stamps
L. Cheney	f. Send an email survey (or SAS postcards) trying to determine what would draw residents to meetings (food, music, time of day/week/season, activities, door prizes).	Summer 2017	$10 for postcards and stamps
Assn. officers	g. Increase attendance at the annual meeting from 30% of property owners to 40% through ideas garnered from survey.	Summer 2018	$100 from assoc. dues
A. Coombs	h. Establish a Lake Six Facebook page to help disseminate information on lake stewardship, AIS, wildlife habitat, safety issues, etc. and information on association events and activities.	Summer 2017	$100 annually; HLRP grant
Assn. officers	i. Defray costs for residents to attend educational meetings and conferences regarding water quality, AIS, wildlife habitat, etc.	On-going	$200 annually; HLRP grant
S. Ogard	j. Send minutes of annual meetings to 100% of property owners whether they are members of the association or not so everyone is informed about lake association activities.	On-going	Minimal postage. Most done by e-mail.

GOAL No. 2 (cont.): To establish and maintain a strong, active lake association.			
Person Leading	**Action Item #2: Ensure the long term success of the lake association.**	**Timeline**	**Budget**
M. Peterson	a. Establish a committee to investigate the requirements and costs associated with acquiring a non-profit incorporated status in order to avoid liability issues, allow donations to be deductible, and to increase our eligibility for grants.	Done	No Cost
L. Cheney	b. Apply for non-profit incorporated status.	Summer 2017	Estimated $1,000 in attorney's fees; From assn. dues and HLRP grant

S. Ogard & Officers	c. Review association by-laws every 4 years and make appropriate changes.	Done 2016	No Cost
M. Peterson	d. Establish and maintain a good working relationship with Lake Seven, Five Lakes Resort, DNR, SWCD, OTC COLA, OTC Land and Resource Department, the Initiative Foundation and other pertinent organizations.	On-going	No Cost
M. Peterson	e. Continue membership in the OTC COLA and send a representative to monthly meetings who will report back to Lake Six residents. President Marlene Peterson is now a member of the OTC COLA board of directors serving as the Environmental Officer.	On-going	$46 annually from association dues (plus $210 for water testing)

GOAL No. 3: To preserve and protect wildlife and habitat in and around Lake Six.

Person Leading	Action Item #1: Promote wildlife habitat for loons, pollinators, birds, fish and other wildlife.	Timeline	Budget
D. Rudquist B. Anderson	a. Provide two man-made nesting sites for loons at the north and south ends of the lake. Educate residents about loons and the importance of staying away from them while boating on the lake.	Done annually	$50 association dues
S. Ogard M. Peterson	b. Provide information about the importance of pollinators (bees and butterflies) through the annual meeting and newsletters. Encourage residents to plant native plants and flowers to provide habitat for pollinators and birds and to minimize the use of pesticides and herbicides.	Done/On-going	No Cost
S. Ogard	c. Provide residents with information about bee houses and instructions on how to build and install them to attract pollinators which do not sting.	Summer 2017	No cost
S. Ogard	d. Provide 75 packets of milk weed seeds at the annual meeting and encourage residents to plant milkweed for monarch butterflies.	Done	No Cost - Seeds donated
P. Puetz	e. Provide information on native bird species, their habitat, and how to attract them to yards. Schedule a speaker for a future event.	90 days Summer 2017	$50 HLRP grant

M. Peterson	f. Educate residents at the annual meeting or through newsletters of the importance of lake vegetation as habitat for fish and shoreline stabilization and not as “weeds” needing to be removed.	Spring 2017	Cost of newsletter: $90-100 annually from assoc. dues
Dick Peterson	g. Continue to monitor DNR fish surveys to determine if populations are stabilized at healthy levels. Educate residents about what the data mean regarding "catch and release" vs. "catching to eat". Post fishing survey and analysis on Facebook.	On-going	No Cost
D. Peterson	h. Distribute 2017 DNR fishing rules and regulations guide book to all interested residents.	On-going	Free brochures
Assn. officers	i. Provide residents with information on Minnesota Noxious Weeds and ask them to report any findings to the Lake Six officers or to county weed control .	On-going	Free brochures from county agencies.

