Becker County
Shoreland Guide to Lake Stewardship




The *Becker County Shoreland Guide to Lake Stewardship* is a collaborative project of the Becker County Coalition of Lake Associations (COLA), Becker County Planning & Zoning, Becker County Environmental Services, and the Pelican River Watershed District.

Other funding contributors include: Becker County Soil & Water Conservation District; Buffalo-Red, Cormorant, and Wild Rice Watershed Districts; and the City of Detroit Lakes.

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1 *Lakescaping for Wildlife and Water Quality,* State of Minnesota, Department of Natural Resources; Henderson C; Dindorf C; Rozumalski, F.

2 Rain Barrel Fact Sheet, Crow Wing County Extension, 2007.

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Becker County

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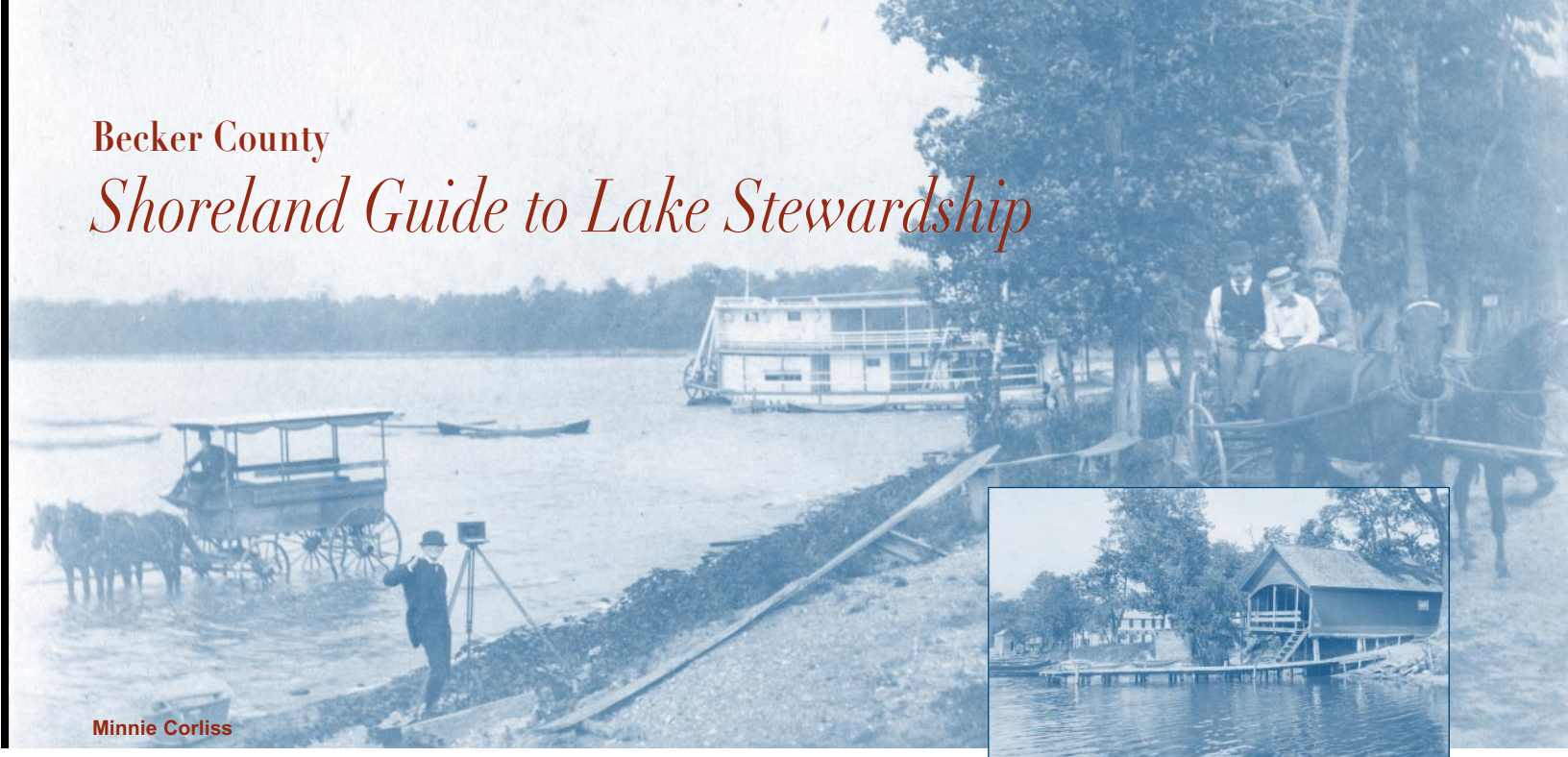


Minnie Corliss

Steamboat Landing

Water is Becker County's greatest natural resource covering approximately 14% of the County's total surface area. With more than 400 lakes, Becker County is considered one of Minnesota's most beautiful and versatile recreation areas. Its water resources have provided both economic sustenance and high quality of life for Becker County residents and property owners for over a century. From the first major industry of bottling and selling pure spring water to the increasing tourism industry of today, multiple generations have enjoyed the lakes of Becker County.

Long Bridge

Recent years have seen increasing pressure on the County's lake resources as more intense development has increased along lakeshores, even on remote lakes. While lakeshore development is a prime opportunity for economic growth it can also be a threat to a limited and fragile resource. As lakeshores accommodate more houses, are ringed by more roads, and seasonal homes are converted to more intensive year-round use, the rate of lakeshore development becomes a critical variable in sustaining the County's lake resources.

Development must be balanced with environmental protection and sound lake management. From good regulations to personal responsibility, the future of Becker County's lakes will depend on everyone who values these water resources to keep them healthy and productive for continued enjoyment, today and in the future.

"A lake is the landscape's most beautiful and expressive feature. It is earth's eye; looking into which the beholder measures the depth of his own nature."

Henry David Thoreau
in *Walden*

Lake Syble

Detroit Lake

" ....we must never forget that the land and the water are ours for the moment only, that generations will follow who must themselves live from the land and drink that water. It would not be enough to just leave something for them, we must also leave it a little better than we found it."

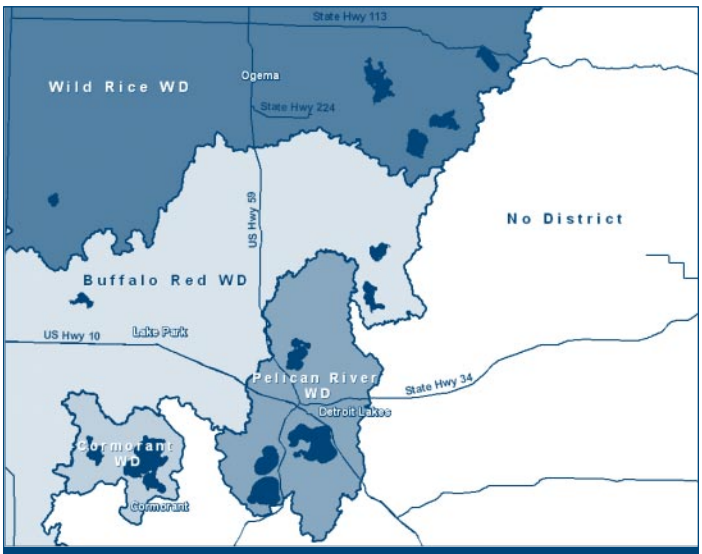
L. L'Amour

Keeping Our Lakes Healthy

Water quality is primarily dependent on what happens on the land around the lake or along a river and within its watershed, the area of land that drains to a particular waterbody. It's the runoff from the land, and the pollution that is carried with it, that can determine the quality of the water.

A healthy lake depends on a healthy watershed. A healthy lake doesn't just happen. It comes about when shoreline property owners and others living in the watershed take steps to insure the lake's health.

Becker County Watershed Districts



Watershed districts are special purpose units of government whose boundaries follow those of a natural watershed. Each watershed district is run by a board of managers appointed by the county board, and each is required to have a citizen advisory committee. Projects within a district are funded through the watershed district's taxing authority or special assessments. The rules for each watershed district can be found at www.bwsr.state.mn.us

Each lake has its own watershed or land that directly influences what comes into the lake. Each lake watershed is part of a larger watershed that influences water quality. Becker County is covered by all or portions of four watershed districts (WD) which have some land use authority over development. These include: Pelican River WD, Cormorant Lakes WD, Buffalo-Red WD, and Wild Rice WD.

While the land activity in the watershed contributes pollution to the lake, the **shoreland zone is the lake's first line of defense.** What you and your neighbors do—or don't do—on your shoreland property can have a significant impact on the quality of the lake. Managing water quality means appropriately managing the land use around the lake to reduce the amount of pollution that enters the lake.

When you own shoreland you do have certain rights and privileges, such as the right to put out a dock to a navigable depth; to fish, boat, hunt, and swim; and to use the water for domestic purposes. But, these rights must be exercised in compliance with the rules of Becker County, the watershed district, and the State of Minnesota. These rules are in place for the benefit of your health and safety and the health of the adjacent lake or stream.

Along with those rights also comes the responsibility to protect, improve, and enhance the quality of the water for your enjoyment and that of future generations, keeping in mind that the water itself is a public resource for everyone to enjoy. **That's called stewardship: the individual responsibility to manage one's life and property with regard for the rights of others.** The lake is a living ecosystem and part of the larger ecosystem of all living plants and animals to which we also belong.

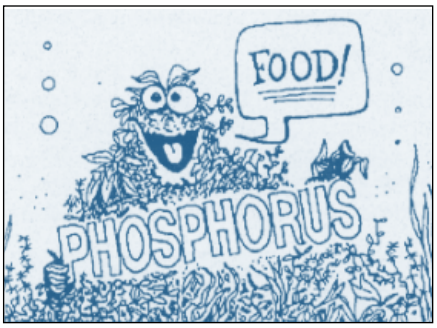
This *Shoreland Guide to Lake Stewardship* will provide you with basic information on good lake stewardship. You'll learn about two primary ways you can manage your property to protect water quality: 1) **curbing pollution** at the source; and 2) **reducing, capturing, and cleansing runoff** that can carry pollutants to the lake. If you and others around the lake practice the ideas in this Guide, collectively you will keep the lake healthy to protect your investment in shoreland property, continue your enjoyment of the lake, and also preserve ecological integrity.

Curb Pollution: Reduce Phosphorus and Other Pollutants

Nitrogen, potash, and phosphorus are the nutrients necessary for plant growth. Phosphorus is the key nutrient needed for aquatic plant and algae growth. When excessive phosphorus reaches the lake, it fuels the overgrowth of aquatic plants and algae, those microscopic organisms that give water a greenish tinge and can cause blue-green scums along the shore. Excessive plant and algae growth decreases water clarity, interferes with the recreational use of the lake, and diminishes oxygen for fish. It generally causes declining water quality.

