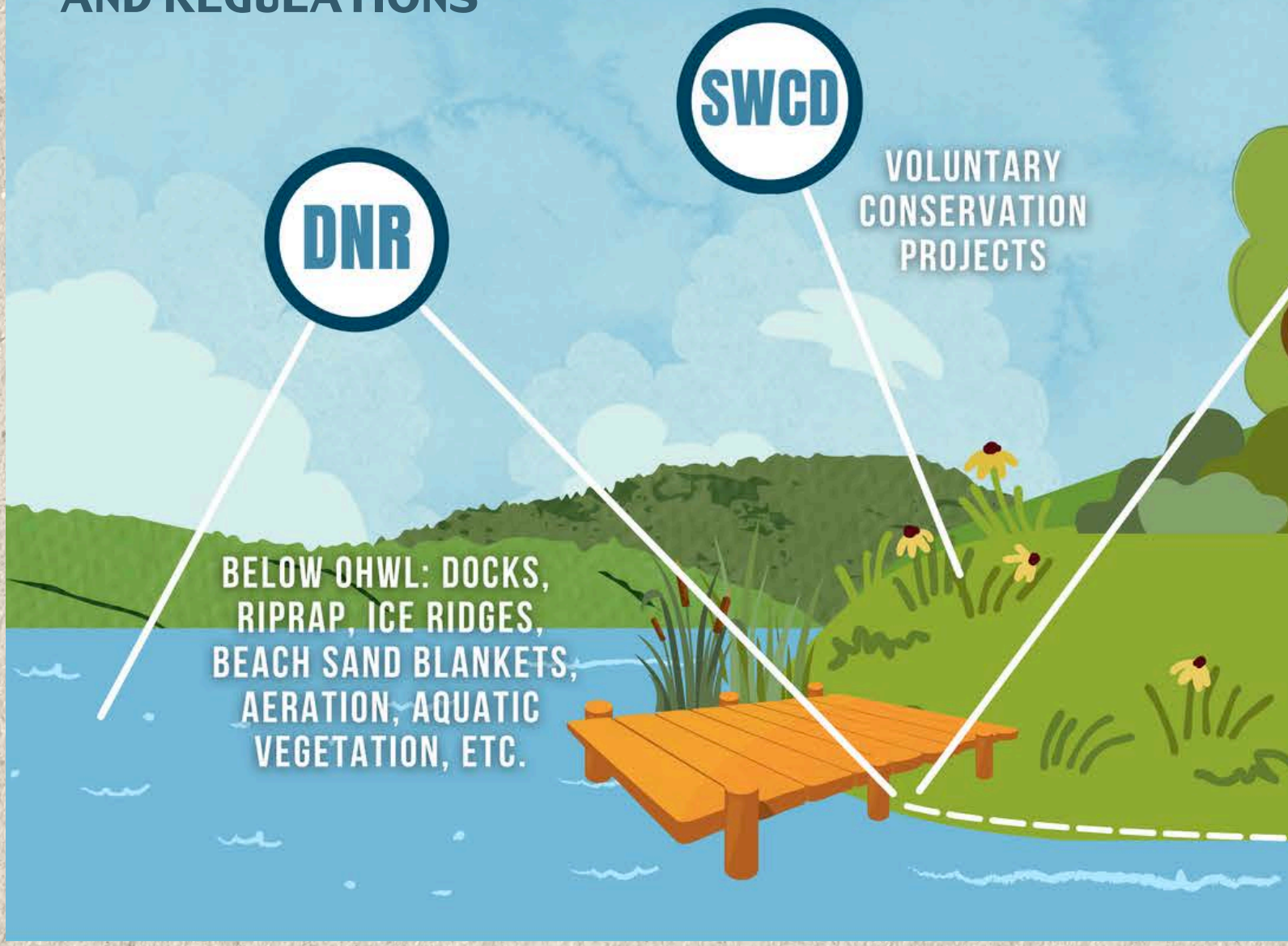
Welcome to the

OTTER TAIL COUNTY MINNESOTA

LAKE STEWARDSHIP GUIDEBOOK

PERMITS AND RESOURCES

AGENCIES THAT OVERSEE SHORELAND PROTECTION AND REGULATIONS

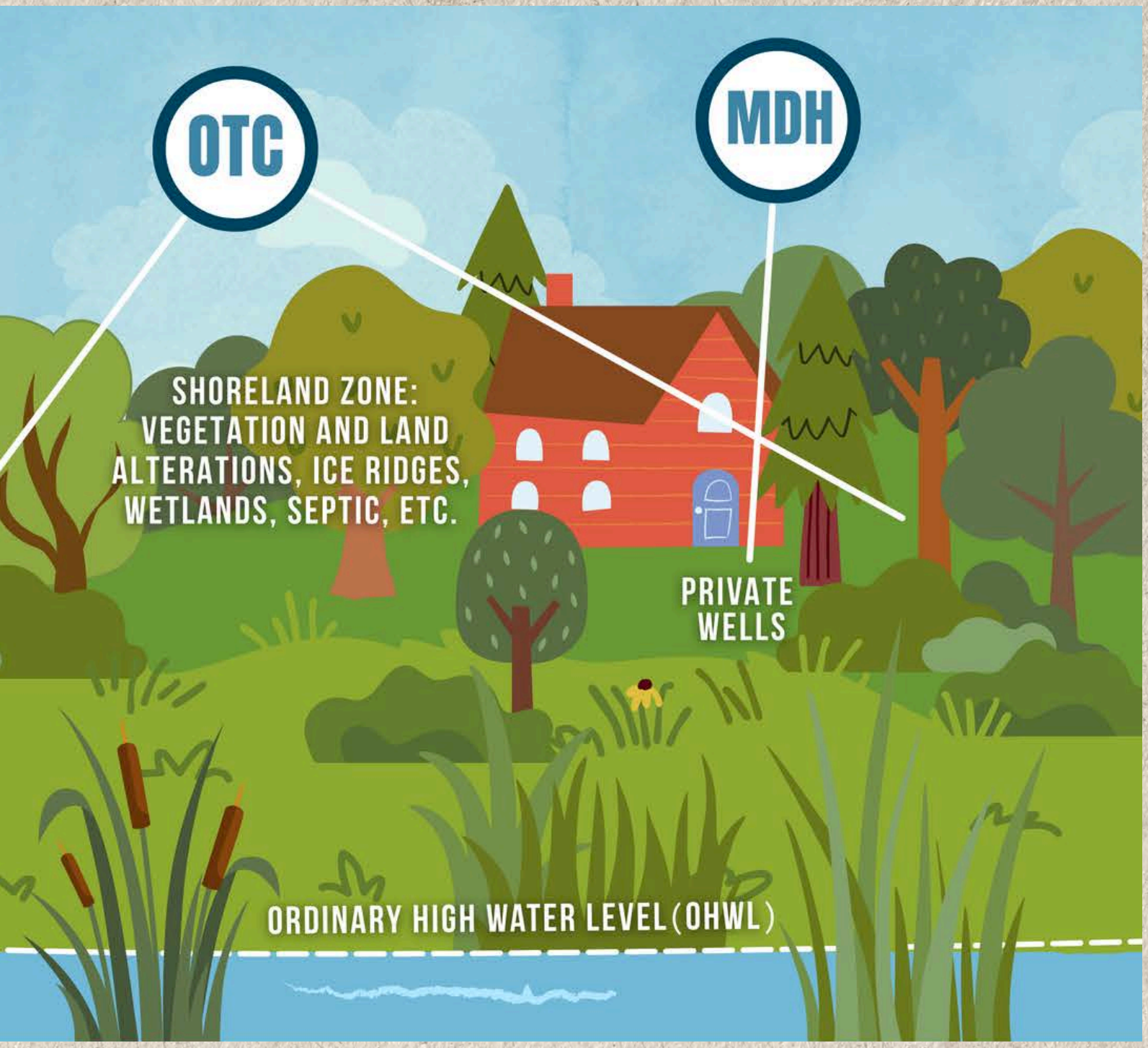


OTTER TAIL COUNTY LAND & RESOURCES DEPT.
Call: (218) 998- 8095
Email: land@ottertailcounty.gov

MN DEPT OF NATURAL RESOURCES AREA HYDROLOGIST
Call: (218) 770-1480

MN DEPT OF HEALTH WELL MANAGEMENT
Call: (218) 201- 4600
Email: health.wells@state.mn.us

MN DEPT OF NATURAL RESOURCES AQUATIC PLANT MANAGEMENT
Call: (218) 846-8296



SWCD

EAST OTTER TAIL SOIL & WATER CONSERVATION DISTRICT
Call: (218) 346- 9105
Email: eotswcd@gmail.com

SWCD

WEST OTTER TAIL SOIL & WATER CONSERVATION DISTRICT
Call: (218) 998- 5300
Email: wotswcd@gmail.com

LANDOWNER RESPONSIBILITY