GOAL No. 4: To promote appropriate and safe recreational activities on and around Lake Six.

Person Leading	Action Item # 1: Monitor the use of the public access	Timeline	Budget
S. Ogard	a. Contract with garbage service for garbage pickup at the public access May - September.	Summer 2017	$120 annually; association dues
M. Peterson	b. Check with the DNR about the possibility of installing "No Littering" signs at the public access. Include wording "Paid for by Lake Six Association member dues".	Called 8/16; installation 2017	$100 association dues
M. Peterson	c. Provide all residents with a refrigerator magnet showing the OTC Sheriff’s phone number and encourage residents to report any illegal or dangerous activity at the public access.	Done	$10 from association dues

Person Leading	Action Item #2: Promote safe and considerate use of the waters of Lake Six.	Timeline	Budget
P. Puetz	a. Educate residents about safe boating practices by distributing the DNR 2017 Boating Guide.	Summer 2017	Free from DNR

P. Puetz	b. Educate residents about water safety/drowning prevention through presentation by water safety instructor.	Summer 2017	No Cost
M. Peterson	c. Educate residents through annual meeting and/or newsletter about the damage done to shorelines by wakes and revving engines close to shore.	Spring 2017	Cost of newsletter: $90-100 annually from assoc. dues
M. Peterson	d. Get input at an OTC COLA meeting about what other lake associations have done to control speed of boats and jet skis.	Done	No Cost
B. Anderson	e. Appoint a liaison to serve as the contact between Camp Cherith and the Lake Six Lake Association to relay any concerns.	Done	No Cost
M. Peterson	f. Provide all residents with a refrigerator magnet showing the OTC Sheriff's phone number and encourage residents to report any illegal or dangerous activity on the lake.	Done	$10 from association dues

GOAL No. 5: To promote a high quality of life on Lake Six.

Person Leading	Action Item #1: Monitor and control the infestations of forest tent caterpillars. (FTC)	Timeline	Budget
M. Peterson	a. Talk to a DNR forester about the life cycle and appropriate control of FTC. Distribute the information to residents through the annual meeting and email.	Done	No Cost
M. Peterson	b. Establish a committee to monitor egg masses in the fall and early hatch in the spring.	Done	No Cost
Lake Assn. Decision	c. Establish a protocol for the annual decision making on whether or not to spray.	Annually in spring.	No Cost

Person Leading	Action Item #2: Promote a safe and clean roadside along Lake Six.	Timeline	Budget
P. Nunn	a. Write a letter to the Hobart Township board, signed by residents, about dangerous drivers and the lack of a speed limit sign on the south end of Lake Six Road.	Done	No Cost
S. Ogard	b. Recruit volunteers through the survey mentioned earlier to conduct a periodic clean up of ditches.	90 days/ On going	No Cost

M. Peterson	c. Provide residents with an OTC law enforcement website where excessive speeders can be reported anonymously.	Done	No Cost
Person Leading	**Action Item #3: Stay informed about any changes in regulations regarding land use on or near Lake Six.**		
M. Peterson	a. Contact the Land & Resource Management Dept. of Otter Tail County and ask to be formally notified of any regulatory decisions pending in the Lake Six area.	Spring 2017	No Cost
Person Leading	**Action Item #3: Encourage residents to test and monitor their private well water used for drinking. (Hobart Township has been identified as vulnerable for high nitrates which is harmful to infants, pregnant women, and anyone going through intensive medical treatments.)**		
Greg Ogard	a. Recruit volunteers to collect water samples from residents and deliver them to EOT SWCD for analysis.	On-going	Free service provided by SWCD
Greg Ogard	b. Research the need for and cost of arsenic testing for private wells and provide information to residents. Consider cost sharing with residents if data shows there is a concern in our area.	Summer 2017	No Cost for now

Glossary

Aerobic: Aquatic life or chemical processes that require the presence of oxygen.

Algal bloom: An unusual or excessive abundance of algae.

Alkalinity: Capacity of a lake to neutralize acid.

Anoxic: The absence of oxygen in a water column or lake; can occur near the bottom of eutrophic lakes in the summer or under the ice in the winter.

Benthic: The bottom zone of a lake, or bottom-dwelling life forms.