Natural rainfall contains high amounts of phosphorus, which we can't control, but we can control our own shoreland practices that can contribute phosphorous to the lake. Excessive phosphorus can get into lakes from shoreland properties in a number of ways, including:

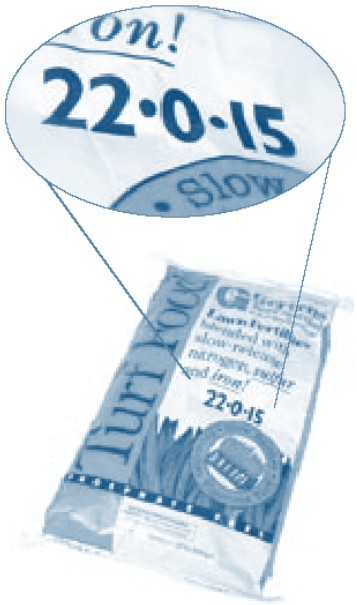
- excessive application to and runoff from lawns;
- decomposition of leaves and other plant material;
- erosion of soil, which has phosphorus particles attached to it;
- improper human and pet waste management, both of which contain high amounts of phosphorus; and the
- use of household products high in phosphorus.



One pound of phosphorus can feed the growth of over 500 pounds of algae.

Apply Fertilizer Sparingly. Use Zero-Phosphorus Lawn Fertilizer—It's the Law in Minnesota

By law since 2005, Minnesota homeowners cannot use fertilizers containing phosphorus, except for exemptions for new lawns or when a soil test indicates a need for phosphorus. In much of Becker County, soils are naturally high in phosphorus so lawns generally don't need extra phosphorus.



When shopping for fertilizer, buy a brand that has a middle number of zero i.e. 22-0-15. The law did not prohibit retailers from selling phosphorous fertilizers, and even though most retailers are carrying more zero phosphorus fertilizers, it's up to you to make sure you comply with the law.

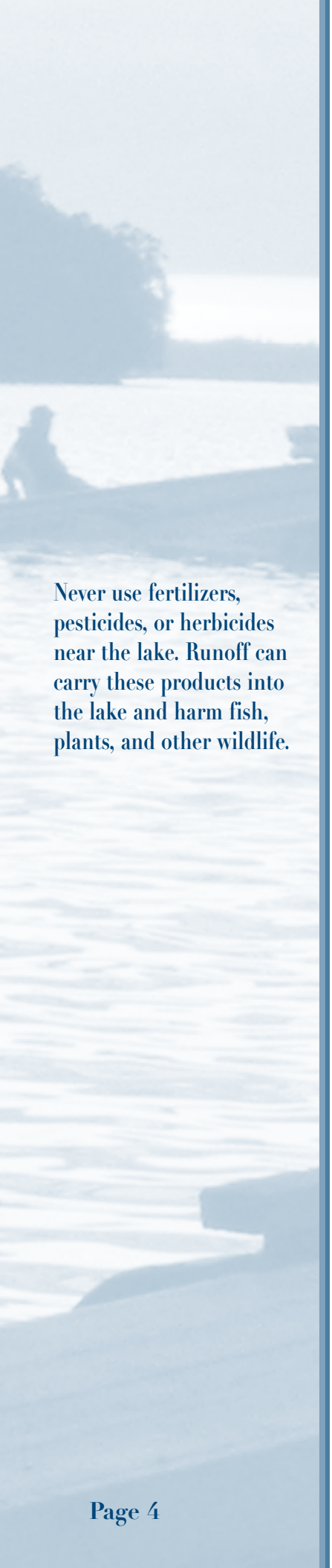
If you have left over phosphorus fertilizer, using it on the garden is a good way to dispose of it.

Other herbicide and pesticide precautions to follow:

- Eliminate the use of fertilizers near water or wetlands.
- Before you consider fertilizing your lawn, aerate it first and see if that improves its health.
- Use the minimum amount needed to replenish the soil and apply at the right time of year, usually spring and early fall. Water lightly after fertilizing to ensure absorption by the roots before a heavy rainfall.
- Sweep fertilizer that has spilled on the driveway and other hard surfaces back onto the lawn to prevent runoff.

The shoreland zone where you live is the lake's first line of defense against unwanted pollution.

Managing water quality means appropriately managing the land use around the lake and within the watershed to reduce the amount of pollution that enters the lake.



Never use fertilizers, pesticides, or herbicides near the lake. Runoff can carry these products into the lake and harm fish, plants, and other wildlife.

Use Herbicides and Pesticides Sparingly, or Not at All

- Keep lawn healthy to avoid the need for herbicide applications.
- When necessary, use the least toxic and most degradable herbicide and follow directions carefully.
- Use corn gluten meal, a byproduct of the corn milling process, as a natural pre-emergent herbicide that stops the root growth of germinating plants. If you can't find it in major retail stores, ask them to carry it.
- Remove dandelions and other unwanted plants from your lawn using hand-tools instead of chemical applications. If you feel you must use a herbicide for control, do not apply it to the whole lawn. Instead, use an applicator which allows you to direct a small spray towards each unwanted plant.
- Identify the pest and learn about the best way to control it; there are many methods of control other than pesticides. See Integrated Pest Management resources.
- When you use pesticides outside your house, on the lawn and in the garden, use them according to the instructions on the label to prevent spillage on the ground, where watering or rain can percolate it into the groundwater or wash it into the lake with runoff.

Do Not Dump Yard Waste

Grass clipping, leaves, and aquatic plant material that wash up on shore all contain phosphorus, which is released when the plant material decomposes. To prevent phosphorus from getting into the lake:

- Use a mulching lawn mower and leave grass clippings on the lawn as natural fertilizer.
- Collect and compost leaves and clippings, or haul them away from the lake to a disposal site.
- Rake up aquatic plants, leaves, and other organic matter on the shore and dispose of away from the lake. *Hint:* It makes great mulch on the garden which can later be worked in as a soil amendment.
- Do not burn leaves near the lake; it destroys the organic matter releasing the phosphorus, which could then be washed into the lake.

Locate Fire Pits Away from the Shore and Dispose of Ash

The leftover ash from burning wood is very high in phosphorus. If the fire pit is located near the lake, rain can wash the ashes into the lake.

- Locate the fire pit at least 50 feet away from the lake; and,
- Remove ashes from the fire pit to prevent the phosphorus-loaded ashes from being blown or washed into the lake.

Pick Up Pet Waste

Improper disposal of pet waste not only jeopardizes water quality, but your health as well. Pet waste contains phosphorus and may contain disease causing organisms, which, if washed into the water, can make it unsafe for swimming.

- Pick up pet waste in the yard or near the shore and dispose of it properly.

Practice Low-Impact Boating

To reduce the pollution impact of motorized watercraft on the lake:

- When fueling the boat, take precautions not to overfill the fuel tank. If you do spill, wipe it up with a rag, do not hose into the water.
- Boat slowly; motors stir up sediments releasing nutrients that can lead to deterioration of water quality—a 50-horsepower motor operated full throttle can stir the water column to a depth of 15 feet.
- Keep your motor well-tuned; use four-cycle motors.

Manage Waste Properly

Take Household Hazardous Waste (HHW) to the Regional Facility

Many of the products that we use at home contain substances that are hazardous. Paints, cleaners, garden chemicals, automotive products and aerosol cans are all examples of products you may have around the home that are hazardous. When these products are no longer useful, they become household hazardous waste (HHW). Household hazardous waste not only threatens the health and safety of our families and ourselves, it can also cause damage to the air we breathe and fish and wildlife in our waters. Products are considered hazardous when they have at least one of the following properties and words on the label:

- **Flammable:** The label may say "Combustible," "Inflammable," "Petroleum Distillates," etc. These products could easily catch on fire.
- **Toxic:** "Poisonous," "Harmful or fatal if swallowed," etc. These products may cause immediate harm or cause long term health problems, such as cancer.
- **Corrosive:** "Acid," "Lye," "Alkali," etc. These products can eat through skin or other materials, such as metal.
- **Reactive:** "Do not mix with other chemicals." These products can react with other chemicals, possibly releasing toxic or flammable gases, igniting, or even exploding.

Before buying or using a potentially hazardous product, read the entire label, buy the least hazardous product you can, purchase only the quantity you need to avoid storing, and follow the use directions carefully. Store those products you do use in a safe place, away from heat, flames, cold temperatures, and in dry areas. Store in original containers.

Free Product Reuse at HHW Facility

Acceptable Items

- Paints
- Stains
- Varnishes
- Solvents
- Garden Pesticides
- Flammable products
- Poisons
- Adhesives
- Aerosol cans
- Lawn care products
- Cleaners
- Automotive Cleaners

Unacceptable Items

- No empty containers
- No business waste (household only)
- No agricultural or industrial waste
- Motor oil can be taken to the Transfer Station

Free Disposal at the Becker County Transfer Station for:

- Appliances
- Scrap Iron
- Waste Oil
- Oil Filters
- Car Batteries
- Passenger Vehicle Tires (limit 4)
- Fluorescent Bulbs (limit 10)
- Ballasts (limit 4)

All other waste accepted at normal charge. Call the Transfer Station for information.

Recycle All the Materials You Can

There are 33 recycling shed locations throughout Becker County accepting aluminum cans, cardboard/paperboard, glass (clear, brown, or green), magazines (no catalogs, TV Guides, Readers Digest or books), mixed paper, newspaper, office paper, plastic bottles (screw top only, #1 or #2), and telephone books.

Recycling is good for the environment and our local economy. Learn what you can do at home.

recyclemoreminnesota.org

Regional HHW Facility

218-847-9664 or
218-847-6382

3 miles north of Detroit Lakes on Highway 59 1/4 mile West on County Road 144 (One driveway East of Transfer Station)

Open Wednesdays
8:00 a.m. to 4:30 p.m.

April through October

Becker County Transfer Station & Demolition Landfill

218-847-6382

3 miles North of Detroit Lakes on Highway 59 1/4 mile West on County Road 144

Hours

Monday:
8:00 a.m. to 6:00 p.m.

Tuesday, Wednesday, Thursday:
8:00 a.m. to 4:30 p.m.

Friday:
8:00 a.m. to 6:00 p.m.

Saturday:
8:00 a.m. to Noon

Sunday: Closed

Check Out Recycling Shed Locations in Becker County

for the shed nearest you!

www.co.becker.mn.us/dept/environmentalservices

Don’t Burn Garbage

Burning household garbage in burn barrels, wood stoves, and fire pits creates pollution that's dangerous to human health and contaminates the air, water, and soil. **It's against the law in Minnesota.**

Garbage today contains a lot of plastics; paper treated with chemicals, coatings, and ink; and many other chemicals. Backyard burning is a low-temperature fire that receives very little oxygen and produces lots of smoke. Under these conditions, a variety of toxic substances is produced and released primarily into the air close to ground level, where they are easily inhaled—with no pollution controls! Dioxin, a potent human carcinogen, is the major health risk posed by residential garbage burning. U.S. EPA research shows that burn barrels are the #1 source of dioxin in the U.S. Just one burn barrel can produce as much or more dioxin as a full-scale municipal waste combustor burning 200 tons/day.

