Protecting Your Waterfront Investment

10 Simple Shoreland Stewardship Practices

HEALTHY WATERSHEDS MAKE HEALTHY LAKES and higher property values

The quality of our lakes and streams is ultimately a reflection of how we take care of our land.

A watershed is the land area that drains to a lake or stream. Waterfront property owners, inland residents, recreational users, agricultural producers and other businesses all can play a positive role in maintaining and improving the water quality of our lakes and streams.

How will shoreland stewardship practices affect your pocketbook?

A recent study of over 1,000 waterfront properties in Minnesota found that when all other factors were equal, properties on lakes with clearer water commanded significantly higher property prices.[1] Similarly, higher property values were found on lakes without Eurasian Water-Milfoil.[2] What you and your neighbors do to sustain or improve water quality will improve resale potential. On the other hand, if water quality is degraded, lower property values could result.

This publication was developed for people who live on developed waterfront lots. It describes three types of opportunities to protect your property investment:

Curb Pollutants

Curb pollutants at their source – fertilizers, household toxins, eroding soils, malfunctioning septic systems.

Cut Runoff

Cut the amount of runoff that picks up pollutants and carries them to the waterway by minimizing the hard surfaces that create runoff.

Capture & Cleanse

Capture and cleanse pollutant-carrying runoff before it reaches the waterway – with shoreland buffers, rain barrels or rain gardens.

Simple Step 1

Choose zero-phosphorus fertilizer

If you must fertilize, avoid fertilizers that contain phosphorus. Remember, it's phosphorus that accelerates algae growth in our lakes and rivers. Most lawns and gardens already contain adequate – and often excessive – amounts of phosphorus. Based on a study of 236 lawns sampled in Dane County, the average available soil phosphorus concentration was approximately four times higher than the amount needed to maintain a healthy lawn.[3] Consider this – one pound of phosphorus in runoff can result in 500 pounds of algae growth![4]

Phosphorus is an essential nutrient for plants. However, when too much phosphorus makes its way into our lakes and streams it promotes the rapid growth of weeds and algae and decreases water clarity, often turning lakes green. Decaying algae also depletes oxygen in the water, so that fish can no longer thrive. Human activities contribute a great deal to the amount of phosphorus that enters a lake or stream.

WHEN YOU'RE FERTILIZING THE LAWN, REMEMBER, YOU'RE NOT JUST FERTILIZING THE LAWN.

Photo courtesy of Washington State Department of Ecology, King County, and the cities of Bellevue, Seattle, and Tacoma

If you follow the instructions on a bag of fertilizer containing phosphorus, you may be adding over 50 pounds of phosphorus to a half-acre lot each year.[5]

Beginning April 1, 2010, fertilizer that is labeled as containing phosphorus or available phosphate cannot be applied to lawns or turf in Wisconsin unless the fertilizer application qualifies under certain exemptions.[6]

Check local ordinances.

Simple Step 2

Properly dispose of household hazardous wastes

Do not pour old oil or pesticides into the ditch or wash paint brushes at the end of your driveway. Where do these pollutants end up? In our groundwater, lakes and streams![7] Gasoline, oil, solvents, old paints, thinners, fertilizers, pesticides, cleaners and many other products need to be disposed of properly. Some counties offer Clean-Sweep programs where you can take these products for safe disposal. To find out about local options, contact your county Land and Water Conservation Department. You can find their contact information at **www.wlwca.org** or in the phonebook.

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

EVEN BETTER, MINIMIZE YOUR USE OF TOXIC PRODUCTS.

See your county UW-Extension family living educator for alternatives to toxic household products.

Sediment fences serve as a last resort for preventing construction site erosion, but the best policy is to leave the natural shoreline intact.

Simple Step 3

Minimize erosion during construction

During construction is **the** time that soil with its algae-feeding nutrients washes into a nearby lake or stream unless the builder uses erosion controls. When you're planning a construction project, follow these steps to protect the lake:

- ***DEVELOP AN EROSION CONTROL PLAN.*** These publications will help you: *Erosion Control for Home Builders* **clean-water.uwex.edu/pubs/pdf/storm.erosio.pdf**

  civicplus.com/DocumentView.aspx?DID=119 They describe how to preserve existing vegetation, build an access drive, install a sediment fence, protect soil piles, clean up sediment and replant the area.

