

SHORELAND RESTORATION GUIDE



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RESTORE YOUR SHORE

With shoreline development at an all-time high, natural shorelines are becoming a scarce resource in northern Wisconsin. In the last twenty years, annual building permits in Rusk County have increased dramatically.

Keep the water clean

A thick cover of vegetation and an intact duff layer of leaves and pine needles serve to slow water flow allowing runoff water to soak into the soil or be filtered by the vegetation. The deep roots of native grasses and shrubs help to hold soil in place. Soil carries nutrients, which are better kept on your shore than in the lake, where they can fuel algae growth.

Provide a home

Diverse mixtures of native trees, shrubs, and groundcover are important for the creatures that make their homes near the water. Trees and shrubs along the water's edge provide shade for fish and places for shoreline birds to nest and find food. Plants in the water and near the shore provide cover for fish, frogs, salamanders, turtles, and the aquatic insects that feed them.

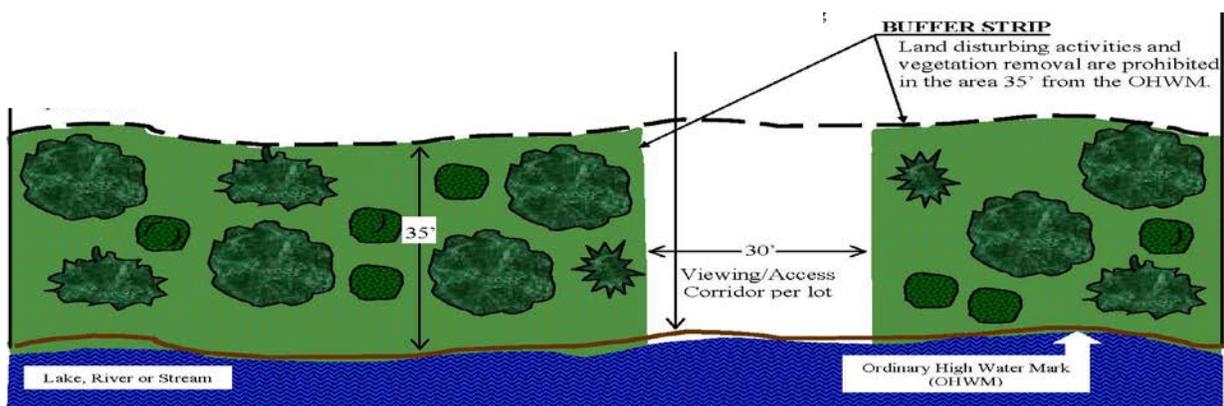
Think about how your waterfront experience is enhanced by the sight of a loon or heron on the water, a turtle sunning itself on a log, or the call of a frog at dusk. All of these creatures depend on vegetation near the shore.

Create natural beauty

Buffers of natural vegetation screen views to and from the lake, and create a wonderful sense of privacy. Take a look at your property. Does it create the Northwoods atmosphere you were looking for when you bought property here?

What is a Shoreline Buffer?

A shoreline buffer is a zone of native vegetation that extends from the ordinary high water mark inland. A buffer restoration design seeks to restore functions provided by the original, natural vegetation.



Do Your Part

Many landowners are deciding to voluntarily restore shoreline buffers. These landowners and their human and animal neighbors will be reaping the benefits for years to come. Financial incentives are available to help pay for plants, materials, and labor to install shoreline buffers. Rusk County Land & Water Conservation for details (715) 532-2162.

Re-establishing Vegetation

Natural Recovery

Native vegetation will recover naturally when the site is protected from disturbance given adequate seed and/or root sources and appropriate site conditions. Natural recovery or "no-mow" zones are encouraged to save time, effort and money. Wet shoreline margins, where turf grasses are not well established, are particularly suited to natural recovery. Results may be slower than for planted buffers, but there is virtually no cost and the end result may appear more natural.

Rusk County Shoreline Buffer Restoration

Rusk County requires that a natural zone of vegetation at least 35 feet wide be left intact next to the water. However, on many shoreline lots the protective zone of vegetation has been removed or greatly altered. To help mitigate the impacts that occur when structures closer than the allowed setbacks are enlarged or altered, the buffer zone must be reestablished.

Using This Guide

This landowner guide is designed to help you restore your shoreline buffer. It includes instructions for preparing the site, planting, and maintaining the buffer; and information about plant selections and sources of plants, seeds, and supplies.

