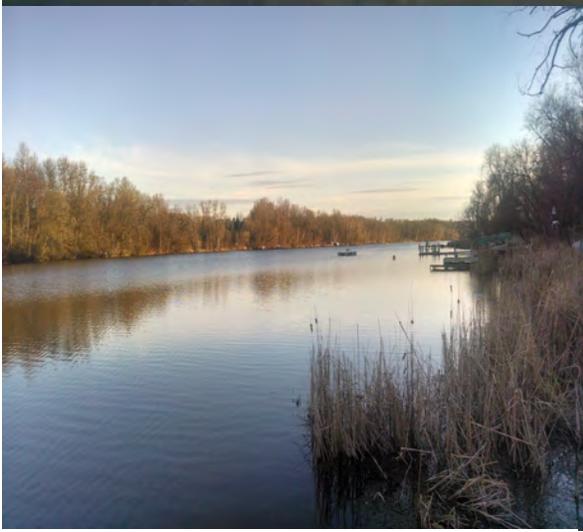


STEARNS COUNTY

Shoreland Homeowner's Guide to Lake Stewardship 2017



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Cover photos: Pirz Lake
Jean Grimm

Shoreland Homeowners Guide to Lake Stewardship

Congratulations on owning shoreland property in Stearns County. Whether you are a full time or seasonal resident, living by the water provides a special opportunity to participate in water-related recreation, such as boating, swimming, or fishing; to observe wildlife in its natural habitat; or simply enjoy the beauty of watching a sunset over the lake and experience the serenity and sense of well-being experienced around water and nature.

When you own shoreland you do have certain riparian (near the water) rights and privileges, such as the right to put a dock out to a navigable depth; to take water for domestic and agricultural purposes; and to fish, boat, hunt and swim. But these rights must be exercised in compliance with the rules and regulations of Stearns County and the State of Minnesota. For example, there are limits on the size of docks; regulations about construction and disturbing land in the shoreland zone (1,000 feet at any lake or 300 feet from a river or the flood plain extent); removal of aquatic plants; placement of wells and maintenance of septic systems. 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 to come, 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 Guide will provide you with basic information on good lake stewardship, which if practiced by you and collectively by others around the lake, will keep the lake healthy to protect your investment in shoreland property (healthy waters=higher property values) and your enjoyment of the lake while also preserving its ecological integrity.

What We Do On the Land Matters

Water quality is primarily dependent on what happens on the land around the lake or along the river. It's the runoff from the land, and the pollution that is carried with it, that can determine the quality of the water. While the land activity in the watershed—the land area that drains to a lake or stream—contributes pollution to the lake, the shoreland zone where you live 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 of the quality of the lake. Managing water quality means managing the land use around the lake to reduce the amount of pollution that enters the lake.

In this Guide, we'll look at two primary ways you, the shoreland homeowner, can manage your property to protect water quality. They are:

- 1. Curbing pollution at the source; and**
- 2. Reducing, capturing, and cleansing runoff.**

Proper lawn care, pet waste disposal, and use of household products: shoreline erosion control and septic system maintenance can help curb pollution. Runoff that can pick up pollution and carry it to the lake can be reduced by minimizing hard surfaces on your property, and limiting clearing and grading, and it can be captured and cleansed so it doesn't reach the lake with shoreland vegetative buffers and by redirecting it in rain barrels and rain gardens. Let's learn more.

*"C*onservation is a state of harmony between men and land...

A land ethic reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land. Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity...

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

Aldo Leopold, A Sand County Almanac, 1949

*"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*

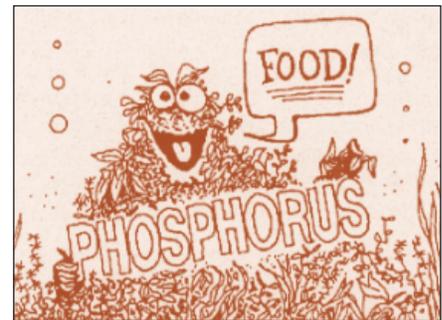
Curb Pollution: Reduce Phosphorus and Other Pollutants

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

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, toxic 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 in the water, generally causing declining water quality.