- ***FENCE THE CONSTRUCTION AREA TO LIMIT CONSTRUCTION ACTIVITY TO THE NECESSARY AREA OF THE SITE.*** This approach reduces erosion and soil compaction. In fact, this approach can reduce the amount of sediment and phosphorus delivered to a lake by 18-fold.[8]

- ***DIVERT RUNOFF AROUND DISTURBED AREAS TO MINIMIZE EROSION.***

- ***AFTER CONSTRUCTION, ESTABLISH VEGETATION RIGHT AWAY.*** The less time bare soil is exposed, the less erosion you will create.

Simple Step 4

Inspect and maintain your septic system regularly

- ***PUMP OR INSPECT YOUR SEPTIC SYSTEM ONCE EVERY THREE YEARS.***[9] Just like owning a car, there is maintenance, inspection and service required for septic systems in order to prevent premature failure. Inspection and pumping costs ($50-100) are minor compared to the cost for installing a new system ($3,000-$8,500).[10] Hire a licensed pumper, plumber or plumbing inspector.

- ***DIVERT SURFACE WATER AWAY FROM THE DRAIN FIELD.***

- ***AVOID DRIVING OR PARKING ON THE DRAIN FIELD TO PREVENT COMPACTION OF THE SOIL.***

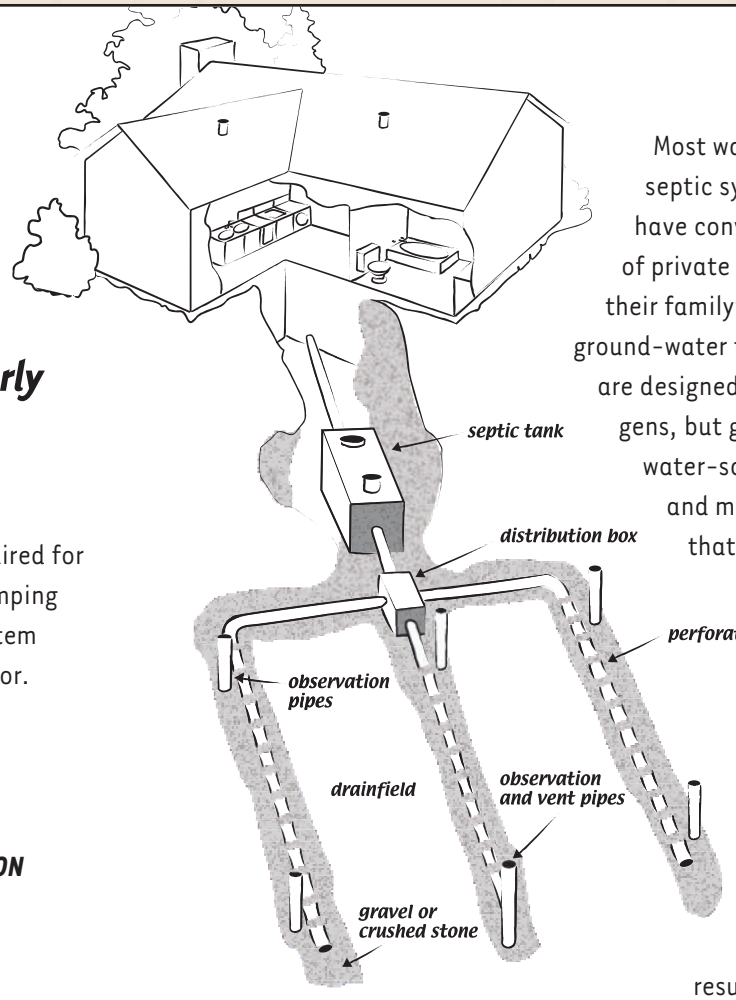
- ***KEEP THE ROOTS OF TREES AND SHRUBS AWAY FROM THE DRAIN FIELD PIPES TO AVOID OBSTRUCTED DRAIN LINES.***

- ***WHEN A REPLACEMENT SYSTEM IS NEEDED, CONSIDER AEROBIC DIGESTERS, RECIRCULATING SAND FILTERS*** and other effluent filtration systems that may do a better job of treating wastes and may be designed to remove nutrients and other contaminants.

- ***AVOID PUTTING ANY OF THE FOLLOWING MATERIALS DOWN THE DRAIN OR TOILET BECAUSE THEY MAY CLOG THE DRAIN FIELD:*** Cooking grease, oils, coffee grounds, cigarettes, facial tissues, paper towels, sanitary napkins, tampons or disposable diapers.[11]

- ***AVOID USING A GARBAGE DISPOSAL.*** Compost your vegetable scraps instead.