An area where a dense growth of turf grasses has been maintained for several years is usually not well suited to natural recovery. Turf grasses frequently out compete native vegetation, and the area may lack native seed sources. Areas with extensive stands of invasive weeds should also not be left to recover naturally.

Accelerated Recovery --- (Planted Buffers)

Native vegetation must be seeded or planted in areas not well suited for natural recovery or where quick results are desired. Planting standards are established for native tree, shrub, and groundcover layers in the buffer design standards. The focus of this guide is to provide instruction for planted buffers.

Why Choose Native Plants?

Today, natural areas exist mainly as scattered remnants. Selecting native plants for shoreline restoration projects helps to reverse this of disappearing habitats.

Native plants have evolved for thousands of years with the local soils, climate, and shoreline environment. They provide the essential elements of food, shelter, and space for wildlife and fish species. Stands of native plants also act as an efficient sponge, soaking up rain and snowmelt runoff and maximizing groundwater recharge. There are many beautiful native plants to choose from to enhance the aesthetic value of your property. Once established, native plants will require little or no maintenance.

Cost of Buffer Installation

Costs for planting a shoreline vary greatly. Establishing no-mow zones to encourage native plant growth in all or part of the buffer greatly reduces costs. Seeding groundcovers is generally cheaper than planting seedlings, but results will take longer to see. Installation costs for buffers have ranged from nothing for establishing no-mow zones and transplanting shrubs, to ten cents to a dollar a square foot. Professional landscapers may charge more. Doing the work yourself generally keeps costs below 50 cents per square foot.

Planting shrubs or trees as bare root stock greatly saves on the cost. Rusk County sponsors a shrub and tree sale annually in April/May. Shrubs and trees purchased through the sale are usually less than one dollar each. Order forms are available beginning in February.

Site Preparation

Proper site preparation is one of the most important steps in establishing a native plant landscape. Take your time, as it can require some effort to prepare the site well. Native plantings can survive on poor, sandy or clay soils and eventually will require little maintenance. However, you might need to lessen the competition on the site by first removing the existing vegetation. Turf grasses, for example, can quickly out compete newly planted native grasses and wildflowers if left in place.

Sometimes removing existing vegetation is not necessary, and it is possible to plant among existing scattered native plants or to leave zones of vegetation intact. The moist zone near the water's edge often consists mostly of native plants because turf grasses are flooded out. Seeds and underground stems may quickly revegetate the area if allowed to grow. Selected native flowers, grasses, and shrubs can usually be planted among existing native vegetation to fill in bare spots or to add color and variety. Stands of invasive plants like reed canary grass or purple loosestrife should be removed from wet areas.

Removing Existing Vegetation

You can remove existing vegetation by smothering or applying herbicide.

A) Smothering - Using Black Plastic

Black plastic spread over vegetation not only eliminates light, but also creates heat that kills seeds, roots, and stems. This method is suitable for almost any site. In areas with high exposure to wind, extra care must be taken to anchor it in place. Explain the purpose of the plastic to your neighbors; they may wonder!

1. Materials
 - a. 3.5 ml or thicker black plastic to adequately cover the area, plus extra to overlap sheets at least 6 inches
 - b. 4 inch or longer CT-shaped metal staples
 - c. Heavy objects like logs, cement blocks, boards, or tires to hold the plastic in place
2. Prepare the site by mowing; weed whacking, or trimming vegetation to be removed
3. Lay the plastic down
 - a. Overlap the plastic at least 6 inches if using more than one piece.
4. Staple in place as you lay it down
 - a. Space staples 1 foot apart where plastic overlaps
5. Place heavy objects over plastic to be sure it stays there
6. Leave in place 6-8 weeks during spring or summer.
 - a. Make certain there is no sign of living vegetation before removing it
7. Remove plastic and plant directly into dead vegetation without tilling.

B) Applying Herbicide

A glyphosate herbicide like Roundup™ is safest and best to use. Vegetation must be actively growing for this herbicide to be effective. Avoid drift of herbicide to water. If herbicide is to be applied in the water, an aquatic glyphosate formulation such as Rodeo™ must be used and a Department of Natural Resources permit is required. Always follow label instructions carefully.

Roundup™ only affects plants directly sprayed, and does not spread to nearby plants. Within days, Roundup™ begins to break down into harmless natural materials allowing the area to be replanted with natives. Wait 7 to 10 days before planting native plants or preparing the site for seeding native plants. Be certain that vegetation is dead before planting. If turf is still green or yellow-green, a repeated application is recommended.