Natural rainfall contains high amounts of phosphorus, which we can't control, but we can control our own shoreland practices that contribute phosphorus 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 and Use Zero-Phosphorus Lawn Fertilizer—It's the Law in Minnesota

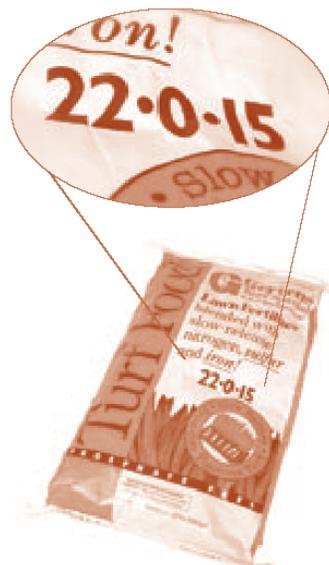
By law since 2005, Minnesota homeowners cannot use fertilizers containing phosphorus, except for exemptions for new lawns or when a soil test indicates a need for phosphorus. In Stearns County, soils are naturally high in phosphorus so lawns generally don't need extra phosphorus.

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 cautions 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 insure absorption by the roots before a heavy rainfall.
- Sweep fertilizer that has spilled on hard surfaces back onto the lawn to prevent runoff.



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

- Keep lawn healthy to avoid the need for herbicide applications. When necessary, use the least toxic and most degradable pesticide and follow directions carefully. Never use near the lake.
- Remove dandelions and other unwanted plants from your lawn using hand-tools instead of chemical applications. If you feel you must use a pesticide 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.

Keep Grass Clippings, Leaves, and Washed Up Aquatic Plant Material Out of the Lake

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 shoreland and dispose 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 be washed into the lake.

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

Properly Dispose of 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 properly dispose.

Use Phosphorus-free Household Products

Read labels carefully and select bio-degradable, non-phosphorus dishwashing detergents, and reduce the use of commercial cleaners. Learn about and use natural, non-toxic household alternatives.

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 to a depth of 15 feet.
- Keep your motor well-tuned; use four-cycle motors.
- Inspect your boat and trailer to avoid transporting aquatic invasive species, like Eurasian watermilfoil, Curlyleaf pondweed, or zebra mussels into the lake if you've had your boat in another waterbody. See page 16 and 17 for more information.

Caution:

Broadleaf herbicides will also affect all non-grass species, including trees and shrubs. Use carefully, or not at all, on shoreland areas.

Curb Pollution: Inspect and Maintain Your Septic System

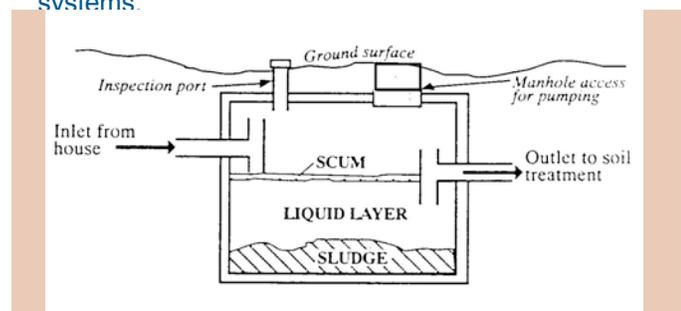
Most homes in shoreland areas rely on Subsurface Sewage Treatment Systems (SSTS), commonly known as the septic system. Your septic system, if designed, installed, and maintained properly, will effectively treat wastewater before it is returned to the environment to protect public health and prevent pollution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

Understand How Your Septic System Works

Understanding your system is essential to proper operation and maintenance. The basic components of most systems are 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 tank size is based on the number of bedrooms in the home, 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.

⇒ **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:

- 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 enter the groundwater and eventually the lake, 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,
- High levels of nitrates or coliform bacteria in well water tests.

If you have a problem:

- Contact the Stearns Environmental Services 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 Septic 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. 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, or contact Stearns Environmental Services Department.

✓ Practice Water Conservation

Too much water flowing into the tank will 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 pesticides 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.