Take ownership of your impacts in the shoreland zone and public waters. If you're interested in a project, check the ordinances, make contacts, and line up the proper permits before work begins.

Contact the Otter Tail County Coalition of Lake Associations to find your lake association and get involved.
Email: otccola2@gmail.com

EAST & WEST OTTER TAIL
SOIL & WATER CONSERVATION DISTRICTS

Your local tool for resource conservation

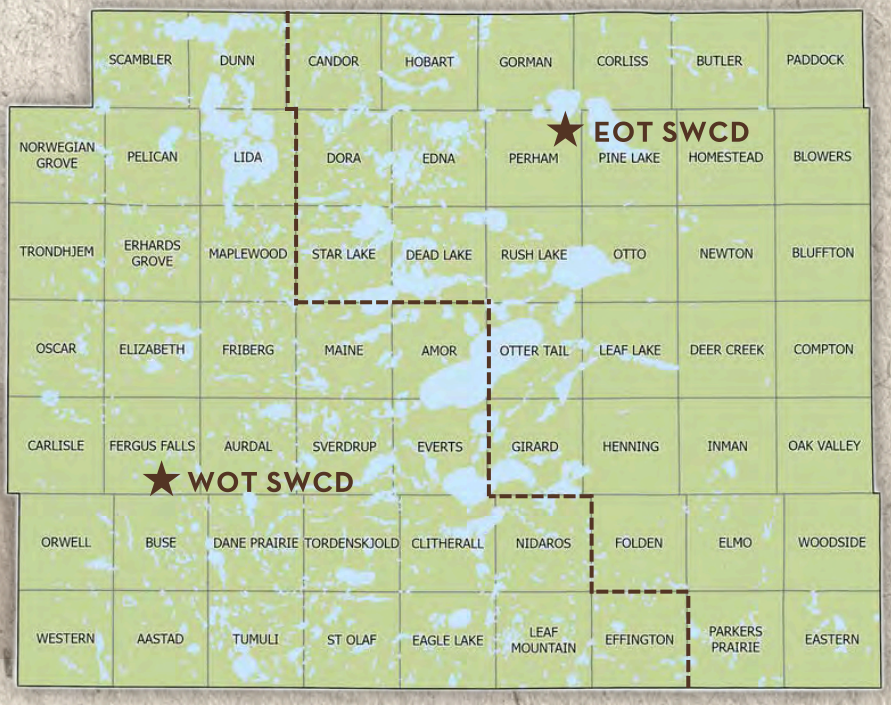
GUIDING LANDOWNERS TO STEWARDSHIP SINCE 1944

East and West Otter Tail Soil & Water Conservation Districts (SWCD) are the local government units that help direct and manage natural resource programs. Each SWCD is governed by a board of locally elected supervisors that develop policy, plans, and budgets for the district. Our staff work one-on-one with landowners, connecting them with the technical and financial resources to put voluntary conservation practices on private land.