Soil Preparation

In most cases soil preparation is not required to plant native plants. Make sure that native plants are chosen to match the soil, moisture, and light conditions on your shoreline. Adding black dirt or manure can be detrimental to your lakeshore planting. These soil amendments will favor weed growth, and the native plants may grow more quickly and be less sturdy.

Occasionally, soil amendments are necessary. It is wise to have the soil tested if you have any questions concerning its type, its pH value, or its fertility. Contact the University of Wisconsin Extension office for a soil test kit. In highly acidic soils (less than 5.5pH), adding lime may be an asset to your lakeshore planting. Fertilizers may also be required for soils having low to no nutrients.

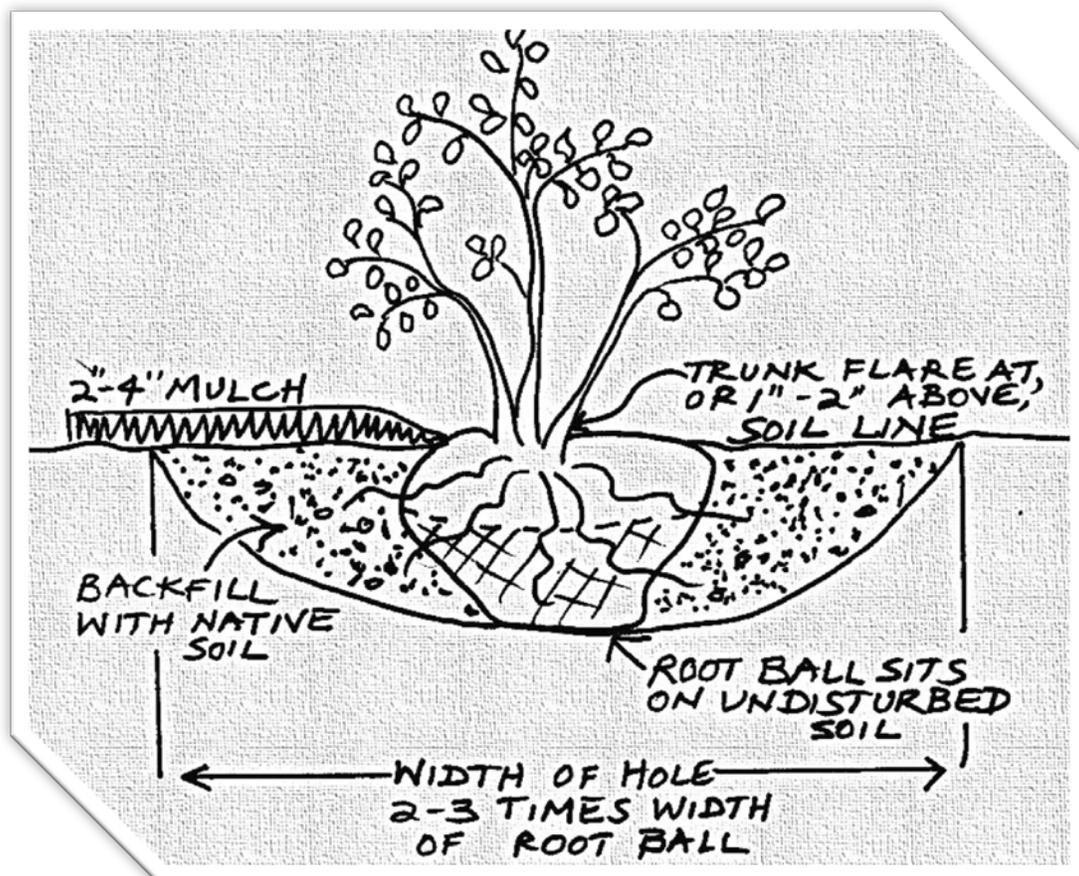
Where fertilizers are necessary as indicated by the results of the soil test, they should never be broadcast due to the potential for runoff into the lake. Instead, apply a very small amount of organic fertilizer such as Renaissance™ (6-0-6) in each planting hole. Use one teaspoon of organic fertilizer per grass or wildflower plant and 1/4 cup per shrub or tree. Up to one cup can be added to larger shrub or tree planting holes. An organic rather than a chemical fertilizer will release nutrients more slowly and is less likely to burn plant roots or run off into the lake. Use phosphorus free fertilizer. Phosphorus levels are adequate in most soils, and phosphorus can increase algae growth in the lake. Phosphorus is the middle number of the three given on the fertilizer bag.