- ***CONSERVE WATER.*** Use low-flow toilets, faucets and showerheads to reduce the volume of water the system must filter and absorb.



Most waterfront homeowners in Wisconsin utilize a septic system, although some densely developed lakes have converted to public sanitary sewer systems. Owners of private septic systems have a responsibility to protect their family's health, as well as to protect the surface and ground-water from contamination. Properly functioning systems are designed to remove most disease-causing human pathogens, but generally are NOT designed to remove or treat water-soluble nutrients or pollutants.[12] The more water and material that goes into your septic system, the more that comes out into your drain field. Recent research at the University of Wisconsin-Stevens Point on septic systems located in sandy soils has found both phosphorus and nitrates migrated underground over 150 feet from drain fields. If these nutrients seep underground into the lake, aquatic plant growth and algae blooms are likely results.

Malfunctioning systems are especially harmful. Effluent from failed systems can result in direct contamination of well or surface water and could cause serious human health risks. Reasons for septic system failure may include advanced age, overloading, poor site placement and/or poor maintenance.

EVIDENCE OF A MALFUNCTIONING SEPTIC SYSTEM:

- Sewage backing up in the basement or drains.
- Ponded water or wet areas over the drain field.
- Bright green grass over the drain field.
- A dense stand of aquatic plants along only your shoreland.
- Sewage odors.
- Bacteria or nitrate in nearby well water.
- Biodegradable dye flushed through your system is detectable in the lake.

Cut Runoff

Runoff is excess water that comes from hard surfaces like roof tops, driveways, parking areas, sidewalks, decks and compacted soils. Runoff water washes fertilizer, eroded soil, car fluids and other pollutants into our lakes and streams. To reduce runoff, let water soak into the ground.

Simple Step 5

Reduce the hard surfaces like rooftops and driveways on your property

When considering additions, decide whether the extra space is really needed. Perhaps you could build up instead of out. Also consider runoff from decks, sidewalks and parking areas. Gravel areas quickly become compacted and are nearly as impervious as paved surfaces. Pervious pavers are an option for areas that do not have heavy traffic.

WHICH LOTS WILL CREATE MORE RUNOFF?

Simple Step 6

Plant trees and shrubs or protect your wooded areas

Wooded areas develop a thick understory of small shrubs and plants and a duff layer. This duff protects soil from rain impact and absorbs water. Root systems keep the duff in place, not in the lake. Lawns absorb little rainfall. A recent Wisconsin study found that lawns created much more runoff than wooded areas. As a consequence, the runoff from lawns carried eight times more phosphorus to the lake than the runoff from similar sized wooded areas.[13]

LAWNS CREATE MORE RUNOFF BECAUSE:

- Grading a lot removes the natural divots where water naturally ponds and has time to soak in.
- Heavy equipment, vehicles, lawn mowers and foot traffic compact the soils during and after construction.
- Removal of trees and shrubs causes more rain to hit the ground and run off rather than landing on leaves and branches.

Allowing water to soak in rather than run off your property filters out pollutants and replenishes our groundwater.

Simple Step 7

Direct downspouts onto your lawn or landscaping, not onto hard surfaces

Simple Step 8

Install a rain barrel

Collect water from your rooftop to water your yard during dry periods. The barrel should be covered to keep out silt, leaves and insects.

Simple Step 9

Build a rain garden

Rain Gardens: A How-To Manual for Homeowners provides easy-to-follow instructions to create a rain garden providing guidance on the following questions:

- ***Where is a good spot in my yard for a rain garden?***
- ***How big should it be?***
- ***What plants would work well?***
- ***What do I need to do after it's planted?***

This publication is available through county UW-Extension offices, and at: **learningstore.uwex.edu/assets/pdfs/GWQ037.pdf**

Rain Gardens
a beautiful solution to water pollution

HOW DOES A RAIN GARDEN WORK?

Rain gardens are just what they sound like – areas that soak up rain water during wet times and serve as a beautiful garden all the time. They are landscaped areas planted to wildflowers and other native vegetation to replace areas of lawn. The gardens fill with a few inches of water and allow the water to slowly filter into the ground.[14] The plants in the rain garden act as filters for the rain water, helping to slow the runoff and allowing it to soak into the ground rather than flowing out into storm sewers, ditches, or drainage ways on the way to lakes and streams. Keeping rain on your property, where it naturally belongs, will help solve some of our water pollution problems.

In addition to the benefits they provide to our water supply, rain gardens also provide wildlife habitat for birds, butterflies and dragonflies and are an aesthetically pleasing addition to any property.