Otter Tail County is home to 1,048 lakes that attract tourists and lifelong residents for fishing, swimming, boating, and relaxation. Our lakes are important to us! That's why East and West Otter Tail SWCDs collaborate to protect waterquality and promote lake stewardship. Together, we are dedicated to helping lake home owners across Otter Tail County become better lake stewards.

Our Shoreland Team offers technical assistance to landowners concerned about natural resources on their property. We will assess your property, discuss resource concerns, and develop a management plan or restoration design to address resource concerns and protect our treasured lakes for future generations.

WE CREATED THIS BOOK WITH 15 TIPS TO HELP GUIDE YOU TOWARD BETTER LAKE STEWARDSHIP



Avoid

CREATING OVERDEVELOPED LAKE LOTS

- Extensive, unused lawn
- No buffer zone or screening
- Excessive impervious surfaces
- Unnecessary riprap
- Unnatural beach installation
- Aquatic vegetation removed

Better

NOW YOU'RE GETTING IT

- 12ft native buffer
- Some native trees
- Reduced impervious surfaces
- Some aquatic vegetation
- No unnatural features

Best!

WE KNOW YOU LOVE THE LAKE

- 25ft native buffer
- Proper structure screening
- All native trees & shrubs
- Mindful lawn, impervious surfaces, & lake access
- Aquatic vegetation

1 APPRECIATING AQUATIC VEGETATION

Those "weeds" are the lake's forest & habitat

AQUATIC PLANTS ARE ESSENTIAL TO LAKE HEALTH

AQUATIC PLANTS...

- Are the jurisdiction of the DNR Section of Fisheries.
- Filter the water & absorb nutrients.
- Moderate algae growth.
- Improve water clarity & quality.
- Soften the erosive effects of waves along shores.
- Provide fish protective cover & spawning habitat.
- Produce the basis for the food chain.
- Oxygenate the water.
- Stabilize lake sediment.
- Offer nesting habitat for loons & waterfowl.

Often mislabeled as "weeds", aquatic vegetation is thought of as a nuisance for landowners, but the truth is quite the opposite. Aquatic plants are vital for fish, wildlife, and you, regardless of how you spend time on Minnesota's lakes and rivers.

The Department of Natural Resources (DNR) regulates the management and removal of aquatic vegetation. Before undertaking any projects regarding aquatic plants, make sure you have a permit.

Lake ecosystems are sensitive to human activities in the watershed. Lakeshore development increases nutrient loading by removing vegetative buffers, fertilizing lawns, and sometimes via leaky septic systems. If you're concerned about excessive plant growth, its important to locate the source before treating the symptom.

"I believe that one of the primary reasons that fishing has declined on many lakes is because of alterations to lakeshore habitat by shoreline property owners."
- Jack Skrypek, DNR Fisheries chief, retired

WETLAND AWARENESS 2

Contact the County Wetlands Inspector

STAY IN COMPLIANCE WITH THE WETLAND CONSERVATION ACT

Prior to settlement, wetlands made up roughly a third of Minnesota's acreage. Today, it's estimated that only half of our original wetlands remain. That's why in 1991 the **Minnesota Wetlands Conservation Act (WCA)** was passed into law with the purpose of achieving no net loss of quantity, quality, and biological diversity of existing wetlands. The law regulates draining, filling, and in some cases, excavating in wetlands and is implemented by local government units.

If you plan to do work on your property, it's best to check with the **County Wetlands Inspector** who is trained in wetland identification, hydrology, hydrophytic plants, and hydric soils, and can help property owners navigate WCA rules. Wetlands are impressively diverse, so you may encounter a wetland on your property without knowing. It's not uncommon for our lakes to host a transitional wetland between upland and public waters.

WETLAND BENEFITS:

CLEANER WATER
Wetlands slow down flow and allow sediments and toxins to settle, working them out of the system.

FLOOD MITIGATION
Like a giant sponge, wetlands absorb stormwater for slow release, reducing velocity and flood heights.

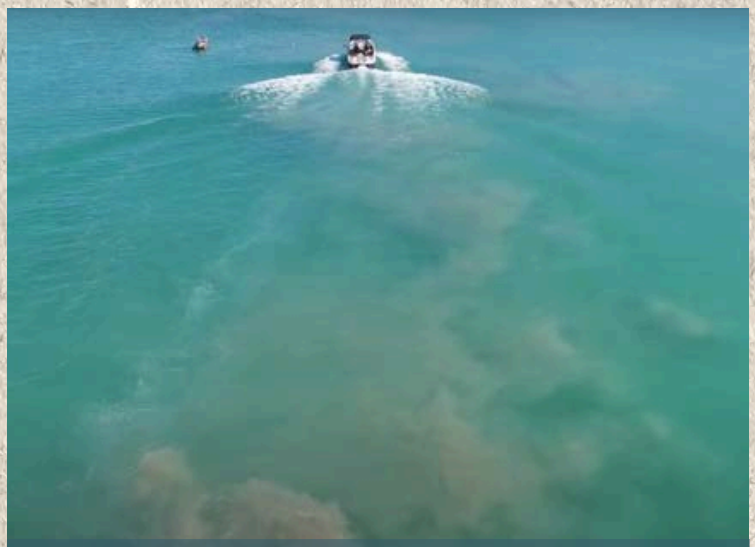
COOLER CLIMATE
Wetland plants capture carbon and sequester it in the soil.

BIOLOGICAL DIVERSITY
In terms of species supported, wetlands are similar to rainforests.