- Instead of burning garbage, dispose of it properly.
- REDUCE, REUSE, RECYCLE. Reduce the amount of waste you create by buying products with less packaging and buying items that last longer instead of disposable ones. REUSE the durable packaging you get (like wash out that sour cream container and use it to put leftovers in). RECYCLE all the materials you can, like cardboard, newspapers, plastic grocery bags, cans and bottles.

Compost Waste

Composting is a natural process. You don't need fancy equipment or expensive artificial additives to break down your organic scraps and turn them into something useful. All you need is: food, water, air/oxygen, and correct temperature.

Like any simple recipe, you'll get the best results if you use the right mix of ingredients to make your compost. The key materials are nitrogen-rich "greens," carbon-rich "browns," water, and air. All of these are essential, but they're easy to mix together for quality compost.

Getting your own compost bin started can be boiled down to three simple steps:

1. Make a compost bin (or buy one).
2. Throw in your kitchen scraps and yard waste.
3. Mix it up with a shovel or pitchfork once in a while. It's that easy! Lay a base. Start with a layer of browns, laying down 4-6 inches of twigs or other coarse carbons on the bottom of the pile for good air circulation. Add Browns and Greens, and **stir.** Add water as you go (about the amount of a damp sponge).

Benefits:

- Improves soil structure
- Provides aeration
- Drought protection
- Reduces erosion
- And much more…

Composting Basics

GREENS provide nitrogen and act as a source of protein for the microbes that are hard at work in your compost pile.

- Green leaves
- Coffee grounds
- Tea bags
- Plant trimmings
- Raw fruit and vegetable scraps
- Fresh grass clippings
- Egg shells

BROWNS are a source of carbon and provide energy for the microbes.

- Dried grasses, leaves
- Woodchips
- Twigs and branches
- Straw
- Sawdust
- Shredded newspaper

NO meat, diary, pet feces, weed seeds, and charcoal.

Working Around Wetlands

What are Wetlands?

Wetlands are a vital transitional link between land and water. When you think of wetlands you probably think of wet, swampy, marshy areas. This would be true for some, yet other types of wetlands may be dry most of the year and support trees and shrubs. Generally, a wetland is defined as an area that is mostly wet soil, is saturated with water either above or just below the surface, and is covered with plants that have adapted to wet conditions.

Wetlands have extremely valuable benefits, including:

- **Water Quality Protection:** Wetlands filter and absorb polluted surface water runoff before it enters groundwater, lakes and rivers.
- **Flood Control and Groundwater Recharge:** Wetlands serve as holding areas for water, slowing flood damage and soil erosion during heavy rain falls.
- **Fish and Wildlife Habitat:** Wetlands provide homes, nesting areas, and feeding areas for wildlife. Wetlands along shorelines are especially important due to the habitat they provide to aquatic insects and amphibians, which are also food sources for fish.
- **Reducing shoreline erosion:** Wetlands, and the deep rooted plants that grow in them, protect shorelines from the forces of wave action that erode away the shoreline.

Who has permit authority?

Despite these benefits, wetlands have been considered nuisances in the past and have been drained or filled in shoreland areas for development.

In 1991, the Minnesota Wetland Conservation Act (WCA) was passed to stop the loss of wetlands. To accomplish this, anyone proposing to drain, fill, or excavate in wetland areas must first try to avoid disturbing the wetland; second, try to minimize the impact on the wetland; and finally, mitigate, or replace the square footage of wetland loss. Some exemptions to the law may apply to certain situations. Generally, wetlands in shoreland areas are given extra consideration for protection due to the benefits they provide to lakes.

If access to the lake is limited due to the presence of wetlands along the shoreline, boardwalks and docking is encouraged. The Becker SWCD can also provide assistance in helping you determine if wetlands are on your property and what permits may be needed. Work that is done below the ordinary high water level (OHW) in lakes, rivers or public waters will require a permit from the DNR Public Works Program.

Contact the Becker Soil and Water Conservation District (SWCD) at (218) 846-7360 for permit information and requirements when working around wetlands.

Also contact the Becker SWCD for:

- Soils information for your property.
- Technical assistance for erosion control practices.
- Tree sales and design assistance for windbreaks and wildlife plantings.
- Information on sealing abandoned water wells.
- Cost share programs for installing conservation practices on your property.
- The County Agriculture Inspector and information regarding the Noxious Weeds Law.

Statewide, Minnesota has lost over 50% of its pre-statehood wetlands and has about 9.285 million acres of wetlands remaining. Let's protect what we have left.

Wetlands are valuable because:

- they clean the water.
- recharge water supplies.
- reduce flood risks.
- provide fish and wildlife habitat.
- provide recreational opportunities and aesthetic benefits.

If access to the lake is limited due to the presence of wetlands along the shoreline, boardwalks and docking is encouraged.

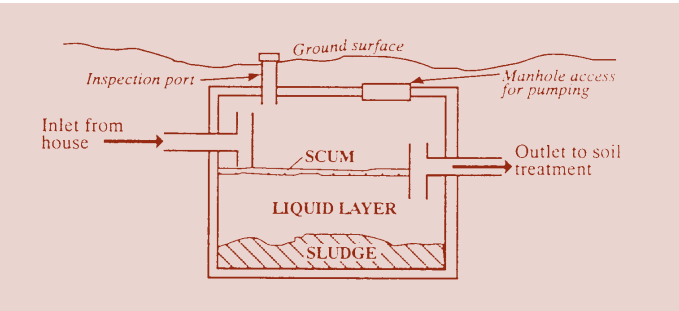
Properly Install, Operate, and Maintain the Septic System

Many homes in shoreland and rural areas rely on Subsurface Sewage Treatment Systems (SSTS), commonly known as the septic system. Your septic system, if designed, installed, operated and maintained properly, will effectively treat wastewater before it is returned to the environment to protect public health and prevent pollution of nearby waters.

Understand How Your Septic System Works

Understanding your system is essential to proper operation and maintenance. The basic components of most systems are the:

- **The Septic Tank** receives the wastewater from the household plumbing. In the tank, the solids are separated from the liquid. Here, naturally occurring bacteria decomposes food particles and human waste and the remaining solids settle to the bottom until they are pumped out on a regular basis. The tank will have an inspection pipe for monitoring of the tank and a manhole for access when pumped. The size of the tank is based on the home's potential water use and types of appliances installed. When the capacity of the tank is reached the excess liquid flows, or is pumped, over into the drainfield.
- **The Soil Treatment System (drainfield)**, which is typically a network of perforated pipes surrounded by small rock and soil. The liquid, which contains pathogens (disease-causing organisms), nutrients such as phosphorus, and fine solids, is cleansed naturally by bacteria as it percolates down through the soil. The design of the treatment system (trench, mound, etc.) is based on the soil conditions on your property, which must allow for at least three feet of unsaturated soil for the wastewater to percolate through for proper treatment. The correct type of system needed for your property will be determined by a state-licensed septic designer. Where gravity flow is not enough to move the liquids from the tank to the soil treatment system, pumps or lift stations are common—this is typical with mound systems.



Source: University of MN Extension Protecting Our Waters Series, #2

What Causes a Septic System to Fail?

Septic system failure is most commonly the result of:

- Improper design or installation of the system;
- Overuse of water in the home; and/or
- Improper maintenance.

When your system, or a neighbor's system fails, untreated wastewater could come in contact with people, causing a public health hazard. Or, it could enter the groundwater and eventually a nearby lake, river, or stream, adding pollution that can contribute to increased algae and aquatic plant growth and declining water quality.

What are the signs of a failing system?

- Sewage backup into the house or slow toilet flushing,
- Frozen pipes or soil treatment areas,
- System alarms sounding,
- Wet and/or black areas around a septic mound,
- Algal blooms and excessive plant growth in the water near shore,
- Sewage odors indoors or outdoors,
- Water or sewage surfacing in the yard or a nearby low spot, or
- High levels of nitrates or coliform bacteria in well water tests.

If you have a problem:

- **Contact the local Planning & Zoning Office for advice and/or licensed septic inspector.**
- **If the drainfield or household pipes are not clogged, have the system pumped for both solids and liquids as a temporary measure.**
- **If there is surface pooling of wastewater, fence off the area to prevent contact with humans or pets.**

Properly Operate and Maintain Your System

Proper operation and maintenance will extend the life of your system for many years and prevent costly repairs.

✓ Pump the Tank Regularly

Have a licensed professional pump the solids (floating scum and sludge) that have accumulated from the septic tank every one to three years—the more use, the more often pumping is needed. Make sure they pump through the manhole. While garbage disposal use is not recommended with septic systems, pump annually if you are using one. Failure to remove the solids can cause them to enter the drainfield, which can result in expensive repair or replacement. For licensed and certified septic system maintenance services, refer to the yellow pages under septic tanks and systems-cleaning.

✓ Practice Water Conservation

Too much water flowing into the tank will cause the tank to back up and lead to ineffective treatment of wastewater. To prevent this:

- Repair all leaky faucets, fixtures, and appliances.
- Install low water-use fixtures and appliances (especially toilets and shower heads).
- Do not empty roof drains and sump pump water into the septic system.
- Wash only full loads of clothing and dishes, and spread out water use, such as laundry, throughout the day and week. Consider front loading machines; they use less water.
- Reduce the length of showers and the number of toilet flushings, especially during high use periods.
- Reroute water softener discharge water out of the septic system.
- Do not hook floor drains or drain tile into the septic system.

✓ Limit What Goes Down the Drain

- Do not put household cleaners, paint, solvents, medications, and other chemicals down the drain.
- Limit the use of antibacterial products. As the name suggests, they can reduce the amount of working bacteria in the septic tank.
- Use only the recommended amounts of liquid non-phosphorus detergents and cleaners.
- Prevent food particles, grease, lint, coffee grounds, plastics, and other non-degradable solids from getting into the system.
- Use single-ply toilet paper for the best decomposition.

✓ Do Not Use System Additives

It is not necessary to use starters, feeders, cleaners, or other septic additives to enhance the performance of your system. If your system is properly maintained and operated, it will operate at maximum performance with the use of naturally occurring bacteria.

✓ Protect Your Drainfield

Compacting or obstructing the soil over the treatment area can cause malfunctioning of the drain field. To protect it:

- Keep heavy vehicles off the drainfield.
- Maintain vegetative cover, but do not plant trees or shrubs on the drainfield because the roots may penetrate and clog the distribution system.
- Mow the area, but do not fertilize or water.
- Reroute roof drains and drain tile away from the drainfield.

For more information on septic system design and maintenance, see the University of Minnesota Water Resources Center's homeowner resources at: http://septic.umn.edu/homeowner/index.html or call the hotline at 800-322-8642.

Protect Your System from Freezing in the Winter

Common causes of septic system freezing during the winter can be lack of snow cover, extreme cold, compacted snow, irregular use of the system, leaking plumbing fixtures, pipes not draining properly, or a water-logged system.