Best Management Practices: A practice determined by a state agency or other authority as the most effective, practicable means of preventing or reducing pollution.

Bioaccumulation: Build-up of toxic substances in fish (or other living organism) flesh. Toxic effects may be passed on to humans eating the fish.

Biological Oxygen Demand: The amount of oxygen required by aerobic microorganisms to decompose the organic matter in sample of water. Used as a measure of the degree of water pollution.

Buffer Zone: Undisturbed vegetation that can serve as to slow down and/or retain surface water runoff, and assimilate nutrients.

Chlorophyll *a*: The green pigment in plants that is essential to photosynthesis.

Clean Water Partnership (CWP) Program: A program created by the legislature in 1990 to protect and improve ground water and surface water in Minnesota by providing financial and technical assistance to local units of government interested in controlling nonpoint source pollution.

Conservation Easement: A perpetual conservation easement is a legally binding condition placed on a deed to restrict the types of development that can occur on the subject property.

Cultural eutrophication: Accelerated "aging" of a lake as a result of human activities.

Epilimnion: Deeper lakes form three distinct layers of water during summertime weather. The epilimnion is the upper layer and is characterized by warmer and lighter water.

Eutrophication: The aging process by which lakes are fertilized with nutrients.

Eutrophic Lake: A nutrient-rich lake – usually shallow, "green" and with limited oxygen in the bottom layer of water.

Exotic Species: Any non-native species that can cause displacement of or otherwise threaten native communities.

Fall Turnover: In the autumn as surface water loses temperature they are "turned under" (sink to lower depths) by winds and changes in water density until the lake has a relatively uniform distribution of temperature.

Feedlot: A lot or building or a group of lots or buildings used for the confined feeding, breeding or holding of animals. This definition includes areas specifically designed for confinement in which manure may accumulate or any area where the concentration of animals is such that a vegetative cover cannot be maintained. Lots used to feed and raise poultry are considered to be feedlots. Pastures are not animal feedlots.

Groundwater: water found beneath the soil surface (literally between the soil particles); groundwater is often a primary source of recharge to lakes.

Hardwater: Describes a lake with relatively high levels of dissolved minerals such as calcium and magnesium.

Hypolimnion: The bottom layer of lake water during the summer months. The water in the hypolimnion is denser and much colder than the water in the upper two layers.

Impervious Surface: Pavement, asphalt, roofing materials or other surfaces through which water cannot drain. The presence of impervious surfaces can increase the rates and speed of runoff from an area, and prevents groundwater recharge.

Internal Loading: Nutrients or pollutants entering a body of water from its sediments.

Lake Management: The process of study, assessment of problems, and decisions affecting the maintenance of lakes as thriving ecosystems.

Littoral zone: The shallow areas (less than 15 feet in depth) around a lake's shoreline, usually dominated by aquatic plants. These plants produce oxygen and provide food, shelter and reproduction areas for fish & animal life.

Local Unit of Government: A unit of government at the township, city or county level.

Mesotrophic Lake: A lake that is midway in nutrient concentrations (between a eutrophic and oligotrophic lake). Characterized by periodic problems with algae blooms or problem aquatic vegetation.

Native Species: An animal or plant species that is naturally present and reproducing.

Nonpoint source: Polluted runoff – nutrients or pollution sources not discharged from a single point. Common examples include runoff from feedlots, fertilized lawns, and agricultural fields.

Nutrient: A substance that provides food or nourishment, such as usable proteins, vitamins, minerals or carbohydrates. Fertilizers, particularly phosphorus and nitrogen, are the most common nutrients that contribute to lake eutrophication and nonpoint source pollution.

Oligotrophic Lake: A relatively nutrient-poor lake, characterized by outstanding water clarity and high levels of oxygen in the deeper waters.

Nutrient: A substance that provides food or nourishment, such as usable proteins, vitamins, minerals or carbohydrates. Fertilizers, particularly phosphorus and nitrogen, are the most common nutrients that contribute to lake eutrophication and non-point source pollution.

pH: The scale by which the relative acidity or basic nature of waters are accessed,

Photosynthesis: The process by which green plants produce oxygen from sunlight, water and carbon dioxide.