3 BE A RESPONSIBLE BOATER

Boating etiquette is conservation

RECREATE IN CLEAN WATERS ALL SUMMER



Cloud of sediment stirred up by a wake boat. Image courtesy of Larratt Aquatic Consulting Ltd

Most lake enjoyers have probably heard of the DNR "Own Your Wake" initiative – it's just being a good neighbor! But did you know that negligent boating practices can also have impacts below the surface? Water displacement and motor turbulence can create massive lakebed disruption when wake boating or accelerating in too shallow water.

Think of the lake floor as a forest. When a wake boat passes through water less than 20ft deep, stirred up lake sediment can completely blacken the sky of the lake's forest and create cloudy conditions for more than 10 minutes. Aquatic vegetation – the lake's trees – are sometimes uprooted from this disturbance. Spawning beds – the nests of sunfish species – can be lost when sediment is displaced and the eggs become buried. This **sediment disturbance also releases phosphorus** that would otherwise rest unactive at the lake bottom. Phosphorus **fuels algae blooms** and can make the lake unsafe for people, pets, and wildlife.

Next time you are ready to pick up speed, let your boat glide into deeper waters before hitting the gas. UMN's St. Anthony Falls Laboratory study suggests wake boaters keep at least 500ft from shore and in 20ft or deeper of water. Never use the motor to "power load" or unload your boat onto or off the trailer or lift.

Male bluegills create spawning beds by clearing fine sediments to find firm bottom for the eggs to be laid.

OWN YOUR WAKE

STOP AQUATIC HITCHHIKERS 4

Protect our waters from invasives

HOW DO HUMANS SPREAD AQUATIC INVASIVE SPECIES?

INVASIVE AQUATIC PLANTS

- Plant fragments or roots attached to boats, trailers, and other water-related gear.
- Plant seeds attached to boots, waders, and water-related gear.
- Fish tanks and aquariums that are dumped into storm drains, lakes, and ponds.

INVASIVE MUSSELS & SNAILS

- Moving boats, docks, lifts, and other equipment between water bodies.
- Attached to aquatic plants that are not removed from water-related equipment.
- Microscopic larvae of zebra/quagga mussels can spread through any transported water.

INVASIVE FISH

- Live bait and fish tanks that are dumped into storm drains, lakes, and ponds.
- Moving fish from one water body to another.

CLEAN IN, CLEAN OUT

Aquatic invasive species (AIS) are non-native plants, animals, and diseases that do not naturally occur in our waters and may cause harm to the environment, local economy, human health or natural resources. Invasive species impact recreation, stress fish populations, and alter the ecosystem by eliminating sources of food for native species, forming dense mats of plants that crowd out native vegetation or causing diseases that kill waterfowl and fish.

Management of invasive populations requires long-term and resource-intensive efforts. Therefore, preventing the spread of AIS is critical to protecting our waters.

HELP SLOW & STOP THE SPREAD OF AIS:

CLEAN watercraft of all aquatic plants and invasive species.

DRAIN all water by removing drain plugs.

DISPOSE of all unwanted bait into the trash.

DRY docks, lifts, and swim rafts for at least 21 days before moving them to another water body.

This boater is using the self service rinse station at a local access. Image courtesy of OTC Land & Resource.

5 EMBRACE TREES & SHRUBS

Take a break while at the lake

LEAVE THE SUBURBAN LAWN WORK IN THE CITY

Most Minnesotans agree that one of our state's greatest assets is our water. Our vast landscapes of serene lake country have been cherished by residents and visitors for generations. Unfortunately, the **lush shorelines** we owe our pristine waters and scenic views to **are disappearing at a rate of 1-2% each year**.

Rustic cabins once tucked away in the privacy of forested shorelines have been traded in for exposed suburban style homes with extensive lawns and riprap. This transformation is leading to the degradation of our prized waters.

As a lake property owner, you can contribute to restoring Minnesota's scenic shores and protecting water quality. It's as easy as embracing trees and shrubs! The roots of woody vegetation promote infiltration and shoreline stability. Leaf canopies help soften rainfall erosion and offer shade over the water for fish rearing. They also provide you with a green, private oasis to truly enjoy unplugging at the lake.

- **IF YOUR LAKESHORE IS WOODED,** minimize tree removal and utilize strategic trimming. Size your views and lake access to only what is necessary. Enjoy the shade and privacy!
- **IF YOU HAVE A FEW TREES BUT MOSTLY LAWN,** planting more native trees and shrubs does wonders for water quality!

PROVIDE A BUFFER ZONE 6

Allow native vegetation to flourish

BUFFERS ARE THE LAST LINE OF DEFENSE

A shoreland buffer is an unmowed strip of native vegetation along the shoreline which acts as a natural filter, protecting lake health. The DNR found buffers that extend 25-50ft from the shore and cover at least 50% of the lot length provide the best lake protection. However, even 10-15ft can provide some benefits to habitat, shoreline stabilization, and runoff filtration.

Developed lots with extensive mowed lawn to the waterline **contribute seven to nine times the amount of pollutants** than natural, undeveloped lake lots. A great way to protect lake health is to simply stop mowing a lawn 25ft or more from the waterline. "Don't Mow, Let it Grow" is an easy and cost effective first step to protecting lake health and water quality.

BUFFER BENEFITS:

SLOW AND FILTER STORMWATER RUNOFF

Native buffers slow runoff and their roots create pathways for rain to soak into the ground.

STABILIZE SHORELINE

Protect property value by protecting from shoreline loss. Native roots anchor soils, preventing erosion from wave action and healing the shoreline after ice heaves.