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? Disconnect 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.
- In the fall, leave the grass longer over the tank and drainfield for better insulation.
- Add a layer of hay or straw mulch (8-12 inches) over the pipes, tank, and soil treatment area.
- Keep ATVs and snowmobiles off the drainfield.
- Spread hot water use (laundry, showers, dishwasher) out over the day and week. If you'll be gone for extended periods, consider having someone stop by to run hot water regularly.
- High efficiency furnaces, water softeners, and iron filters have the potential to cause problems in the winter because of slow and/or periodic discharges of water. For suggested precautions, see septic system resources on back cover.
- Talk with a professional before installing heat tapes or tank heaters.

Stearns County Requirements

Who regulates? The design, inspection, and installation of septic systems are regulated by Stearns County and must be done by professionals licensed by the state. Lists of licensed professionals and permits for septic system installation can be obtained on the MPCA website.

What records are required? All septic systems must have a Certificate of Compliance indicating they meet the Stearns County SSTS Ordinance, sometimes referred to as being "up-to-code." A Certificate is good for five years from the date of original installation.

When are inspections required? If you are applying for a building permit for new construction or the addition of a bedroom, a compliant septic system is required. A building permit for any addition to current buildings in shoreland, including a deck or garage—attached or non-attached, requires a current Certificate of Compliance for the septic system. If one is not currently on record or it is not current, an inspection of the septic system will be required. If the system is found to be noncompliant, modification or replacement of the system may be necessary.

What about property transfers? A Certificate of Compliance is required as part of a transfer for any property with a septic system. If the system is not compliant, timeframes established by ordinance will guide the property owner(s) as to when to gain compliance by.

Call the Stearns County ESD for questions about septic system requirements, including setbacks from property lines, wells, lakes, rivers, and streams.

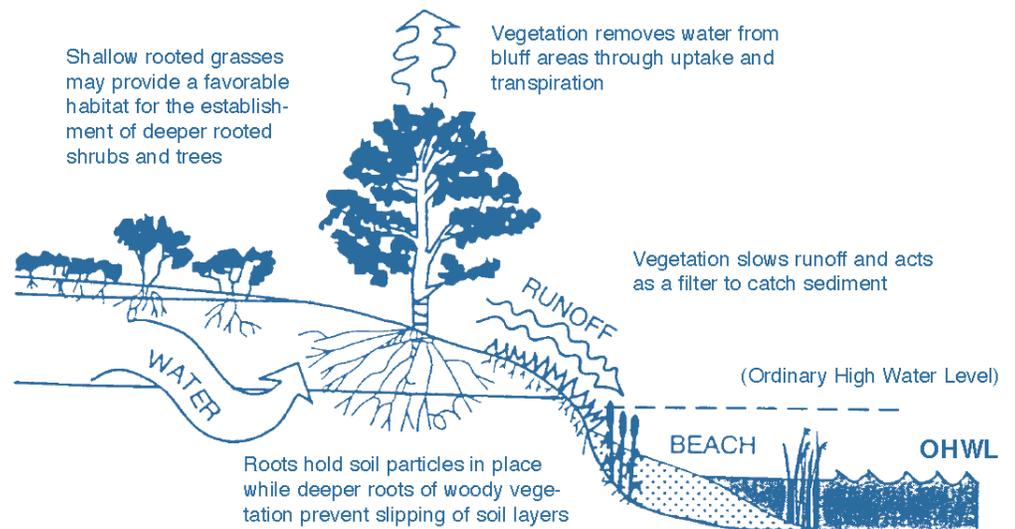
Managing stormwater on your property is the best way to reduce runoff and pollutants before they reach the lake.

Reduce Runoff

What is runoff?

Snow melt or rainwater that does not soak into the ground and instead runs off hard surfaces such as roofs, driveways, sidewalks, and compacted soils or washes off lawns and steep slopes is called runoff. It is also referred to as stormwater. When runoff reaches the lake, it can carry with it nutrients, eroded soil sediments, toxic materials, bacteria and other pollutants that can all be detrimental to water quality and fish and wildlife habitat. **Reducing runoff decreases the pollutants that can eventually reach the lake.**

Managing stormwater on your property so it soaks into the ground (infiltrates) rather than running off is the best way to reduce runoff and filter out pollutants before they reach the lake. Hard or paved-over surfaces do not allow the absorption of water. Any green space, including gardens, trees, shrubs or landscaping allows water to permeate slowly down into the soil and roots.