Avoid Soil Erosion - Leave Dead Vegetation in Place

Dead vegetation left in place after smothering or an herbicide application does not need to be removed. Leave the dead material to serve as a mulch to capture moisture, reduce weed growth, and add organic material to the soil. If planting seedlings, you can plant directly through the dead material. Be sure that the roots are buried in soil and not in the thatch of dead lawn, where the plant would quickly dry out and die. If seeding, additional soil preparation will be necessary.

SHRUB AND TREE PLANTING CHECKLIST

- Keep bare root stock moist and cool before planting. Dormant bare root shrubs can be ordered in Spring. Plant bare root stock as soon as it arrives if possible. If you must wait to plant, store bare root stock as close to 34 degrees Fahrenheit, to avoid breaking dormancy. Keep tree roots moist by periodically sprinkling with water. Do not soak roots in water because this will deprive them of oxygen.
- Transplant from nearby wood or open areas. Dig up as much of the root as possible. Replace the duff layer of leaves and stems to reduce erosion at the site.
- Dig a hole deep enough so that the roots won't curl or bunch up. The trees and shrubs should be planted about one-half inch deeper than they were in the nursery. The old soil line can be recognized by the paler colored bark and a slight swelling on the stem.
- Pack soil firmly around the roots. Air pockets left around the roots will dry them out. Press soil around the roots with your foot, but do not stomp on them.
- Water regularly to keep soil moist but not saturated.
- Mulch a two foot diameter circle around each plant 2 to 4 inches deep with wood chips, straw, or leaves. This will reduce competition with other plants. Keep these areas free of other growth by weed whacking or hand pulling weeds for the first couple of years.



NATIVE SEEDLING PLANTING CHECKLIST

- Assess existing vegetation.** It might be possible to plant among existing native vegetation or into a poorly established lawn. Ask for assistance from the Land & Water Conservation Department if you are unsure.
- Remove non-native competing vegetation** such as turf grasses and invasive weeds through smothering or applying herbicide as described above.
- Assess soil and fertilize, if needed.** For sandy, nutrient poor soils, a small amount of organic, phosphorus-free fertilizer such as Renaissance™ (6-0-6) is recommended. Phosphorus is represented by the middle number on the fertilizer label. To fertilize, place a teaspoon or two around each plant hole. For other soil types, do not fertilize, or have the soil tested to determine if fertilizer is necessary. Excess fertilizer will encourage weed growth.
- Plan your planting scheme.** Spacing plants 12-18" apart is recommended.
- Lay mulch down prior to planting.** Spread 2 to 3 inches of straw, marsh hay, wood chips, leaves, or pine needles to conserve moisture and reduce weed growth. Avoid using field hay because it generally contains weed seeds.
- Dig holes for your plants.** This will speed up planting. A bulb planter or bulb auger drill bit work well for planting. Make sure the holes for the plants penetrate the dead grass.
- Be ready to water.** Watering plant plugs is critical to their success. Be ready with hoses and sprinklers before you begin to plant. Water seedlings immediately after planting.
- Plant live plants in the ground soon after you receive them.** If you must keep them a few days before planting, keep them in an area with partial sun such as on the east side of a building or under a deciduous tree. Do not leave them in a dark area for long periods as this will weaken the plants. Water to keep moist once or twice a day.
- Plant in the cool hours of the day.** Your plants will have a greater survival rate if planted on a cool day or during the morning or evening hours. To plant, separate the mulch, dig a hole, place the plug in the hole, press the soil gently around the plug, and replace the mulch being careful to keep mulch 1/2" from stem of plants.
- Water.** Don't forget this important step to give your plants a good start! Plan to water daily for the first few weeks or until plants are well established. Once plants are established, water only if prolonged dry periods occur through the first year.