Phytoplankton: Algae – the base of the lake's food chain, it also produces oxygen.

Point Sources: Specific sources of nutrient or pollution discharge to a water body, i.e., a stormwater discharge pipe.

Riparian: The natural ecosystem or community associated with river or lake shoreline.

Secchi Disc: A device measuring the depth of light penetration in water.

Sedimentation: The addition of soils to lakes, which can accelerate the "aging" process by destroying fisheries habitat, introducing soil-bound nutrients, and filling in the lake.

Spring turnover: After ice melts in the spring, warming surface water sinks to mix with deeper, colder water. At this time of year all water is the same temperature.

Thermocline: During summertime deeper lakes stratify by temperature to form three discrete layers; the middle layer of lake water in known as the thermocline.

Trophic Status: The level of growth or productivity of a lake as measured by phosphorus, content, algae abundance, and depth of light penetration.

Watershed: The surrounding land area that drains into a lake, river, or river system.

Zooplankton: Microscopic animals.

Common Biological or Chemical Abbreviations

BOD	Biological Oxygen Demand
°C	degree(s) Celsius
cfs	cubic feet per second (a common measure of rate of flow)
cfu	colony forming units (a common measure of bacterial concentrations)
chl *a*	Chlorophyll *a*
cm	centimeter
COD	Chemical Oxygen Demand
Cond	conductivity
DO	dissolved oxygen
FC	fecal coliform (bacteria)
ft	feet
IR	infrared
l	liter
m	meter
mg	milligram
ml	milliliter
NH_3-N	nitrogen as ammonia
NO_2-NO_3	nitrate-nitrogen
NTU	Nephelometric Turbidity Units, standard measure of turbidity
OP	Ortho-phosphorus
ppb	parts per billion
ppm	parts per million
SD	Standard Deviation (statistical variance)
TDS	total dissolved solids
TN	total nitrogen
TP	total phosphorus
TSI	trophic status index
TSI (C)	trophic status index (based on chlorophyll *a*)
TSI (P)	trophic status index (based on total phosphorus)
TSI (S)	trophic status index (based on secchi disc transparency)
TSS	total suspended solids
µg/l	micrograms per liter
µmhos/cm	micromhos per centimeter, the standard measure of conductivity
UV	Ultraviolet

Guide to common acronyms

State and Federal Agencies

BWSR	Board of Soil & Water
COE	U.S. Army Corps of Engineers
CRP	Conservation Reserve Program - A federal government conservation program
DNR	Department of Natural Resources
DOJ	United States Department of Justice
DOT	Department of Transportation
DTED	Department of Trade and Economic Development
EPA	U.S. Environmental Protection Agency
EQB	MN Environmental Quality Board
LCCMR	Legislative-Citizen Commission on Minnesota Resources
MDH	Minnesota Department of Health
MPCA	Minnesota Pollution Control Agency
OEA	MN Office of Environmental Assistance
OSHA	Occupational Safety and Health Administration
RIM	Reinvest In Minnesota - a State of Minnesota Conservation Program
SCS	Soil Conservation Service
SWCD	Soil & Water Conservation District
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish & Wildlife Service

Regional, watershed, community development, trade and advocacy groups

AMC	Association of Minnesota Counties
APA	American Planning Association
COLA	Coalition of Lake Associations
IF	Initiative Foundation
LMC	League of Minnesota Cities
MAT	Minnesota Association of Townships
MLA	Minnesota Lakes Association
MSBA	Minnesota School Board Association
MCIT	Minnesota Counties Insurance Trust
Mid-MnMA	Mid-Minnesota Association of Builders
MLA	Minnesota Lakes Association
MnSCU	Minnesota State Colleges and Universities
RCM	Rivers Council of Minnesota
TIF	Tax Increment Financing