PROVIDE HABITAT

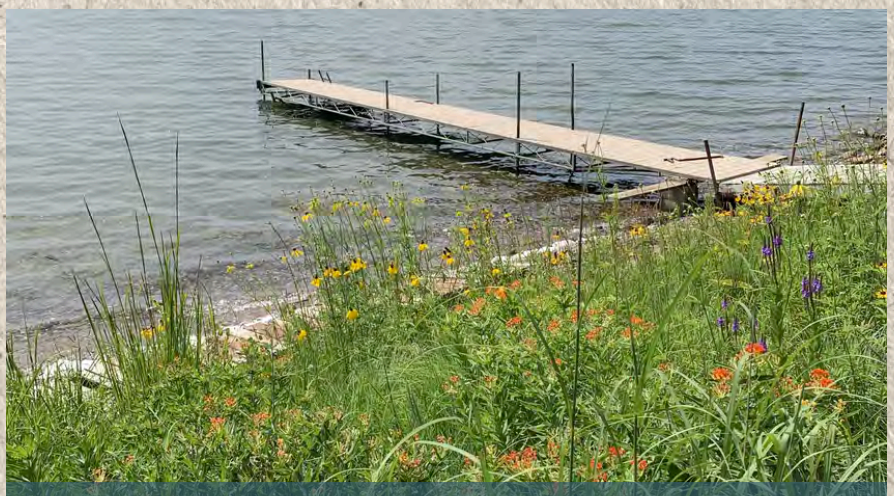
Native birds, butterflies, turtles and other wildlife utilize the buffer for nesting and nutritional needs year round.

ENHANCE AESTHETICS

Native species offer a variety of blooms throughout the summer and unique textures in winter. The monarchs & song birds they attract will add to the beauty!

LIMIT NUISANCE WILDLIFE

Taller vegetation is a natural barrier to Canada geese.



This shoreland buffer is still thriving after 9 years of proper care. It was installed with help from the SWCD.

7 RECONSIDER RIPRAPPING

Rock is not your cure-all solution

SEEK GUIDANCE FROM A CONSERVATION PROFESSIONAL

Riprap, when designed appropriately, addresses eroding shorelines affected by intense wave action or high water. However, these rock installations are often overused and misunderstood in their purpose. In 2025, the DNR estimated that nearly half of Minnesota's naturally lush and forested shorelines have been lost to overdevelopment. Riprap is often a knee-jerk reaction to fighting accelerated erosion caused by overdevelopment that would have otherwise been prevented if the shoreline and buffer were left in their natural state.

Not all shorelines are created equal, yet property owners often turn to riprap as a cure-all solution to erosion, no matter how big the problem and without understanding its source. Alternative solutions exist for shoreline protection that provide additional benefits to the lake and water quality while often costing far less.

It is important to remember that erosion is a natural process happening constantly across the landscape. Determining when it's appropriate to apply riprap or pursue a bioengineering method can be challenging, so consult with a conservation specialist if you have concerns about your shoreline. If riprap is already present, consider planting native plants, shrubs, and trees between the stones, or establishing a vegetated buffer upland from the riprap. This will strengthen the integrity of the riprap, and the roots will filter and absorb excess nutrients, reducing the pollutants that can reach the lake.

RIPRAP...

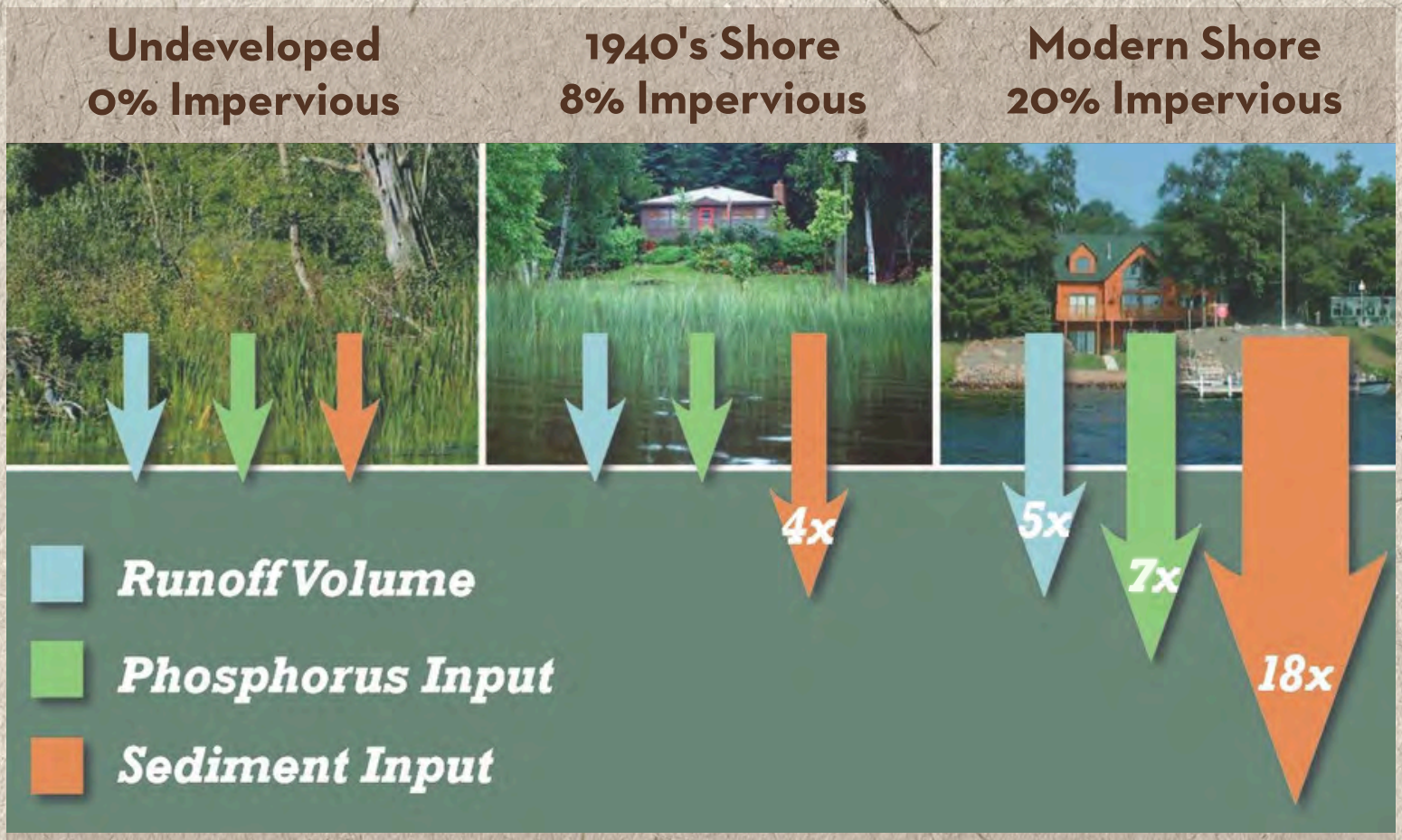
- Absorbs heat, encouraging algae blooms.
- Does not buffer the lake from pollutants.
- Destroys habitat, creating a shoreline desert.
- Should not be used for aesthetic purposes.
- Will not prevent ice heaving.