NATIVE PLANT SEEDING CHECKLIST

- Remove non-native competing vegetation** through smothering or applying herbicide as described in the about "Site Preparation." Rake or fill very lightly to expose soil for planting seed. Use 3-5 ounces of seed for every 1,000 square feet. Greater amounts of seed will result in denser growth and better chances for success.
- Mix seed with slightly moist sand.** Fill an ice cream pail or similar one gallon bucket 2/3 full with moist, but not wet, sand. Add seeds and mix well. The seeds will adhere to the sand, so they can be spread more thinly and evenly.
- Broadcast the seed/sand mixture.** Use half of the seed/sand mixture to cover the entire area. Then sow the remaining half by walking perpendicular to the line of the first pass. This will assure good seed distribution throughout the area you wish to plant.
- Press seed in by tamping down** the soil with a rake or lightly raking the seeds in. You may also roll the site with a water filled roller to insure good soil/seed contact. **NEVER** roll when soil is wet, this will compact the soil and reduce seed germination and levels of oxygen in the soil.
- Mulch lightly** with 1/2 inch of straw or marsh hay. **NEVER** use field hay, as it contains numerous weed seeds. You must be able to see soil between the straw stems, or the mulch is too thick to allow seedlings to grow. On steep slopes, hold the mulch in place by staking down a jute or plastic net or mesh over it.
- Water.** Don't forget this important step to give your plants a good start! Watering seeds and small seedlings after sprouting is critical. Plan to water daily, preferably in the morning, for the first few weeks or until plants are well established. Check to see that soil is moist beneath the mulch. Very sandy sites may require watering more than once daily for the first few days. Once plants are established, water only if prolonged dry periods occur.



LONG TERM CARE AND MAINTENANCE

The easiest and most ideal buffer maintenance is to simply leave the buffer zone alone. Do not fertilize, do not mow, do not rake, do not "clean up" fallen limbs or trees. Allow natural vegetation to regrow.

In areas not well suited for natural recovery, some initial maintenance of planted buffers may be required. Pulling invasive weeds around native shrubs, trees, and groundcovers the first year or two eliminates competition and will help to give them a good start.

"No-Touch Zone"

Once the buffer is established, vegetation removal and land disturbing activities are prohibited in this area. Noxious or problem weed removal may be allowed with an approved plan from the County Conservationist. The duff layer, made up of fallen leaves and pine needles, must be left intact. This layer covers the soil, thereby conserving moisture, preventing erosion, and allowing water to infiltrate into the soil.

"Minimum Maintenance Zone"

Limited pruning and mowing are allowed in this area

Initial Maintenance of Planted Groundcovers

Weeding and watering the first two years will insure long-term success. In time your maintenance duties will ease and you will have time to enjoy the scenic beauty you have brought back to the shoreline.

Year One

Watering

Regular watering in the first two months of a Spring or Summer planting is one of the most important factors for success. Without supplemental watering, your young plants' roots may not reach the soil moisture they need. Watering at least 30 minutes each day allows vigorous root growth for plants to become quickly established. Where drainage is poor, water only in the morning, never at night when evaporation is reduced. Fungal diseases that start with excess moisture can kill young seedlings. This should not be a concern in the sandy soils that border many Rusk County Lakes. Use lake water if feasible, since this water often is warmer and more nutrient rich than well water. Pumping water from the lake is legal as long as no type of structure is left in the lake.

Weeding

Native plants are typically either slow-growing or warm season plants. Cool season weeds can crowd out natives by getting a quick start in the spring before natives have had a chance to grow. Weeds deprive natives of water, light, nutrients, and space. Check for weeds every two weeks. Pull them out immediately being careful to not disturb the native plants. Do not allow non-native invasive species like purple loosestrife, mullein, quack grass, reed canary grass, bluegrass and others to take over the planting. Ask if you need assistance identifying weeds.

Weeding Seeded Groundcovers

Seeded groundcovers are a special challenge because it can be difficult to tell the weeds from the natives. Sprouting a small sample of the native seeds in a plant tray will assist you in their identification, helping you to identify and pull common weeds. Also pull weeds you recognize. Your investment of time will payoff next year and in following years. Be patient, the perennial natives will eventually out compete annual weeds that sprout from seed.

Fertilizing and Applying Insecticides

DON'T DO IT! Applying fertilizers encourages weed growth. If native plants are selected appropriately supplemental fertilization should not be required. Avoid applying insecticides since so many are non-specific and can harm or even kill non-target species. But, if fertilizer needs to be used, make sure it contains **ZERO** phosphorous. This fertilizer can be found at most nurseries that sell native plants.

Vegetative Cover

At the end of the first season, allow all dead vegetation to remain in place. It becomes a valuable seed source for next year's growth. The grass seed and dried flower heads add another level of appeal to the native landscape in the winter months.