Simple Step 9

Protect or restore your shoreland buffer

- ***If you have native vegetation along your shoreline***, consider yourself and the local wildlife fortunate. A mature native buffer represents many years of nature at work and discourages undesirable, exotic plants and animals while attracting songbirds, butterflies, turtles and frogs.

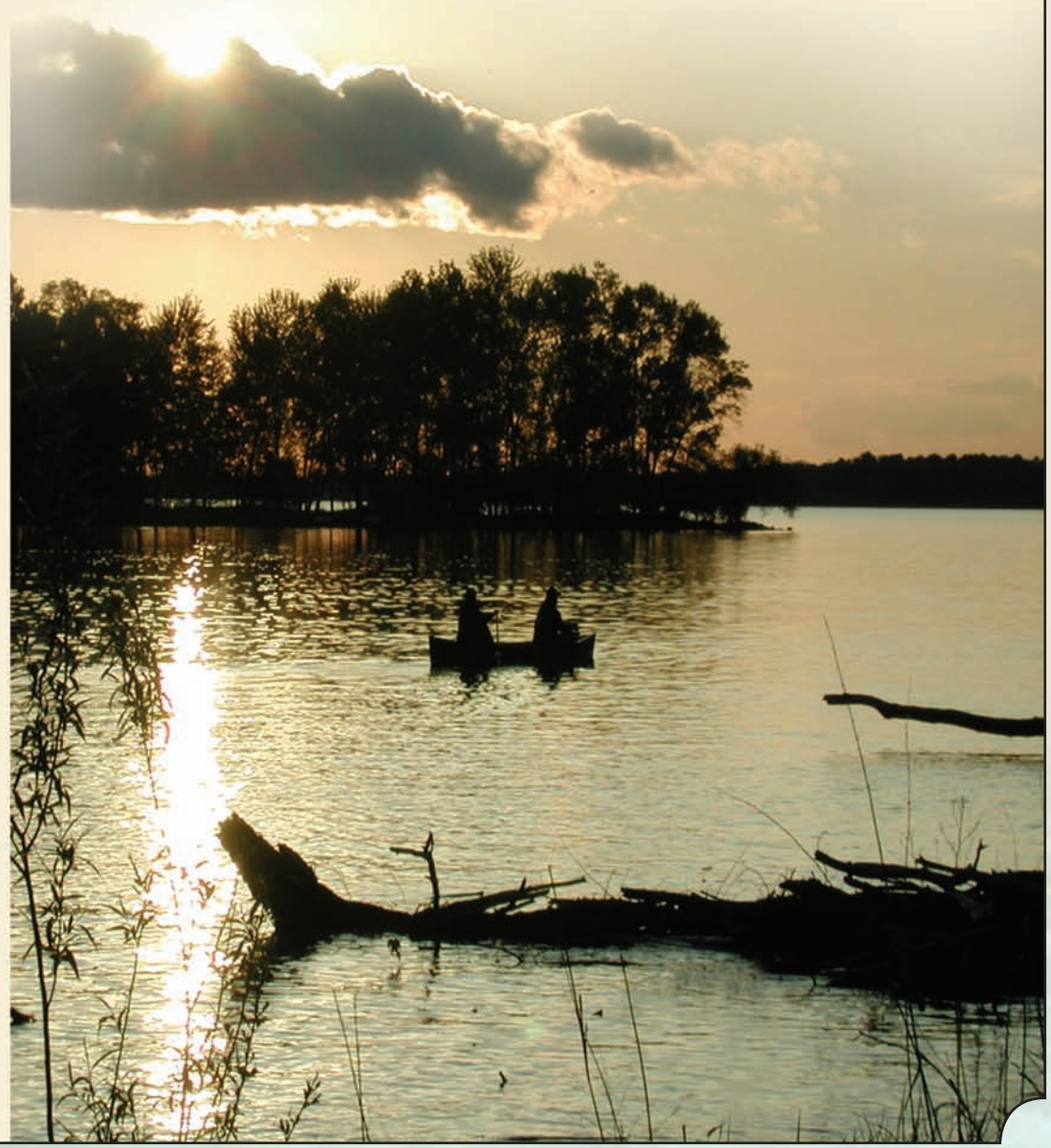
- ***If you have lawn to the water's edge***, a simple, no-cost way to get started in restoring your shoreland is to stop mowing next to the water. Seeds in the soil will germinate and valuable native plants will begin to reappear.