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

Practice Good Lawn Management

Reduce the Amount of Lawn

Bringing the suburban lawn mentality to the lake has also brought more opportunities to degrade the quality of our lakes. Limit the amount of lawn and keep as much natural vegetation as possible, or replant natural vegetation—especially near the lake. Not only will you reduce runoff, you'll reduce the amount of yard work, freeing you up to recreate instead.

Maintain a Healthy Lawn to Absorb More Water

- Mow to a height of two or 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 into a state of dormancy 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.

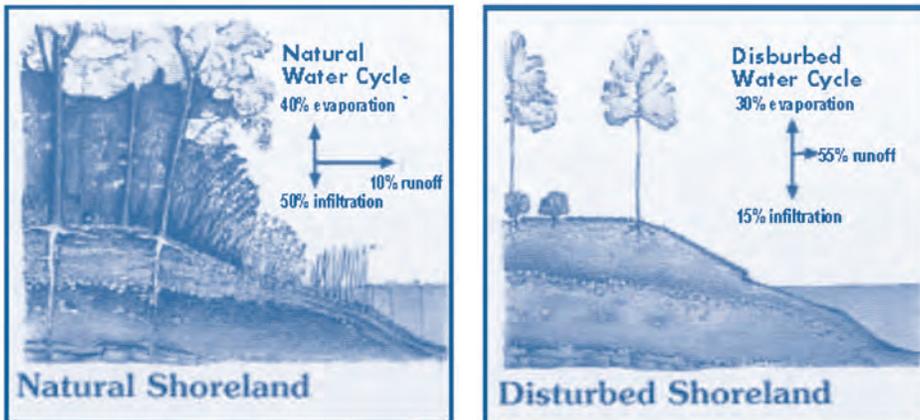
If we love our lakes we have to change our ideas about what is a good lawn at the lake.

That beautiful manicured lawn takes more chemicals and more work to maintain and does not provide good habitat for the wildlife that share the shoreland with you.

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. In addition, those shrubs are most likely the next generation of tree growth.
- 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 shorelines to direct runoff away from the lake.



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 significantly impact the amount of runoff and infiltration. Natural vegetation will hold back the runoff providing time for it to soak into the ground.

Reduce Hard Surfaces, Like Roofs and Driveways

Since hard surfaces cannot absorb water, reducing the amount of hard surfaces on your lot will reduce the volume of runoff.

- When considering additions, decide if the extra space is really necessary. Could you build up instead of out to reduce the roof size?
- Minimize the amount of paved surfaces, such as driveways and sidewalks. Locate driveways, sidewalks, stairways, and footpaths away from steep slopes.
- If you're installing a new patio or rebuilding a sidewalk or walkway, use bricks, interlocking pavers or flat stones set in sand instead of concrete. Consider using pervious pavers, where water runs through it, and pervious asphalt for driveways.
- Cover well worn paths, that may be compacted and act like asphalt, with mulch to absorb water; when compacted, they act like asphalt.

Stearns County limits the amount of hard (impervious) surfaces on shoreland parcels; contact Environmental Services for more information.

The Wisconsin DNR calculated runoff volume from an undeveloped shoreland lot compared to a large lake home (approximately 4,000 square feet of impervious surfaces) on a lot entirely converted to lawn. They found up to a:

- 500% increase in runoff volume,
- a 700% increase in phosphorus washing into the lake, and
- a 900% increase in sediment flowing to the lake on the large home lot.²

Reduce Runoff: Curb Erosion

Any exposed soil can be washed away with stormwater. When soil washes into the lake, it carries with it phosphorus—the desired nutrient for weed and algae growth—and debris and other toxic materials that may be on the land. It causes sediment 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 a result. Curbing the erosion of soil will reduce pollutants to the lake.

Monitor Construction or Renovation Projects

Have an erosion control plan and carefully monitor all construction or renovation projects to ensure that soil and construction materials do not runoff the exposed soils.

- Properly dispose of all construction materials each day.
- Use nontoxic, biodegradable or recycled materials.
- Wash or clean any liquid materials in-doors or directly into a container.
- Install silt fences along the shoreland to capture any sediment runoff that might occur.
- After construction, establish vegetation right away.
- Minimize land alteration around your construction projects to take advantage of existing soil stability.

Stabilize the Soil in Steep 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 the slope 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.



Source: *Lakescaping for Wildlife and Water Quality*³