Codes and Regulations

110B	The Minnesota law that regulates non-metro county water plans
ADA	American Disabilities Act
B & B	Bed and Breakfast
BOA	Board of Adjustment
Chapter 70/80	Individual Sewage Treatment Standards
CIC Plat	Common Interest Community Plat
Class V	Class Five "Injection" well; any well which receives discharge
CSAH	County State Aid Highway
CUP	Conditional Use Permit
CWA	Clean Water Act
EAW	Environmental Assessment Worksheet
EIS	Environmental Impact Statement
EOA	Equal Opportunity Act
FOIA	Freedom of Information Act
GD	General Development (lake)
GLAR	Greater Lakes Area Association of Realtors
IAQ	Indoor Air Quality
ISTS	Individual Sewage Treatment System
LMP	Lake Management Plan
LQG	Large Quantity Generator (of hazardous waste)
MAP	Minnesota Assistance Program
OHW	Ordinary High Water
PUD	Planned Unit Development
RD	Recreational Development (lake)
ROD	Record of Decision
ROW	Right-of-Way
SBC	State Building Code
SDWA	Safe Drinking Water Act
SF	Square feet
SIZ	Shoreland Impact Zone
SQG	Small Quantity Generator (of hazardous waste)
SWMP	Stormwater Management Plan
UBC	Universal Building Code

INDIVIDUAL COMMENTS MADE AT VISIONING

Below is the raw data gathered from the visioning meeting. The comments were made and written down in small groups during the breakout session. Comments were organized into categories.

Category	Item
General (comments without a specific category)	use water for fertilizer
	get OAT in formation over and over and over
	June 25th Lake 7 annual meeting Hobart Township Hall; John's Meeting
	June 25th Lake 7 annual meeting Hobart Township Hall; John's Meeting
	speed limit on road-more signs
	clean distance from dock
	need boat checks at landing again for invasive species
	Kaldah's east shore remains undeveloped
	future development pressure?
Lake Access	access issues
	access is public and swimming is allowed
	garbage cans-who will take of these?
	Invasive species-who is checking boats?
	keep out spiny starwort
	keep out Eurasian milfoil
	$$$$$$ NEEDS $2000
	Hire a boat landing captain; weekends and holidays
	organize volunteers
	close public access
	have good caretakers of public access
	help us protect the public access
	Docks, lifts, boats coming from other lakes; How do you control?
	hire a captain
	organize volunteers
	we need a sheet to know what to do
	we need a sheet to know what to do
	water quality
	avoid invasive species
	SWCD grants
	Get garbage cans set up; Check with DNR for proper set up
	Get garbage cans set up; Check with DNR for proper set up
	Funds from association for above projects

	garbage can and pick up
	designate parking area(s)
	No wake zone at access
	No minnow dumping
	add signs
	add raccoon proof garbage cans and service
	hire boat launch manager; volunteers to check boats
	more tidy public access
	no zebra mussels or IS
	inspectors at public access for AIS
	public access garbage solution
	Invasive species
	littering
	sanitation
	toileting-diapers, etc?
Shoreline and Runoff	Too much dirt washing into the lake
	Buffer zones all around the lake with native species and deep roots
	Coconut logs
	Have chemist check to see if springs are bringing in too many chemicals
	Should we lower the lake level?
	Are native buffers better than rip rap?
	Educate homeowners on native buffers to protect shoreline
	Educate homeowners on impervious surface
	Cost of coconut logs
	Does the yellow iris help erosion?
	How do we pay for buffers?
	Recruit youth group i.e. scouts, etc. for labor
	SWCD
	Rocks, coconut logs, sediment logs
	No more loss of shoreline
	Use large root system plants to stabilize beach--yellow iris is a PLUS
	RMB Labs
	Hobart Township
	DNR
	UMN
	? Printing Company
	OT County
	shoreline erosion
	shoreline management
	Buffer