What to do if the system freezes? Unplug your pump and call a septic system professional. Do not add antifreeze, additives, or continuously run water to try to thaw the system.

To prevent freezing, follow these general guidelines:

- Fix any leaking plumbing or appliances prior to winter.
- Late fall, add a layer of hay or straw mulch (8-12 inches) over the pipes, tank, and soil treatment area.
- Spread hot water use (laundry, showers, dishwasher) out over the day and week.
- For high efficiency furnaces that have low water discharge, you can put a heat tape in the pipe or install a small condensate pump.
- If you are gone for extended period of time, consider having someone stop by to run hot water regularly or pump the tank before leaving.

Becker County Requirements

Who Regulates? The design and installation of septic systems is regulated by Becker County, and permits are required from Planning & Zoning. All septic systems, including outhouses, must be designed by a state-licensed septic professional, but the homeowner may do installation of a non-pressurized system.

Who certifies systems? Licensed inspectors review all newly installed septic systems and will sign a Certificate of Compliance on properly installed new systems. For an existing system, a certificate of compliance can be obtained by a Designer I certified professional.

When is a new compliance certificate required? If you are applying for a building permit for new construction, a compliant septic system is required. If a certificate is not on record or it is not current (less than 3 years old), a new inspection will be required. In Becker County, compliance inspections are not required upon sale or transfer of property.

What are the setbacks from a structure? Ten (10) feet from the structure for the septic tank and 20 feet for the drainfield. Wells require a 3 foot setback from the structure; they are regulated by the Minnesota Department of Health (218-332-5150).

Call the Becker County Planning & Zoning Office for questions about septic system requirements.

Reduce Rainwater Runoff... It Doesn't Go Away!

Rainwater runoff is the #1 source of pollution to our lakes. It's like dumping pollution directly into our lakes!

What is runoff?

Rainwater or snowmelt that does not soak into the ground and instead runs off hard surfaces that don't absorb water (impervious surfaces) or washes off lawns and steep slopes is called *runoff.* Impervious surfaces include roofs, driveways, sidewalks, and compacted soils. When the runoff reaches the lake, it can carry with it nutrients, eroded soil sediments, toxic materials, bacteria and other pollutants that can cause reduced water clarity, increased aquatic plants and algae, and impact fish and wildlife habitat.

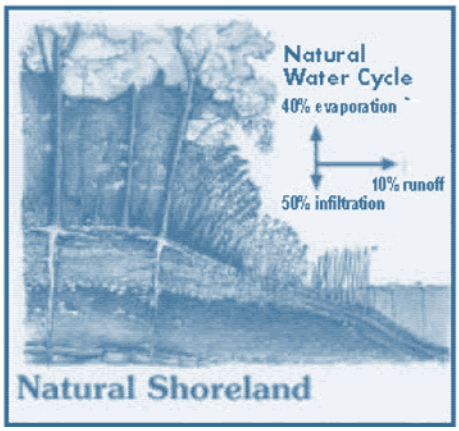
What was once an occasional cabin along a wild shore has become a ribbon of structures and paved areas circling the lakes. All this construction has added more rooftops, roads, walkways, decks, parking areas and driveways, increasing the amount of impervious surfaces, which act like funnels for runoff to reach lakes, rivers, and wetlands. Runoff from these impervious surfaces also increases erosion and sedimentation.

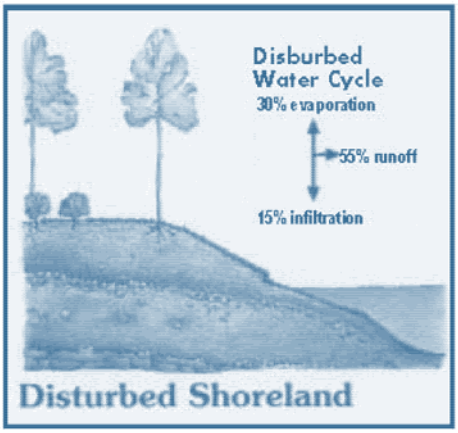
Managing runoff on your property is the best way to reduce pollutants before they reach the lake. Increasing opportunities for water to soak into the ground (infiltrate) instead of running off is the best way to reduce runoff and filter out the pollutants before they reach the lake

Learn From Mother Nature

With the natural water cycle, when there is precipitation, water will evaporate, run off the land, or soak (infiltrate) into the ground. The amount of vegetative cover on the ground will determine the amount of runoff and infiltration. Natural vegetation will hold back the runoff providing time for it to soak into the ground.

Studies done by the Center for Watershed Protection have shown negative impacts to nearby waterbodies begin when the amount of impervious surface on a lot exceeds 12%.





You Don't Have to Live on the Lake for Runoff to Impact Water Quality

If you live in town, the water running off your lawn and into the storm sewers has to go somewhere, and it eventually drains to the lake carrying with it nutrients, pollutants, and sediments that impact water quality. Whether you live on the lake or not, practice the principles in this Guide for reducing the amount of runoff from residential and commercial properties to increase the amount of rainfall that infiltrates back into the ground.

Maintain Natural Vegetation

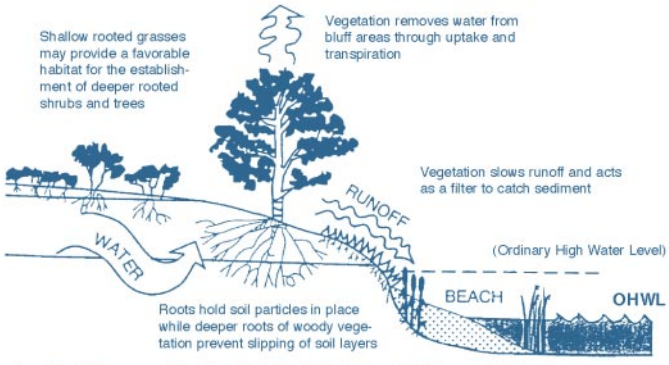
Natural vegetation will naturally reduce runoff by holding back the water to provide time for it to soak into the ground.

- When clearing your lot, minimize the removal of wooded areas, trees and low growing shrubs. Their removal causes more rain to fall to the ground instead of landing on leaves and branches.
- Grading large areas of land removes the natural depressions of land where water can pond and soak in.
- Carefully landscape your yard near roads, driveways, and along the shoreline to direct runoff away from the lake.

Practice Good Lawn Management

Maintain a Healthy Lawn to Absorb More Water

- Leave the suburban lawn mentality in the cities. Limit the amount of lawn and keep it as natural as possible to reduce maintenance and increase its ability to absorb runoff.
- Mow to a height of two to three inches; mow when dry to prevent clumping. Taller grass provides shade for better root growth, which helps with water absorption.
- Consider replacing some of the grass in your lawn area with clover, native grasses, or other groundcovers that don't need watering.
- If watering is necessary, water deeply, but infrequently, to encourage deep root growth. Water with lake water. (*Hint:* use the nutrients in the lake to make a healthy lawn instead of frequent fertilizer applications.) Water in the morning, not mid-day or evening.
- In hot weather, allow lawn grasses to go dormant so that they require less water and nutrient intake for survival. Water 1/4 to 1/2 inch every two or three weeks to keep crowns from dehydrating beyond the point of recovery.



Shoreland Best Management Practices Fact Sheet #5, University of Minnesota Extension.

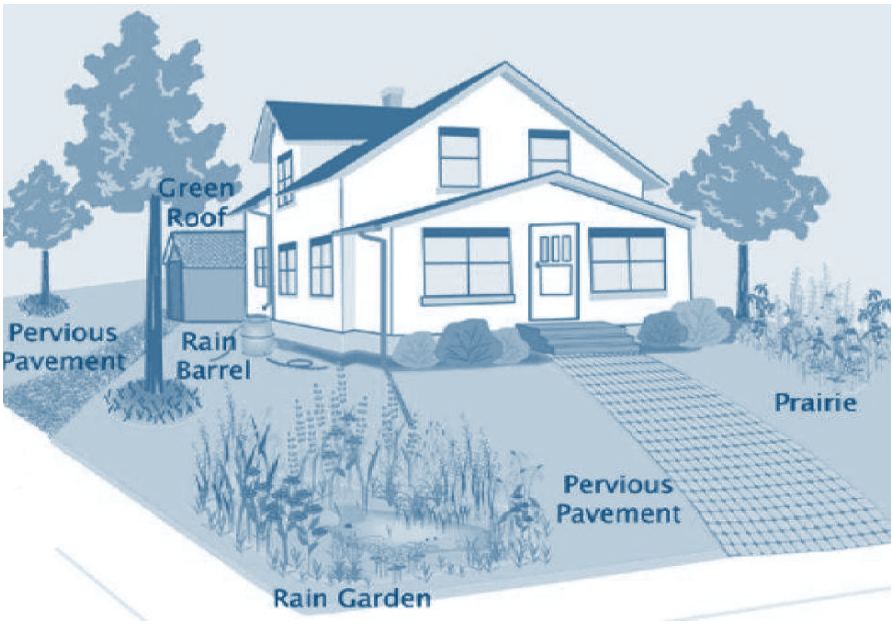
Identifying Lake Problems Caused by Runoff

Problem	Is the water near shore cloudy?
Possible Cause	*Excess sediment reaching the water.*
Problem	Is there an oily rainbow film on the water?
Possible Cause	*Possible petroleum contamination.*
Problem	Are there algal blooms, green scum, or abundant plant growth in the water?
Possible Cause	*Excess nutrients such as nitrate or phosphorus reaching the water.*
Problem	Are washouts, trenches, small piles of sediment, leaves, or debris found at the bottom of slopes?
Possible Cause	*Excessive water runoff across the property.*
Problem	Is your shoreline eroding?
Possible Cause	*Removal of natural vegetation for property development or creation of beaches, both on-shore and in the lake; dredging, filling, or construction on or near the shoreline; trampling of banks; inadequate protection against runoff from roofs, driveways, roads, or other developed areas.*

If we love our lakes, we have to change our ideas about what is a good lawn for shoreland properties.

Building a home and establishing a lawn to the water's edge can cause seven times the amount of phosphorus and 18 times the amount of sediment to enter the water compared to a natural shoreline.[1]

Allow Water to Settle Into the Soil—Not Run Off into the Lake!



The fewer hard surfaces there are for rainwater to collect and runoff from the less likely there will be erosion and runoff into the lake. The key to solving this problem is to stop water from running off your property so it can soak into the ground. You can **capture** rainwater and allow it to be **cleansed** through natural soil processes.

The best way to do this is to: divert rainwater off roofs, driveways, walkways, and other hard surfaces into rain barrels or to the lawn, or create a rain garden designed to capture and cleanse the rainwater naturally.

Divert Rainwater off Roofs and Driveways

Paved driveways and roofs of buildings comprise most of the impervious surfaces on a lot. Redirect rainwater flow from downspouts, roof gutters, and driveways onto lawns or into a rain garden where it will have time to naturally infiltrate into the ground. Or, capture the water in a rain barrel, where it can be used later for watering

Install a Rain Barrel

A rain barrel is any type of container used to catch water flowing from a downspout and store it for later use.