Native vegetation was planted and is encouraged to grow between rocks of existing riprap.

REDUCE HARD SURFACES 8

Make sure to check ordinances!

REGULATIONS PROTECT SHORELINES & WATER QUALITY



Sediment and phosphorus inputs increase as impervious surface coverage increases.

IMPERVIOUS, or hard surfaces like roads, patios, and rooftops, prevent rainwater from soaking into the ground, creating runoff.

RUNOFF is another word for stormwater that flows over impervious surfaces, lawns, and steep slopes. This runoff carries nutrients, sediments, toxic materials, bacteria, and other pollutants that reduce water clarity, increase aquatic plants and algae, and impact fish and wildlife habitat.

KEY INSIGHTS

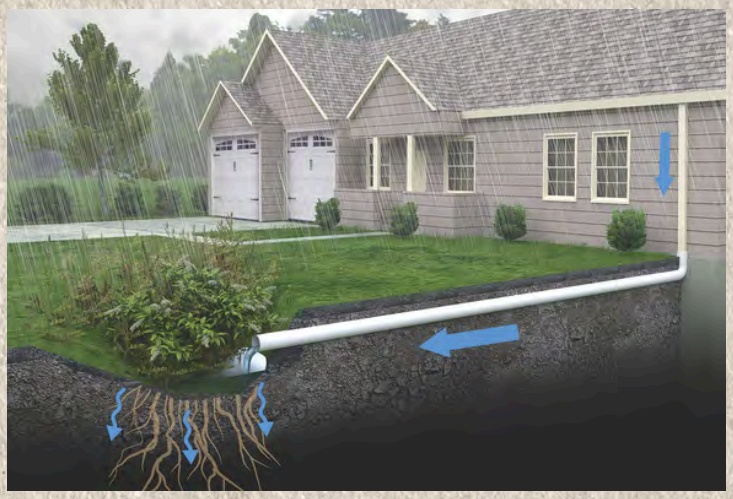
- Check local ordinances for structure setbacks depending on lake classification.
- Reducing the footprint of impervious surfaces decreased development impacts on the lake.
- Place firepit at least 50ft from shore to avoid nutrient loading.

9 IMPLEMENT STORMWATER MANAGEMENT PRACTICES

Divert your downspouts

KNOW EXACTLY WHERE YOUR RUNOFF GOES

Direct downspouts onto your lawn or landscaping, away from the lake and hard surfaces. This will allow the runoff a chance to be absorbed and filtered before flowing into the lake or street.



Use a rain barrel to collect roof runoff

SAVE QUALITY RAIN WATER TO USE LATER!

Collect water from your roof to water your yard, gardens, and planters during dry periods. Watering plants with rain water beats well or city water! The barrel should be covered to keep out leaves and insects.

Install a rain garden

FUNCTIONAL AESTHETICS & HIGH VALUE NATIVE PLANTS

Blue Thumb is a great source of information to guide you through planning and installing your rain garden.

BLUE THUMB CAN HELP YOU:

- Find the right location for a rain garden in your space.
- Properly size your garden.
- Determine the best plants suited for your soils.
- Navigate installation and maintenance.

MINIMIZE FERTILIZER USE 10

Phosphorus Lawn Fertilizer Law

USE OF PHOSPHORUS FERTILIZER ON LAWNS IS RESTRICTED

Minnesota's Phosphorus Lawn Fertilizer Law was enacted is 2002 to reduce over-enrichment of our natural waters with the nutrient phosphorus. Near shore fertilizers and pesticides are easily washed into the lake by snowmelt or rain where they drive algae blooms and kill aquatic insects which small fish feed upon.

BE SURE THE MIDDLE NUMBER ON THE BAG IS **ZERO.** EXAMPLE: 16-0-8.

To protect lake health and water quality, avoid the use of fertilizers and pesticides on lakeshore properties as most lawns already contain enough phosphorous. If you purchase fertilizer, be sure the middle number on the bag is zero. Remember, when fertilizing the lawn, **you are not just fertilizing the lawn.**

11 DISPOSE OF HAZARDOUS WASTE PROPERLY

Where is your designated collection site?

CHECK IN WITH THE COUNTY FOR WASTE COLLECTION DAYS

Gasoline, oil, solvents, old paints, thinners, fertilizers, pesticides, cleaners and many other products need to be disposed of properly.

Otter Tail County has a web page outlining the do's and don'ts of hazardous disposal in our area. Check out the website:

IF YOU WOULDN'T DRINK IT – DON'T DUMP IT!