- ***If you have lawn to the water's edge and would like to play a more active role in restoring your shoreland***, you can replant native trees, shrubs, grasses and wildflowers to attract songbirds and butterflies. The main area where water runs off your property is the best location to start planting to improve water quality. You can create a natural, appealing waterfront landscape while eliminating expensive and time-consuming lawn care. The publication ***Protecting and Restoring Shorelands*** (**learningstore.uwex.edu/Assets/pdfs/GWQ038.pdf**) will help you think about what benefits you want from your buffer and the size needed to achieve these. For help designing and planting a natural shoreland, contact your County Land and Water Conservation Department listed at **www.wlwca.org** or a local nursery that specializes in native landscapes. Some counties have cost-share programs to help restore your shoreland.

Natural shorelands contain a lush mixture of native grasses, flowers, shrubs and trees that help to filter polluted runoff and provide important habitat for animals in the water and on the land. The trees, shrubs and plants not only help shelter and create privacy for both the homeowner and the lake user, but may also act as a noise buffer. Larger areas of natural shoreline provide more benefits. However, any amount of natural shoreline is better than none.

Flourishing shorelands provide some of the most effective protection for the lakes and streams of Wisconsin.

When trees and branches fall in the water, they form critical habitat for tiny aquatic organisms that feed bluegills, turtles, crayfish and other critters. Additionally, a fallen tree is like a dock for ducks and turtles, as well as serving as a perch for kingfishers, osprey and songbirds.



Endnotes

1. Krysel, Charles et al. June 2003. Lakeshore property values and water quality: Evidence from property sales in the Mississippi headwaters region. www.friendscvsf.org/bsu_study.pdf

2. Horsch, Eric J. et al. 2009. The Effects of Aquatic Invasive Species on Property Values: Evidence from a Quasi-Experiment. Land Economics, 85(3):391-409. http://171.66.125.237/cgi/content/abstract/85/3/391

3. Bennett, E.M. 2003. Soil phosphorus concentrations in Dane county, Wisconsin, USA: An evaluation of the urban-rural gradient paradigm. Environmental Management 32, no. 4: 476-487 and Bennett, E.M. personal communication 4/13/05.

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5. Calculated by Kate Demorest, UW-Stevens Point.

6. Turf Fertilizer: Restrictions on Use, Sale & Display for Homeowners http://datcp.wi.gov/Environment/Fertilizer/Turf_Fertilizer/

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8. Wisconsin Department of Natural Resources memo from John Panuska 11/6/94. Graphic by Wisconsin Lakes Partnership

9. Department of Commerce, COMM 83

10. Portage County Onsite Waste Specialist, personal communication 8/5/04.

11. Life on the Edge. 7th ed. Dresen, Michael and Robert Korth. 2003. University of Wisconsin-Extension, College of Natural Resources, UW-Stevens Point.

12. Pierce, Bryan; Kraft, George and Paul McGinley. August 2003. Guarding Our Groundwater. UW-Extension. www.uwex.edu/ces/shoreland/modules.htm

13. Graczyk, David J. et al. 2003. Hydrology, Nutrient Concentrations, and Nutrient Yields in Nearshore Areas of Four Lakes in Northern Wisconsin, 1999–2001. p 41, USGS Water Resources Investigation Report 03-4144. water.usgs.gov/pubs/wri/wrir-03-4144/

14. Rain Gardens: A Household Way To Improve Water Quality in Your Community by University of Wisconsin-Extension, publication GWQ034, and Wisconsin Department of Natural Resources publication WT 731-2002, learningstore.uwex.edu/assets/pdfs/GWQ034.pdf

In addition to this booklet and the resources below, we encourage you to join your local lake or river association, Wisconsin Association of Lakes, River Alliance of Wisconsin or other conservation groups. Additional resources, training and workshops may also be available through your county UW-Extension or Land and Water Conservation office, or local DNR office.