The rain barrel is placed underneath a shortened downspout diverting the roof runoff into the barrel. The rain barrel has a spigot to collect the stored water for use in watering flower gardens, house plants and lawns. Rainwater is naturally high in phosphorus—it's a natural way to fertilize.

Water collected in a rain barrel is not recommended for watering vegetable gardens. Humans and pets should not drink the stored water. Non-toxic mosquito dunks are available at garden supply stores and mail order catalogs to prevent the breeding of mosquitoes in rain barrels.

Rain barrels need to be cleaned routinely during spring and summer months to reduce algae growth. During winter months, take your barrel out of operation by simply turning it upside down at the same location or storing elsewhere. Rain barrels can be purchased at garden centers, ordered online from garden catalogs, or you can make your own.

How much rain do I need to fill a 50-gallon barrel? For every inch of rain that falls on one square foot of your roof, you can collect just over half a gallon of rainwater. Example: 100 square feet of roof could collect 60 gallons of rainwater during a 1-inch rain event.[2]

Plant a Rain Garden

A rain garden is just what it sounds like—a garden to soak up rain water. It is a recessed planting bed, shaped like a saucer or shallow bowl, designed to collect runoff from driveways, roofs, and other hard surface or sheet flow of rain from lawns. The collected water is then infiltrated into the ground instead of running off to the lake.

Rain gardens are planted with hardy, water-loving native perennial plants that have deep roots, which along with the soil, work to provide a filter system to catch pollutants such as phosphorus, oil, mercury and other heavy metals in rainwater that run into the garden area. Rain gardens allow sediments that are carried with runoff to settle so plants can absorb the nutrients. During a rainfall, the highest concentration of pollutants is during the first inch, or first flush of a storm, which is retained in the rain garden. Rain collected will infiltrate into the ground within a few days, sometimes even hours depending on your soil type.

To be effective, rain gardens must be properly designed for the right shape and size to accommodate the amount of roof, driveway, and other hard surfaces on your property as well as your soil conditions. Plants must be used that are appropriate for your soil type and will also tolerate standing water for up to 48 hours. For proper design, it is recommended to consult resources to help you determine the proper plants and dimensions. Remember to always call the Digger Hotline (800-242-8511) before digging to prevent cutting into an electrical line or cable.

Additional Resources for Rain Barrels and Gardens:

Constructing a rain barrel:

http://home.comcast.net/~leavesdance/rainbarrels/construction.html

Designing a Rain Garden:

http://www.lowimpactdevelopment.org/raingarden_design/how2designraingarden.htm

http://bluethumb.org/raingardens/

Rain Garden Tips:

- Don't worry about mosquitoes. Most rain gardens will not hold water long enough for mosquitoes to reproduce.
- When first planted, hand weed biweekly until native plants are established.
- Don't fertilize near the rain garden, it will stimulate weed competition without benefiting the native plants.

Source: Taylor Creek Restoration Nurseries

Use Pervious Pavement and Pavers

Pervious pavement and pavers are made of special materials that allow the water to flow through and infiltrate into the ground. They can be used for driveways, sidewalks, walkways, and patios. Pavers are quite attractive and some have a 5-year life span. A 1,000 square foot pervious driveway will infiltrate over 12,000 gallons of water per year. Runoff from rooftops and lawns can be diverted to pervious areas for additional water treatment.

Buffer the Lake from Runoff

Benefits of a Shoreland Buffer

1. **Slows and filters runoff.** A good buffer protects your lake, stream, or wetland by slowing runoff and allowing it to soak into the ground.

2. **Stabilizes shoreline.** Buffers prevent fluctuating water levels, moving ice, flooding, surface runoff and wave action from eroding your shoreline.

3. **Provides habitat.** The water's edge provides food and cover for birds, butterflies, turtles and other wildlife. A good buffer can be a very diverse habitat.

4. **Enhances aesthetics.** Natural buffers beautify your yard with a variety of colorful wildflowers that bloom throughout the season. Buffers also create a natural screen, increasing privacy.

5. **Increases property value.** A high quality buffer is an asset that can add resale value.

6. **Limits nuisance wildlife.** A native plant buffer creates a natural barrier to Canada geese.

Scientific research shows that the way we treat our shorelines affects lake water quality and fish and wildlife habitat. **To protect and improve our lakes, we need to improve our shorelines.** The best way we can do that is by adding or keeping a buffer strip of natural vegetation along the shore. Buffer strips of native species of trees, shrubs, and understory plants protect water quality and provide habitat for fish and wildlife.

If your shoreland is already natural vegetation, congratulations—please keep it that way. If you have lawn to the water's edge, or very little native vegetation near the shore, consider a natural shoreland landscaping project to restore the native vegetation by creating a shoreland buffer zone—an area of native vegetation along the water's edge.

Rethinking How our Shorelands Should Look

Creating and maintaining a natural buffer zone along your shore does not mean your property has to look messy, but it may mean you have to re-think what your shoreland should look like. Lawn-to-lake shorelines are no longer ecologically smart.

Research has found interesting differences between the lawn-to-lake style of shoreline as compared to a native vegetated shoreline.

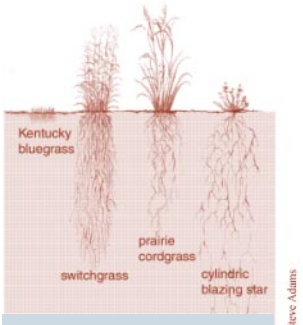
- Rainwater runoff from lawn-to-lake shoreline was measured to be 5 to 10 times higher than forested shorelines.
- The lawn-to-lake shoreline allows 7 to 9 times more phosphorus to enter the lake than a more natural native vegetated shoreline. More phosphorus to the lake can mean more algae resulting in lower water clarity and aquatic plant growth.

Creating or keeping a native shoreline buffer reduces the amount of nutrients entering the lake along with providing better wildlife habitat. For example, a 40-foot buffer strip along the lake traps about 60% of the phosphorus runoff and about 80% of the sediment pollutants.

This lawn is labor-intensive and expensive to maintain. Fertilizer and grass clippings add nutrients to the lake leading to weed and algae growth. A shallow rooted lawn (turfgrass) has a minimal ability to filter nutrients and sediment entering from rainwater runoff and is ineffective at allowing infiltration of water into the soil.

This shoreland buffer of native vegetation protects the shoreline, maintains the natural landscape, and filters out boat noise. Many plants are suitable that are low growing and won't impede your view of the lake. Using ornamental grasses, perennials and smaller woody plants will significantly reduce and filter runoff while restoring the natural beauty to the shore, and they are less work for more time to recreate.

One of the greatest benefits of establishing native vegetation is their deep root systems that stabilize the shore from erosion and ice damage and provide an area for rain to soak into the ground instead of running off to the lake.



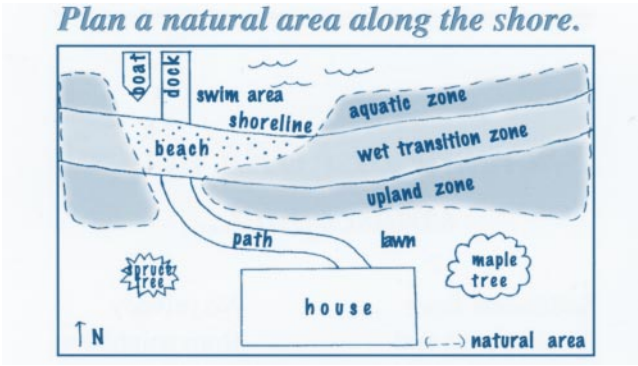
Native plants are more effective at stabilizing soils and banks because their roots are longer (3-5 feet) and more dense than typical Kentucky bluegrass (2-3 inches). They hold the soil particles together to prevent erosion and reduce ice damage.

What is a shoreland buffer zone?

A buffer zone is an unmowed strip of native vegetation that extends both lakeward and landward from the water's edge. A buffer zone of native plants that extends 25-50 feet landward from the shore is preferable, but even adding a buffer as narrow as 10-15 feet can restore many functions critical to the health of the lake that may have been eliminated previously by sod, hard structures, or mowing. **When it comes to shoreland buffers, wider is better for more benefits.**

A shoreland buffer zone consists of:

- The shallow **aquatic zone** of the emergent, submerged, and floating leaf aquatic plants that provide food and shelter for ducks, songbirds, frogs and other amphibians, and fish. The taller plants, like bulrush, sedges, and cattails can reduce the energy of wave action to minimize erosion and help maintain water quality.
- The **wetland transition zone** of more water-loving plants that bind the lake bed to the upland soils.
- The **upland zone** of native trees, shrubs, grasses, and wildflowers slows rainwater running over-land, making sediment drop out, absorbing water and nutrients, and breaking down pollutants.



Source: University of Minnesota Extension Service, 2005; Item #08308

Getting Started Creating a Shoreland Buffer

Before You Start

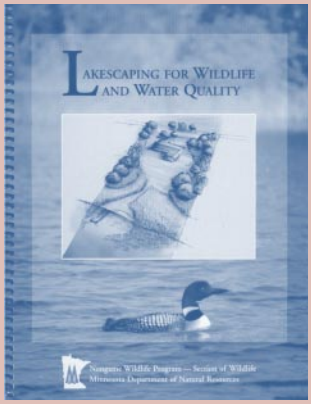
There are a number of ways to create a shoreland buffer depending on the characteristics of the shoreland and the desires of the property owner. Before you decide how to approach establishing a shoreland buffer, thoughtfully assess your shoreline and what you want to accomplish.

- Do you have erosion problems to correct? Problems with Canada geese? What kind of wildlife would you like to attract?
- Consider the specific conditions at your site, including light, moisture, orientation, and degree of slope.
- Identify soil type and the type of lake bottom (mucky, sandy, rocky).
- Think about where you're located on the lake – do you get a lot of wind and wave action, or direct sunlight for much of the day? Shoreline revegetation is most likely to succeed in areas that are sheltered and experience little or moderate wave action, do not experience significant changes in water level during the growing season, and are not very steep.
- Also consider the different ways you use the shoreland area and the amount of shoreland that you want to restore. How much area is really needed for lake access for boats and swimming? Limiting the beach and dock area to 15-20 feet and leaving the rest of the shoreline natural is ideal to have both the benefits of the buffer zone while having recreational access to the lake. Resource professionals recommend that you maintain a shoreland buffer along 75% of the shoreline frontage.

Resource professionals recommend that you maintain a shoreland buffer along 75% of the shoreline frontage.

Next, decide how you want to establish a shoreland buffer. Here are some options.