	native plantings
	spraying weeds and fetilizer; sumack along road
	SWCD grants
	Shore land regulations
	Shore land regulations
	At lake meetings, ask residents to minimize fertilizing and spraying
	Resources: coordinate between shoreline management and SWCD
	Resources: coordinate between shoreline management and SWCD
	shoreline management area leading to lake
	lake vegetation management
	rainwater management
	SWCD-a qualified lake management person to inspect individual properties and advise them what they might do to help
	schedule a specific day and multiple owners and can have a visit
	someone to investigate the root system of the water iris-ours is better than any other!
	to what extent do we need shore line control? Do large waves effect the shoreline?
	healthy plant growth management
	Buffer zones all around the lake-restoring shoreline
	rain gardens-rainwater runoff
	no yellow irises; invasives will crowd out natural plants
	Reduce shoreline erosion
	no fall leaves blowing/raking into lake
	Increase in shoreline erosion protection and hillside runoff
	better understanding of shore (15 ft lake) vegetation
	what is the advantage of rip rap? Erosion control
Strong Lake Association	Why won't lake people join the lake association?
	Why do people think the lake association is the watch dog and enforcer of lake rules and regulations?
	People get scared off
	Worry about time commitment
	People think it may be boring to attend meetings
	Build on social aspect
	Extend to family beyond owners--children and grandchildren
	Phone book with map (where people live, contact info/email, update as needed, info about person)
	Block party funding with an officer in attendance--NO AGENDA!
	SWCD
	EOT SWCD

	Membership drive assistance
	Welcome wagon meet new property owners with binder of important lake information
	Annual Meeting--place on agenda: block party, 1st party at Jeff Giefer's, date/time TBD
	Welcome wagon info packet
	End of season party/picnic (coordinate with dock removal)
	Get together with neighbor lake associations
	get to know all the neighbors
	more social events
	communication
	Are there any possibilites of more lots built on?
	talk to neighbors
	continue C.O.L.A
	upon finding AIS- rapid response plan
	community development-neighbors meet neighbors regardless of membership
	more neighbor involvement in Lake Assoc
Use of Lake	No wake signage
	worry about how the speed boats affect shoreline
	wake control
	wake control
	maintaining swim area
	signs about staying far from shore at high speeds
	add "no wake zone buoy"
	boat traffic- use middle of lake and avoid shoreline, watch for swimmers, etc
	lake speed limits
	boats and ski doos too close to shore
	no wake zone-limit speed
	beach covered in weeds
	Eliminate large ski boats
	limit shoreline waves/ horsepower of motors??
	no divers on resident side of lake
	are other resorts sending people to our lake to swim because their lake isnt clean?
	What happened to the beach? Is it related to the canal?
	need more children to play in the water to keep beach clean
Water Quality and Clarity	What are the "peat moss clumps"--find someone to identify and explain (are they good or bad?)
	Clarity
	lawn fertilizer
	encourage people limit lawn fertilizer

	septic maintenance-continued inspections; Lake Association Meeting, more input
	list of people to educate on our needs
	lake vegetation management
	Amy/money
	improve water quality
	reduce fertilizer and herbicides along shoreline and roads
	septic system checks mandatory
	Improved water quality
	maintaining clarity
	aging of lake-does that promote weed growth?
Wildlife Habitat and preservation of natural spaces	habitat for pollinators
	beaver population-can we accommodate them? Destruction to trees
	monitor invasive species
	yellow irises-leave alone-no spray-kills birds and other creatures
	yellow irises-leave alone-no spray-kills birds and other creatures
	marten houses-good for mosquito control
	fireflies-keep going
	preserve flowers for bees and butterflies
	beavers-how to coexist
	chicken wire trees-beavers
	encourage more birds-feeders and houses
	no weed rollers-limit?
	address concerns for education on flowers and birds at next lake assoc. meeting
	Plan Workshops
	Butterflies newsletter-snippets
	Bees Newsletter
	Birds Newsletter
	Bird house types- for martens and others
	Check Nursery-Neo Nicotinoids in nursery available
	Iris Control without spraying- learn how to dead head
	grants-rain gardens
	Money for news letters and postage
	email
	locate experts
	shoreline control necessary
	checking incoming boats for invasive
	public access garbage solution
	publicize SWCD consult
	damaging sprays for bees and butterflies
	money for workshops? $100

	educate about birds
	educate about dead heading irises
	good bee and butterfly flowers to plant-milkweed
	get EVERYONE on board-priority for generations to come
	fertilizers-no phosphorus
	workshop on building bird houses
	shoreline buffer-reduce runoff
	ask lake 7 association
	involve neighbors
	newsletter
	check diving school assoc. about locations for diving
	all plants and fish; monitoring
	protect the fishery in the lake
	protect the loons
	get more emergent plants-aquatic for fish habitat
	fish spawning
	Maintain wildlife habitat