Additional Information:

GENERAL REFERENCES:

The Living Shore. A 17-minute video showing the importance of leaving a natural 'buffer zone' between the lake and lake owners' dwellings, and providing information about selecting and planting shoreline plants. UW-Extension and University of Minnesota Extension. Phone: 888-936-7463 http://cyfernet.extension.umn.edu/distribution/naturalresources/DD8307.html

Life on the Edge... Owning Waterfront Property. UW-Extension Lakes Program. Comprehensive guide for waterfront property owners.112 pages. Phone: 715-346-2116 or email *uwexlakes@uwsp.edu*

PHOSPHORUS:

Phosphorus in Lawns, Landscapes and Lakes. 2004. Minnesota Department of Agriculture and partners. Phone: 651-296-6121 www.mda.state.mn.us/news/publications/chemfert/reports/phosphorusguide.pdf

Understanding Lake Data. 2004. UW-Extension and Wisconsin DNR (G3582) learningstore.uwex.edu/Assets/pdfs/G3582.pdf

Brown Water, Green Weeds. 2001. UW-Extension (GWQ003) and Wisconsin DNR (WT-459-92) learningstore.uwex.edu/Assets/pdfs/GWQ003.pdf

FERTILIZER:

Lawn & Garden Fertilizer. 2008. UW-Extension (GWQ002) and Wisconsin DNR (WT-528-99) learningstore.uwex.edu/Assets/pdfs/GWQ002.pdf

Rethinking Yard Care. 2008. UW-Extension (GWQ009) and Wisconsin DNR (WT-526-99) learningstore.uwex.edu/Assets/pdfs/GWQ009.pdf

EROSION CONTROL AND RUNOFF

Erosion Control for Homebuilders. 1999. UW-Extension (GWQ001) and Wisconsin DNR (WT-457-96) learningstore.uwex.edu/Assets/pdfs/GWQ001.pdf

Controlling Runoff and Erosion from Your Property: A Landowner's Guide. 2008. Burnett County Land and Water Conservation Department and partners. www.burnettcounty.com/DocumentView.aspx?DID=119

SEPTIC SYSTEMS

Care and Maintenance of Residential Septic Systems. 2006. UW-Extension (B3583) learningstore.uwex.edu/assets/pdfs/B3583.pdf

STORMWATER RUNOFF

A Storm on the Horizon: An Educational Video on the Effects of Stormwater on Our Rivers. 18 minute video by Trout Unlimited.
Phone: 715-386-7568 or email *andrewlamberson@hotmail.com*

RAIN GARDENS

Rain Gardens ... A Household Way To Improve Water Quality in Your Community. 2002. UW-Extension (GWQ034) and Wisconsin DNR (WT-731-2002) learningstore.uwex.edu/Assets/pdfs/GWQ034.pdf

Rain Gardens: A How-To Manual for Homeowners. 2003. UW-Extension (GWQ037) and Wisconsin DNR (WT-776 2003) Phone: 608-267-7694 learningstore.uwex.edu/assets/pdfs/GWQ037.pdf

Wisconsin Native Plants for Rain Gardens. dnr.wi.gov/runoff/rg/plants/PlantListing.htm

Wisconsin Native Plants for Shady Rain Gardens. dnr.wi.gov/runoff/rg/plants/shady/shady.htm

SHORELAND BUFFERS

The Waters Edge: Helping Fish and Wildlife on Your Waterfront Property. 2000. Wisconsin DNR (PUB-FH-428 00). learningstore.uwex.edu/Assets/pdfs/GWQ040.pdf

Shoreland Restoration: A Growing Solution. 2001. A 15 minute how-to guide. UW-Extension (GWQ032) Phone: 877-947-7827. http://cyfernet.extension.umn.edu/distribution/naturalresources/DD8307.html

Restoration Stories. 2003. UW-Extension and Wisconsin DNR. www.burnettcounty.com/DocumentView.aspx?DID=120

Protecting Our Living Shores – UWEX (GWQ039) DNR (WT-764-2003) learningstore.uwex.edu/Assets/pdfs/GWQ039.pdf

Protecting and Restoring Shorelands – UWEX (GWQ038) DNR (WT-748-2003) learningstore.uwex.edu/Assets/pdfs/GWQ038.pdf

A Fresh Look at Shoreland Restoration – UWEX (GWQ027) DNR (FH-429-2003) learningstore.uwex.edu/Assets/pdfs/GWQ027.pdf

Lakescaping for Wildlife and Water Quality. Minnesota Department of Natural Resources. The best detailed planning guide available for shoreland restoration in Wisconsin.180 pages. Phone: 800-675-3757

Wisconsin Native Plant Sources. 2004. UW-Extension (GWQ041) and Wisconsin DNR (WT-802). learningstore.uwex.edu/Assets/pdfs/GWQ041.pdf

INVASIVE SPECIES

We all have an important role to play in keeping our lakes, streams, and landscapes free of invasive species. The main way aquatic invasives spread to new waters is by hitching a ride on the boats and equipment of the very people who enjoy the water the most.

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