Don't Mow, Let It Grow A simple, no-cost way to get started in restoring your shoreland is to stop mowing for the width of the desired buffer strip. Turf grasses will grow 12-24 inches before going to seed, after which seeds in the soil will germinate and valuable native plants will begin to appear. You can note the types of native plants and wildflowers growing on natural shorelands around lake to get an idea of what is likely to appear or will be suitable for growing in your area. While the buffer is getting established, you may need to weed out nuisance species or add native plants for diversity, but not mowing will get you started. Over time, shrubs and trees will naturally fill in and provide a more diverse plant cover.



The book *Lakescaping for Wildlife and Water Quality* and the DNR CD *Restore Your Shore* are two highly recommended resources to get you started. They are available in book-stores and online through the Minnesota Bookstore.

The *Restore Your Shore* CD will soon be viewable online at www.dnr.state.mn.us.

Do-It-Yourself

Local nurseries and garden centers are starting to carry more native plant stock and can recommend the best plants for your site. Plants used should be indigenous to this region of Minnesota-don't buy plants from a mail order catalog grown in another part of the country and expect them to grow. The DNR website has a list of native plant suppliers and landscapers. Consult with University of Minnesota Shoreland Specialists, DNR Shoreland Restoration Specialists, or the Becker County Soil and Water Conservation District for resources and fact sheets on designing your project, selecting plants, preparing the site, and planting. Take one of the many classes offered throughout the summer on the basics of shoreland restoration. Professionals teaching the classes will help you design your own project and may later be available for further consultation. Many classes include an opportunity to participate in the planting of a restoration project to give you experience for planting your own project. Check with the Becker County SWCD for possible cost-share assistance.

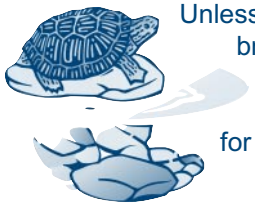
Hire a Professional

Shoreland restoration is a rapidly growing field among landscape professionals; consult the yellow pages or watch for promotions. Ask for recommendations from other property owners who have completed re-vegetation projects. If your site has a steep slope or other unusual characteristics, getting professional assistance will be very important to the success of your project.

Maintaining Your Restored Shoreland

A shoreland restored with native vegetation should maintain itself once it is established. Apply mulch to new planting beds to prevent soil erosion, hold moisture in the soil, and control weeds. You may need to water and weed the first season, but once the plants are established, they will be able to out-compete most weeds. Native species should never be fertilized because they are adapted to the nutrient levels found in local soils, and fertilizers and pesticides applied to areas near shore can be a threat to aquatic life and water quality. Plants left standing in fall and winter provide seeds and shelter for wildlife, and protect the soil from wind erosion. If some plants do not survive the first year, replant as quickly as possible to maintain a continuous vegetative cover. As your shoreland buffer grows, you may want to trim some tree branches or shrubs to keep your view of the lake clear while maintaining the benefits of a natural shoreline.

Leave Fallen Trees and Branches Alone



Unless they are interfering with your recreational access, leave trees and branches that have fallen into the water alone. They form critical habitat for aquatic organisms that fish and other aquatic life feed on, provide cover from predators for small fish, and they serve as a dock for turtles, kingfishers and other interesting wildlife.

Protect the Aquatic Zone

The aquatic zone is a vital part of the shoreland buffer. Emergent vegetation, such as soft stem bulrush, wild rice, and cattails, help purify the lake by removing contaminants and calming the water, which allows suspended soil particles to settle to the lake bottom. They provide shelter and spawning areas for fish and other wildlife and add oxygen back into the water. If submerged aquatic plants are interfering with swimming, clear by hand only what is needed to provide a small swimming area. Leave other submerged plants in place. Any chemical treatment of aquatic plants will require a permit from the local DNR Fisheries office. As part of your project, you may want to plant more aquatic vegetation.

Who Will Be Required to Make Shoreland or Stormwater Improvements?

In Becker County, if you have a substandard lot you will need to make lot improvements to reduce runoff from getting to the lake (mitigate) if:

- you wish to be closer to the lake than the required setback, and/or
- your impervious surface coverage on your lot is 15% or greater.

Mitigating the Lake Setback

Mitigating the lake setback may allow you to build closer to the lake than the standard required setback, but it will not allow you to build anything: 1) in the shore impact zone (one-half the required building setback) or, 2) ahead of the "stringline", an imaginary line between neighboring properties so their view is not blocked.

A formula is used to determine a number of mitigation credits that must be gained, by either/or a combination of:

1) Installing a vegetative buffer, the larger the buffer the more credits gained.
2) Removing structures and other impervious surfaces in the shore impact zone.

Credit formula: (Required setback) - (Proposed setback) = # of credits needed

Mitigating the Impervious Surface

Impervious surfaces (structures or anything that reduces or prevents the infiltration of water) of more than 15% on a substandard lot must be offset with stormwater improvements to reduce the amount of runoff to the lake. Impervious surfaces include driveways (class 5, asphalt), concrete, impervious pavers, walks, patios, gazebos, homes, garages, etc. Impervious surface is not allowed to exceed 25% on any lot.

A formula is used to determine the number of mitigation credits that must be gained, by:

1) Reducing the impervious surface covers.
2) Stormwater management (rain gardens, infiltration basins, etc.).
3) Installing a shoreline berm.
4) Removing structures or other impervious material in the shore impact zone.

Credit formula: (Proposed coverage %) - (15%) = ( ) X (5) = # of credits needed

Contact the Becker Planning & Zoning Office for assistance in determining credits and satisfying the mitigation requirements. A downloadable mitigation fact sheet can by found under the Planning & Zoning Department at www.co.becker.mn.us

Required Lake Setbacks:

General Development:	75 ft.
Recreational Development:	100 ft.
Natural Environment: (NE)	150 ft.

Standard Lake Lot Size:

General	100 ft. shoreline + 20,000 sq. ft.
Recreational Development	150 ft. shoreline + 40,000 sq. ft.
250 acre NE	250 ft. shoreline + 100,000 sq. ft.
100-250 acre NE	400 ft. shoreline + 160,000 sq. ft.
50-100 acre NE	500 ft. shoreline + 200,000 sq. ft.
50 or less acre NE	600 ft of shoreline + 240,000 sq. ft.

Don't Let Your Shoreline Slip Away—Curb Erosion

Rainwater runoff or waves lapping at the banks of your shore can erode the shoreline, silt up the water, and carry away your land. When soil washes into the lake, it carries with it phosphorus—the desired nutrient for aquatic plant and algae growth. It causes sediment to build up in the lake; increases turbidity after rain events, which interferes with normal lake functions; and impacts fish and wildlife habitat. Degradation to water quality is the result. **Curbing the erosion of soil into the lake will reduce pollutants from reaching the lake.**

Shorelines can erode through many processes. Natural causes of erosion include currents, waves, ice, and rain. Many human activities may significantly increase the rate of erosion. Some common causes of erosion include:

- removal of natural vegetation for property development or creation of beaches, both on shore and in the lake.
- improper installation of erosion control structures, such as retaining walls.
- increased wave action from watercraft traveling close to the shore.
- dredging, filling, or construction on or near the shoreline.
- trampling of banks by human, animal, or vehicle traffic.
- inadequate protection against stormwater runoff from roofs, driveways, streets, and other paved or hard surfaces.

Curbing the erosion of soil into the lake will reduce pollutants from reaching the lake.

Signs of a Serious Problem

- A large area of bare soil on a steep, high shoreline bank.
- A noticeable recession of the shoreline over a period of time.
- Leaning or downed trees with exposed roots on the shoreline.
- Large patches of muddy water near a lakeshore, or unusually muddy streams during periods of high water or following a rainstorm.
- Excessive deposits of sand or other sediments on the stream bed, or very wide, shallow areas in a stream.

Erosion may be accelerated by activities such as boat wakes or high waves during storms. Each year, erosion causes the loss of valuable shorefront property.

How can shoreline erosion be controlled?

If your shoreland is eroding away, stabilizing the shoreland will be necessary to reduce erosion.

Each shoreland situation is different. You are encouraged to consult with shoreland landscaping professionals, the DNR Area Hydrologist, University of Minnesota Shoreland Specialists, or the Becker County Soil and Water Conservation District to determine the best solution for your shoreline erosion situation.

Rip-rap, stone, retaining walls, or turf grass might seem like good solutions for stabilizing erosion, but they are not usually the best choice. Water can undercut rip-rap and turf grasses. Stone and non-native grasses can't prevent chemical runoff from polluting the water and causing unsightly algal blooms. These choices can negatively impact the lake by creating an unnatural barrier between upland areas and the shoreland environment that destroys vegetative transition areas and eliminates critical habitat for many species.

Retaining walls deflect wave energy back to the lake instead of diffusing it, which can undercut the base of the wall and cause increased erosion at the ends making the water more turbid. And, neither rip-rap or retaining walls will prevent ice ridges from forming because rock cannot withstand the up to 30,000 pounds of ice pressure per square inch.

Preventing Erosion

Some basic preventive actions include:

- Preserve existing rock and vegetation that naturally occur along the shoreline.
- Stop mowing a strip of land near the shoreline or restore a shoreland buffer of native vegetation.
- Prevent impervious surface (i.e. roofs, driveways, etc.) runoff from flowing to the shoreline, steep slopes and bluff areas.
- Avoid construction within 100 feet of the shoreline, steep slopes or bluffs.
- Protect berms pushed up by ice action along lakeshores. They prevent excessive surface runoff and trap sand which "nourishes" the beach.
- Limit the amount of foot traffic and other recreational activities in erosion prone areas. Regardless of preventive measures, the right combination of conditions, such as high water level, violent windstorms, drastic ice movement, and certain shoreline configurations, may result in serious shoreline erosion.

Preventing Erosion on Steep Slopes and Bluff Areas

The erosion potential on steep slopes and bluffs can be reduced by:

- Diverting water away from steep slopes by rerouting drainpipes and gutters. If diverting water away from the bluff is impractical, it should be routed through a non-perforated plastic drain pipe that outlets at the very bottom of the bluff into rock drainage.
- If you need a walkway to the shore, follow the natural contours of the slope to go across or around the slope, or use steps when a walkway must go directly up and down a slope, but minimize destruction of natural vegetation during construction.
- Keep the moisture- and nutrient-absorbing natural vegetation on steep slopes by limiting clearing and grading.
- Replant vegetation on barren slopes.
- Create a view corridor through the trees with selective pruning for an excellent view while maintaining the natural trees and shrubs.

On steep bluffs, selectively prune trees to create a view corridor of the lake. Keep the vegetative undergrowth to stabilize the soil on the bluff.

Naturalizing your shoreline or maintaining the natural shoreland vegetation is the most important way to reduce shoreland erosion.

Slow the Boat Down

Boat wakes can cause tremendous shoreland erosion, so slow the boat down. In shallow areas (less than 15 feet), motor at slow-no-wake speeds (5 mph or less) to reduce the boat wake and the consequent wave action that can erode your shoreline and other's around the lake. Observe all posted “no-wake” and low-speed zones. For personal watercraft, running at slow, no-wake speed within 150 feet of the shore is the law.