WWW.OTTERTAILCOUNTY.GOV/RECYLING-WASTE-DISPOSAL/

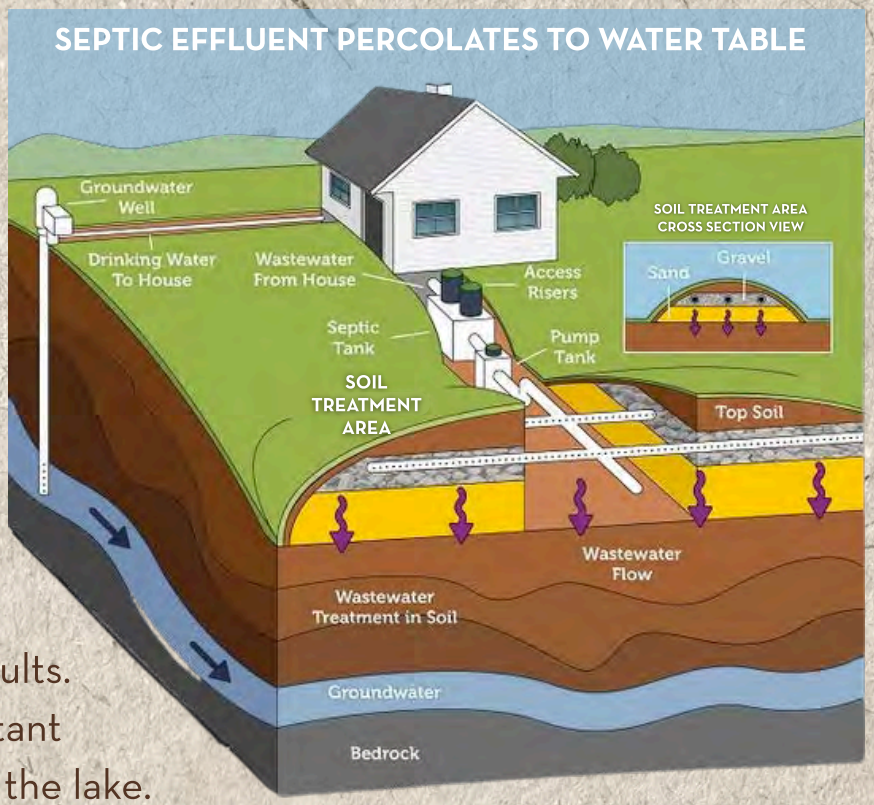
12 MAINTAIN YOUR SEPTIC

Out of sight but not out of mind!

BE RESPONSIBLE FOR YOUR HEALTH AND THE LAKE'S HEALTH

The more water and material that go into your septic system, the more that goes out into your soil treatment area. It is required in state code that septic system maintenance occurs every three years. If a septic system malfunctions and leaks, lakes, rivers, and groundwater can become severely contaminated by the waste.

If nutrients seep underground into the lake, excessive aquatic plant growth and algae blooms are likely results. A properly maintained septic is important for the health of your family as well as the lake.



Be sure to inspect a septic system regularly and contact your local septic system professional immediately in the case of an emergency.

SEPTIC SYSTEM MAINTENANCE TIPS:

1 PUMP YOUR TANK REGULARLY:
Regular septic pumping (every three years) prevents sludge buildup and system failure.

2 PREVENT SEPTIC FREEZING:
Insulating the soil treatment area each fall with straw or other insulation materials can help prevent your septic from freezing in the winter. This is especially critical if it goes unused.

3 MAINTAIN THE SOIL TREATMENT AREA:
Keep the area around your soil treatment area clear of trees and heavy vegetation. Never drive heavy vehicles or equipment over it.

4 USE WATER EFFICIENTLY:
Avoid overloading the system with too much water at once. Spread out laundry and showers.

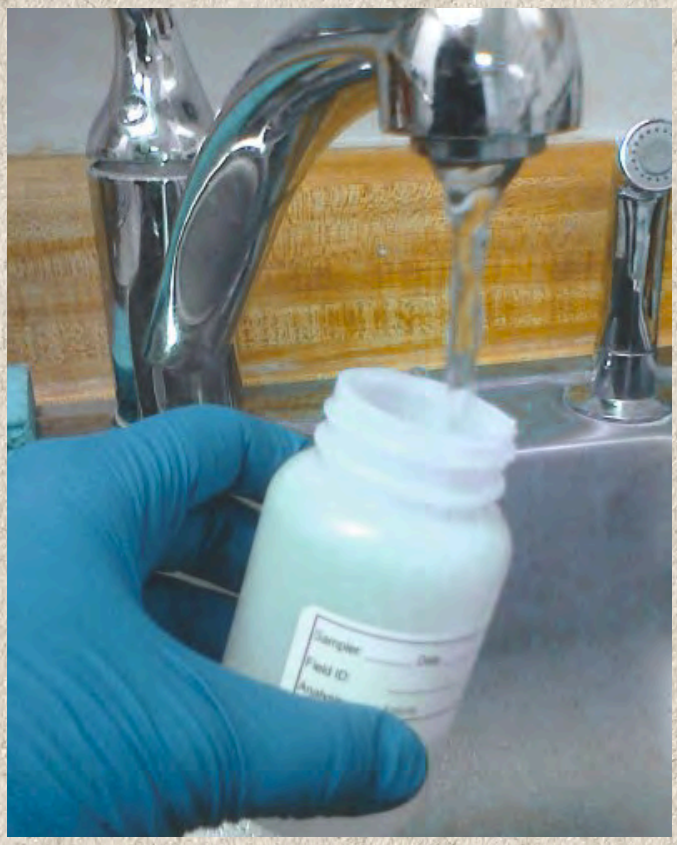
GET TO KNOW YOUR WELL 13

Private wells utilize groundwater

PROTECTED GROUNDWATER IS PROTECTED DRINKING WATER

Groundwater is the main source of drinking water for every three out of four Minnesotans; therefore, it is vital to protect. It's your responsibility to make sure your private well is protected and safe to drink from. The Minnesota Department of Health has resources and guidance for proper well management.