Boating slowly makes less wake, less noise, reduces pollution and is less disruptive to wildlife and other people. Plus, you'll see more and enjoy the lake longer. When running at higher speeds, keep the motor properly trimmed to reduce noise and the boat wake.

Make Friends with the Ice Ridge

Ice ridges are formed by the pushing action of the lake's winter ice sheet against the shore. Cracks form in the ice because of different contraction rates at the top and bottom of the ice sheet, and it is especially pronounced in years when there is little insulating snow cover. Ice cracks also develop because the edges of the ice sheet are sometimes firmly attached to the shore. Then, as the water rises in cracks and freezes, the ice sheet expands slightly and exerts thrust against the shore.

Unless the ice ridge is impeding your use of the lake or access to your dock area, consider making friends with the ice ridge and leave it alone. Ice ridges do provide a natural form of shoreline protection and have many benefits to the lake.

- It is a natural berm to protect the lake from runoff.
- Nutrients collect on the landward side of the mound, producing fertile soil where trees and plants thrive and provide roots systems to hold soil in place.
- They serve as a component of the shoreline habitat for birds, other animals, and plants.

Ice ridges provide a natural form of shoreline protection and have many benefits to the lake.

In addition to producing ice ridges, ice can cause damage to existing ice ridges or to structures that have been placed close to the shoreline. To prevent damage to personal property, keep it out of the immediate shoreland area. An ice ridge cannot be altered if it is older than one year; historical ice ridges cannot be removed.

Alteration of ice ridges may be allowed but a permit is required for mechanical land alternation. Property owners may be allowed to do some hand repairs (with hand tools) without a permit as long as the shoreline vegetation is not disturbed and no material is placed in the lake.

Before doing any repair work on an ice ridge, first contact the Becker County Planning & Zoning or the Pelican River Watershed District, if your property is within their jurisdiction.

Natural shoreline vegetation and other preventive actions are the best protection from both wave erosion and ice heaves, and it's less expensive and longer lasting.

Be a Caring Boater

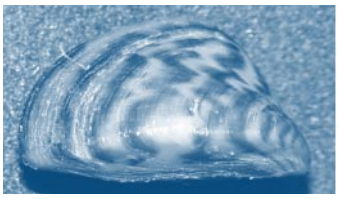
Stop the Spread of Aquatic Invasive Species (AIS)

Aquatic Invasive Species (AIS) are plants and animals released either accidentally or intentionally into areas where they are not native. Such introductions usually occur through human activities and often are spread through boating activity.

Common AIS in Minnesota lakes include:


Eurasian Watermilfoil

- Eurasian watermilfoil, now in over 200 lakes statewide. There are no infested lakes in Becker County yet; let's keep it that way.
- Curlyleaf pondweed is found in some lakes in Becker County.
- Zebra mussels.
- Flowering rush, which is prevalent in a number of lakes in Becker County.


Zebra Mussel

AIS cause problems by replacing native plants important for fish and wildlife and forming thick mats that make boating difficult. Zebra mussels attach to hard surfaces and interrupt the food chain eventually impacting fish populations. Flowering rush outcompetes native shoreland vegetation impeding access to the lake and interrupting shoreland ecological functions.

To stop the spread of AIS, caring boaters:

- Inspect boat, trailer, and boating equipment (anchors, centerboards, rollers, axles) before entering a lake or leaving a lake, and remove any plants and animals that are visible.
- Drain water from the motor, livewell, bilge, and transom wells while on land before leaving any waterbody.
- Dispose of unwanted bait in the trash. Never release live bait into a waterbody. When cleaning off fishing lines, collect plant fragments in a bucket and dispose of onshore.
- Wash then dry your boat, tackle, downriggers, trailer, and other boating equipment to kill harmful species that were not visible at the boat launch.
- Know what waters are infested; check lake accesses for DNR infested waters signs.

Jet skies can carry AIS, too, so clean out all water intakes and other parts before transporting jet skies.

Other Boating Care

- Do not dump wastewater from toilets, porta-potties, sinks, or showers into or near the lake. All waste must be held on board and disposed of properly onshore.
- Avoid boating in very shallow areas, where motors can churn up the bottom and increase the amount of damaging, nutrient-rich sediment in the water.
- Make sure boat engines do not leak oil, gas or other contaminants. Be extra careful when filling fuel tanks and be sure to clean up any spills.
- Keep unsightly litter out of the lake. Take it ashore and place in recyclable trash containers.
- Be safe. Stay 100 feet away from swimmers, paddle boats, and other small objects in the water. Remember who has the right away on the lake.

In Minnesota it is against the law to transport any aquatic plants and invasive species.

Lakes in Becker County infested with Flowering Rush: Buck, Detroit Lake, Curfman, Melissa, Mill, Muskrat, and Sallie plus the Pelican River from Detroit Lake to Muskrat Lake.

What Can I Do on Shoreland Property? What Permits Are Required?

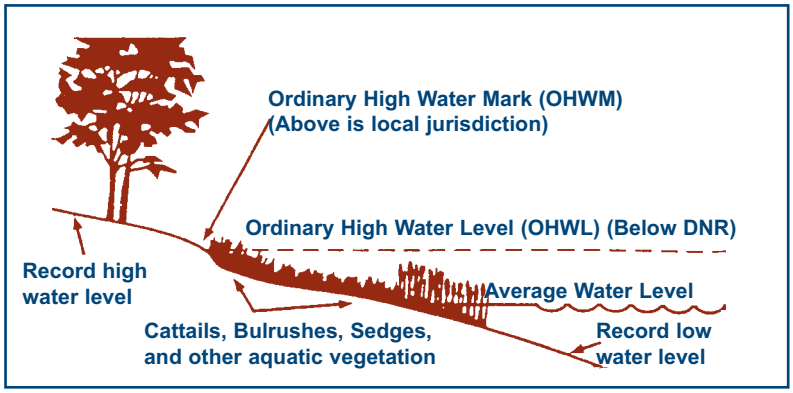
Knowing what you can and cannot do in the water and on the adjacent shoreland area, and following the regulations that apply, is an important stewardship practice.

Any activity that disturbs land, plant or animal life or applying chemicals in the water is a regulated activity to ensure that the quality of the environment is not compromised.

Who Has Regulatory Authority in the Shoreland Zone?

The shoreland zone is defined as the land within 1,000 feet of a lake and 300 feet of a river or stream plus the near shore waters.

- **For any actions in the water or on the land below the ordinary high water level (OHWL)** of a public water (lakes, rivers, streams, wetlands), check with the appropriate Minnesota Department of Natural Resources (DNR) office for permits that may be required.
- **For any actions on the land above the OHWL (the upland areas of your property) and within the shoreland zone,** contact the appropriate county, city or watershed office.



See flowchart on inside back cover for appropriate authority in various situations.

How do I know where the ordinary high water level (OHWL) is? For lakes and wetlands, the OHWL is the highest water level that has been maintained for a sufficient period of time to leave evidence on the landscape; it is not necessarily the highest place the water has been. It is commonly that point where the natural vegetation changes from predominately aquatic to predominantly terrestrial.

If there is a question about the OHWL on your property, contact the DNR Area Hydrologist or check with the Becker Soil and Water Conservation District (SWCD).

What Rules Apply To These Shoreland Activities?

Shoreland Structures and Repairs

Any land alteration in the shoreland area, including building retaining walls, installing rip-rap or beach blankets, and ice ridge repair requires a permit from Planning & Zoning, Pelican River WD, and Cormorant WD.

Dock Placement and Size

Docks are privately owned structures, which are allowed to be placed in the public waters of the state to provide access to the use of the water. The DNR establishes dock rules to prevent the deterioration of the lake's ecosystem from excessive or inappropriate dock placement that can harm aquatic plants or disturb fish spawning, feeding, and shelter from predators.

Local governments have the authority to regulate docks; Becker County currently defers to state rules.

The DNR is currently revising its dock rules, which will be completed in 2010. No DNR permit is needed to install, construct, or reconstruct a dock if: 1) the dock, not including the watercraft lift or canopy, is not wider than 8 feet and is not combined with other structures that create a larger structure; or 2) the dock is no longer than is necessary to reach navigable water depth, is not a safety hazard, it does not close off access for others to the lake, allows for free flow of water under it, and is not intended for use as a marina.

A general permit was issued in 2008 that allows for a modest platform at the lake end of the dock under the following circumstances: 1) a single temporary platform up to 120 square feet measured separately from the access dock, or; 2) 170 square feet including the area of the adjacent access dock. The access dock must be 5 feet or less in width and is located on a lake with a classification of General Development or Recreational Development. The general permit for platforms expires when the revised rules for docks are adopted. A DNR Waters permit will be needed if a dock exceeds these conditions. Check the DNR website for final dock rule revisions in 2010.

Control of Aquatic Plants

The removal or destruction of aquatic plants is a regulated activity by the Minnesota DNR. Aquatic plants are a valuable part of the lake system. They stabilize bottom sediments, protect water clarity, prevent shoreline erosion and provide fish habitat. Keep destruction of aquatic plants to a minimum.

If you see unusually high plant growth where it has not previously occurred, look for possible sources of phosphorus getting into the lake from your property that might be fueling this growth, such as excessive runoff, a malfunctioning septic system, or shoreland erosion.

If it is necessary to manage submersed aquatic vegetation for swimming or boat docking consider removing only that vegetation allowed without permit (see below). DNR regulations restrict submersed vegetation control with a permit to “up to 100 feet or one-half or the length of the person's shoreline, whichever is less.”

DNR Aquatic Plant Management rules require:

- No destruction of emergent aquatic plants (bulrushes, cattails,wild rice) is allowed unless authorized by a DNR permit.
- Limited mechanical control (cutting or pulling) of submerged vegetation not exceeding 2,500 square feet or wider than 50 feet along the shore or half the width of your property, whichever is smaller; more than that requires a permit.
- Cut or pulled vegetation must be removed from the water and the cleared area must remain in the same place from year to year.

A permit from DNR Fisheries is needed for:

- Use of any chemicals or automated mechanical devices (such as the Crary WeedRoller, Beachgroomer or Lake Sweeper).
- Use of copper sulfate for control of swimmers itch or filamentous algae.
- Removal of lily pads in an area larger than a channel 15 feet wide to open water.
- Removal or relocation of a bog
- Planting aquatic plants below the OHWL as part of a shoreline restoration project.

These activities are not allowed in any circumstances:

- Excavating the lake bottom for aquatic plant control using lake-bottom barriers.
- Removing vegetation within posted fish-spawning areas.
- Removing aquatic plants from an undeveloped shoreline.
- Removing aquatic plants where they do not interfere with swimming, boating or other recreation.

Becker County Permits:

General Permit Requirements

Structures: Permits are needed in Becker County for a structure, including a fence, deck or patio that is erected, altered, repaired or replaced. The only structures not requiring permits are licensed fish houses, play houses, dog kennels, swing sets, or agricultural buildings utilized solely for the agricultural use of an active farming operation. Structures not requiring permits must still meet all setbacks.