Private wells should be tested for bacteria and nitrates annually. If you are concerned that your water may be unhealthy to drink, have a professional examine the well to confirm it's working properly. Should a problem persist, the MPCA What's In My Neighborhood online map may be a helpful resource to see if there are contaminants locally that can be addressed.



Unsealed wells can provide a direct pathway for pollutants or contaminants to enter groundwater, risking the safety of your drinking water. If you know of an abandoned or unused well on your property, be sure to have it sealed professionally.

KEY TIPS & RESOURCES:

- Professionally seal wells that are no longer in use or have been abandoned.
- Private wells should be tested for bacteria and nitrates annually.
- Contact your local SWCD for info on Free Nitrate Clinics.

14 WORK WITH NATURE

Mother Nature is a powerful force

PLAN WITH CLIMATE RESILIENCE IN MIND

Locally, we are seeing an increase in climate variability while overdevelopment of our lakes has accelerated. Development without a strategy for climate resilience in mind can consequently degrade water quality, stress lake health, and jeopardize your investments. Nature will behave in its own right and reminds us we cannot control it.

For example, on a lake that is one mile across, when the ice temperature rises from 14°F to 32°F, the ice sheet will expand laterally by roughly three feet, exerting a force possibly not less than 30,000lbs/sqft. This can occur in a matter of hours when there is no snow cover on the ice sheet. However, our shorelines have been healing from ice disturbances for thousands of years and actually use berms as defense against runoff.

Another point of frustration is lake levels. Often, folks will want to take control of lake levels, each with their own ideal. It's natural for lakes to change throughout the year. Today, increased frequency and duration of drought and larger precipitation events contribute to the inevitable fluctuations. Otter Tail Lake recorded a fluctuation of 2.5ft between 2021 and 2022 due to extreme drought followed by a heavy snow year.

Although we can't prevent these natural phenomena, we can plan for their likelihood and strategize low-risk development. When we support our shorelines with more native roots, we can learn to trust nature's ability to heal.

Riprap will not defend against ice damage.

WHAT DO CLIMATE TRENDS LOOK LIKE IN OTTER TAIL COUNTY?

MORE FREQUENT & INTENSE ICE DAMAGE:
In winters with little snow-cover and drastic temperature swings, thermal expansion can be more extreme.

WARMING SURFACE WATERS:
We have lost an average of 10 to 14 days of ice cover in the past 50 years. In July and August, our lakes are about 3.06 – 3.78°F warmer now, on average, than 50 years ago.

DRASTIC PRECIPITATION EVENTS:
Every decade since the 1960s, Minnesota has seen an increase in the number of 2-inch, 3-inch, and 4-inch 24-hour rain events.

PROTECT NATURAL HABITAT FOR FUTURE GENERATIONS 15

It's crucial for survival and reproduction

WHEN YOU NOTICE A CHANGE, SO WILL THE FISH & WILDLIFE

Although the effects of one shoreland lot development may not result in a measurable change in the water quality of your lake, the cumulative effects of many developed lots are substantial. The simple fact is that wildlife we enjoy can't survive and thrive when we disrupt food webs and destroy habitat they depend on.

We can't share with our children the picturesque scene of a loon with it's loonlet if we have replaced it's nesting habitat with turf grass and riprap. Our kids miss out on spying turtles if we remove the downed logs those turtles like to gather on. Childhood fishing holes dry up when our favorite panfish have lost their spawning habitat.

Natural shoreland areas and shallow waters provide essential habitat for balanced populations of fish and wildlife, creating healthy ecosystems. Our actions may seem small but will have a cumulative impact. Good or bad, it's your choice.

"We do not inherit the earth from our ancestors, we borrow it from our children." - Native American Proverb

LAKE STEWARDS KNOW THE IMPACTS & FIND ALTERNATIVES

ACTIVITY	IMPACT	ALTERNATIVE
RIPARIAN VEGETATION REMOVAL		
• Expanding lake views • Creating an urban style lawn • Creating a large access to the lake • Making additional recreation space	• Loss of shade and cover for rearing fish • Loss of insect population • Bank erosion • Intensified stormwater • Attracts nuisance species like geese	• Clear only what's needed for an access • Trim trees and shrubs rather than remove • Plant shoreline with native species
AQUATIC PLANT REMOVAL OR LAKESHORE INFILLING		
• "Cleaning up weeds" • Making a "tidy" shoreline • Creating boat access and swimming areas • Creating a sandy beach	• Buries food organisms & disrupts food web • Destroys spawning beds & rearing habitat • Depletes fish population • May increase nuisance plant growth	• Use a raft, boat, or visit naturally sandy areas for swimming • Utilize public beaches • Remember: those "weeds" are the lake's forest and habitat
INTRODUCTION OF NUTRIENTS & CHEMICALS		
• Unmanaged septic systems • Fertilizing the lawn • Unaddressed pet waste • Regular herbicide & pesticide use • Fire pit on the shore	• Water quality degradation • Algae blooms & excessive aquatic weed growth • Fish stress or fish kills • Unsafe swimming water • Contaminated drinking water	• Pump septic tank regularly • Replace failing systems • Lawn size meets usage • Tidying after pets • Following set ordinances and technical guidance

East Otter Tail Soil & Water Conservation District

CLEAN WATER LAND & LEGACY AMENDMENT
YOUR Clean Water Fund AT WORK

West Otter Tail Soil and Water CONSERVATION DISTRICT