Maintenance of Structures: Permits are not needed for normal maintenance of a structure such as replacement of siding, windows, doors, soffit, facia, shingles, additional doors and windows, or new floorboards to decks if no other structural repairs or changes are made. If structural supports are repaired or altered, a permit is needed.

Impervious Lot Coverage: Properties zoned agricultural, residential, high density residential, or water-oriented commercial are permitted to have up to 25% impervious surface coverage. Commercial properties may have up to 30% impervious surface coverage. Permits are required from the Pelican River WD and Cormorant WD for impervious coverage greater than 25%.

Impervious surface includes, but is not limited to, structures, sidewalks, decks, concrete, asphalt, gravel, and patio pavers.

Recreational Vehicles: RVs/Campers require a permit if placed on a property and utilized more than than 7 days in a 30 day period. RVs are required to meet all setbacks.

LAKE SETBACKS

General Development
- 75 feet from OHW
- Shore Impact Zone = 37.5 ft

Recreational Development
- 100 ft from OHW
- Shore Impact Zone = 50 ft

Natural Environment
- 150 ft from OHW
- Shore Impact Zone = 75 ft

Bluff
- 30 ft from top of bluff

Protected Wetland & Waters
- 50 ft buffer

SETBACKS

Township & County Roads:
- 45 ft from Right of Way

State / US Hwy:
- 85 ft from ROW

Expressways or 4 Lanes:
- 110 ft from ROW

Rear Property:
- 40 ft

Side Property:
- 20 ft Ag
- 10 ft Res
- (Or 10% of lot width not to be less than 5 ft)

Well:
- 3 ft from structure

Septic Tank:
- 10 ft from structure

Drainfield:
- 20 ft from structure

Fact Sheets Available Online:
- Setback, Lot Coverage, and Fees
- Septic Permit Form
- Variance Application
- Non-conforming Lots & Mitigation Worksheet
- Ice Ridge Repairs
- Land Alteration Permit
- Project Review Guidelines

Detached Accessory Structures

Size: *In residential areas and in the shoreland district,* detached garages cannot exceed 1.5 stories and 22 ft in height.

Detached garages within 200 ft of the lake are allowed to be 480 sq ft in size or 5% of the lot area within 200 ft of the lake, with a maximum size of 1,200 sq ft.

Detached garages over 200 ft or across the road from the lake are allowed to be 15% of the buildable area of the lot, with a maximum of 2,400 sq ft in size.

Allowed Use: The detached garage may be equipped with either (1) kitchen facilities, (2) water supply / sanitary disposal facilities, or (3) sleeping facilities. However, the structure cannot contain all three amenities capable of providing independent, continuous human habitation.

Building in the Shoreland Zone

Standard Size Lots:
- **General Development Lakes:** 75 feet shoreline and 20,000 sq ft/area
- **Recreational Development Lakes:** 150 ft shoreline and 40,000 sq ft/area

Natural Environment Lakes:
- If NE lake is less than 50 acres—600 ft shoreline and 240,000 sq ft area.
- If lake is 50-100 acres—500 ft shoreline and 200,000 sq ft area.
- If lake is 100-250 acres—400 ft shoreline and 160,000 sq ft area.
- If lake is 250 acres or greater—250 ft shoreline and 100,000 sq ft area.

If you live within a watershed district, contact the watershed district for applicable permits. For all permits, follow the permit flow chart on the next page.
Standard Size Lots

Substandard Size Lots: Any lot not meeting at least the standard size criteria. Substandard lots are still buildable if setbacks can be met.

Restrictions on Substandard Lots:

Lot coverage: Substandard lots are permitted 25% impervious surface coverage. However, any time a substandard lot exceeds 15% coverage, mitigation in the form of stormwater management (ex: infiltration basins, berms) is required.

Lot Setback: Property owners may be permitted to build closer than the standard setback if behind “stringline” and out of the shore impact zone. On substandard lots, the difference between the closer setback and the lake must be mitigated in the form of a vegetative buffer (restoring part of the shoreline to a natural state).

Water Oriented Structures: ONE water oriented structure may be permitted if a property owner has at least 75 ft of frontage on a General Development Lake or 100 ft of frontage on a Recreational or Natural Environment Lake. Restrictions on size and location apply.

Guest Cottages: May be permitted on General Development Lake properties exceeding 180 ft shoreline and 40,000 sq ft area or Recreational Development Lake properties exceeding 225 ft shoreline and 80,000 sq ft area. Restrictions on size and location apply. Guest Cottages are not permitted on Natural Environment lakes or non-lakeshore property.

Clearing Lakeshore Properties: LIMITED clearing is allowed in the shore impact zone (1/2 of the standard structural setback). Dead, dying or diseased vegetation may be removed. Trees UNDER 2” in diameter and 4 ft in height may also be removed. Clear cutting is NOT allowed. When in question, always secure a land alteration permit first.

Becker County Landowner's Permit Checklist

Contact Becker County Planning & Zoning Office for permits, including:

- Rip-rap, beach blankets, ice ridge repair.
- Building a new structure, remodeling or adding on to an existing structure, and structural repairs.
- Detached accessory structures, fences, decks, patios.
- Driveways, basement excavation, and/or any land clearing.
- Septic system installation, including outhouses.
- RVs and campers.
- Building on substandard lots.

Before beginning to plan or start a project on a shoreland lot, call Planning & Zoning. Staff will answer questions and/or visit your site.

Contact Becker Soil & Water Conservation District for:

- Any work in wetland areas. (Draining, filling, or excavating)
- Technical assistance for erosion control practices.
- Cost share programs for shoreland restoration projects.
- Sealing abandoned wells.

Contact Pelican River Watershed District for:

- Any work in the shore impact zone (generally within 35-50 feet of the water's edge).
- Impervious surface coverage greater than 25%.
- Alteration of ice ridges.

Contact Cormorant Lakes Watershed District for:

- Any work done in the shore impact zone.

Contact the Minnesota Department of Natural Resources before:

- Removing emergent vegetation (cattails, bulrushes, wild rice) in lakes.
- Using chemicals to control aquatic vegetation.
- Altering a lake bed.
- Any work below the ordinary high water level.

If you are in doubt or need clarification about any activity, please call the appropriate office.

Do I need a permit? Check the chart!

Is the parcel of land in the Becker County Jurisdiction?
- NO → See the City of Detroit Lakes, Frazee, Lake Park or Audubon.
- YES ↓

Is the parcel of land located within a Watershed District?
- YES → See Pelican River WD Buffalo-Red WD, Cormorant Lakes WD, or Wild Rice WD.
- NO ↓

Is the parcel of land zoned for the intended use?
- NO → Zone change, conditional use permit or new location required.
- YES ↓

Is the structure new?
- NO → No Permit Required
- YES ↓

Is the purpose of the structure commercial, industrial or a sign?
- YES → Visit with Becker County Planning & Zoning about requirements.
- NO ↓

Is the structure residential in nature or an accessory to residential use (garage or storage shed)
- YES ↓

Site permit required from Becker County.

This chart is only intended as a guide and does not necessarily reflect the complexity of County Zoning Regulations.




Frequently Called Numbers & Contact Information in Becker County

Becker County Courthouse
915 Lake Avenue
Detroit Lakes, MN 56501

Becker County Website: www.co.becker.mn.us
Government officials and links to county departments.

Planning & Zoning Office
915 Lake Avenue (in Courthouse)
Detroit Lakes, MN 56501
218-846-7314
Hours: Mon-Fri 8:00 a.m. - 4:30 p.m.

HHW Facility 218-847-9664
Transfer Station 218-847-6382
24413 County Rd. 144
Detroit Lakes, MN 56501
(HHW facility is driveway to east of Transfer Station)

Soil & Water Conservation Office (SWCD)
809 8th Street SE
Detroit Lakes, MN 56501
218-846-7360
Hours: Mon-Fri, 7:30 a.m. - 5:00 p.m.

Highway Department
200 East State Street
Detroit Lakes, MN 56501
218-847-4463
Permit applications and construction information available online. Materials sold include: mailbox posts, 911 house address signs, specific service signs, county maps, roadsigns & posts. Service programs include: Adopt-A-Highway, Dust Control, and No Spray Areas.

Other Frequently Called Becker County Phone Numbers

- **Administrator:** 218-846-7201
- **Assessor:** 218-846-7300
- **Auditor-Treasurer:** 218-846-7311
- **Court Administration:** 218-846-7305
- **Human Resources:** 218-846-7309
- **Human Services:** 218-847-5628
- **Motor Vehicle:** 218-846-7308
- **Recorder:** 218-846-7304
- **Sheriff's Office:** 218-847-2661
- **Veterans Service:** 218-846-7312

Buffalo-Red River Watershed District
123 Front St
PO Box 341
Barnesville, MN 56514
218-354-7710
Admnistrator: Bruce Albright
Website: www.brrwd.org/

Cormorant Lakes Watershed District
10929 Cty Hwy 5
Pelican Rapids, MN 56572
218-532-2723
Administrator: Duane Hennikson
Website: http://www.cormorantlakeswatershed.org/

Pelican River Watershed District
211 Holmes St W Ste 201, PO Box 1043,
Detroit Lakes, MN 56502
218-846-0436
Administrator: Tera Guetter
Website: www.prwd.org

Wild Rice Watershed District
11 E 5th Ave
Ada, MN 56510
218-784-5501
Website: www.wildricewatershed.org

Other Contacts:

University of Minnesota, Becker County
712 Minnesota Ave, PO 1617
Detroit Lakes, MN 56502
218-846-7328
Email: mnext-becker@umn.edu

University of MN, Shoreland Program
Karen Terry, Shoreland Educator
218-998-3927
Email: kterry@umn.edu
Extension Shoreland Education website:
www.extension.umn.edu/shoreland

Minnesota State Offices

DNR Waters/Area Hydrologist
Bob Merritt
14583 County Hwy 19
Detroit Lakes, MN 56501
218-846-8384
Email: Robert.Merritt@state.mn.us

DNR Aquatic Invasive Species Specialist
Darrin Hoverson
218-699-7293
Email: darrin.hoverson@dnr.state.mn.us

DNR Area Fisheries
14583 County Hwy 19
Detroit Lakes, MN 56501
218-846-8340
Email: DetroitLakes.Fisheries@dnr.state.mn.us

DNR Aquatic Plant Management Permits
Regional Fisheries Manager
2115 Birchmont Beach Road NE
Bemidji, MN 56601
218-755-3959

Becker County Coalition of Lake Associations (COLA)
PO Box 1553
Detroit Lakes, MN 56502
Website: www.beckercola.org
Contact: Fred Tuominen, 218-847-4780

The COLA's mission is to encourage, assist, and nourish strong lake associations; currently serving 30 lake associations in Becker County and 3,000 lakeshore property owners. COLA support includes:

- Lake monitoring programs & assistance
- Education, meetings, newsletters, web site
- Environmental concerns, protecting water quality
- Active involvement in local government