Year Two

If you have been diligent during the first year; the second year's maintenance task will be easier

Watering

Watering should only be necessary during extended periods of drought.

Weeding

Do a thorough weeding job early in the summer. After the initial weeding, check for weeds monthly.

Year Three and Beyond

No watering or weeding should be necessary from now on except for extreme drought conditions or stubborn invasive weed problems. Leave vegetation in place in the fall and through the winter months.

A RUN ON RAIN GARDENS

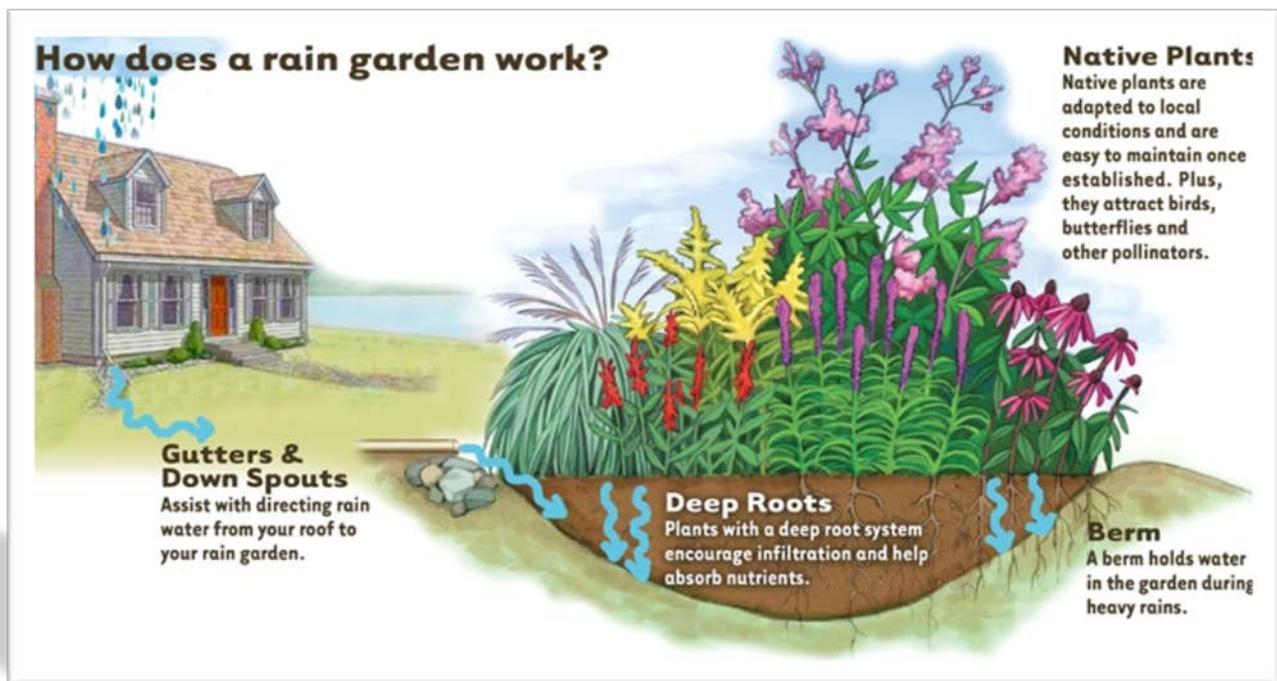
Capturing Water and Attracting Wildlife

Rain gardens are just what they sound like—gardens that soak up rain water, mainly from your roof, but also from your driveway and lawn. They are landscaped areas planted to wild flowers 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 rather than running off to storm drains. Compared to a patch of conventional lawn, a rain garden allows about 30% more water to soak into the ground compared to a conventional lawn.

Holding back the runoff helps prevent pollutants such as fertilizers from washing off your yard, into storm sewers, and eventually into nearby streams and lakes. By reducing the amount of water that enters the local storm drain systems, rain gardens can also reduce the chances for a local flooding, as well as bank and shoreline damage where storm drains empty into streams and lakes.

People in many parts of the country are starting to build rain gardens in their yards and promoting their use in other locations, such as neighborhood parks. You can help in your own yard by simply building one or more rain gardens to collect runoff from your roof. Rain water can sometimes be collected from you driveway or lawn by locating a rain garden in a low spot where the water naturally drains.

For more information on rain gardens contact Rusk County Land & Water Conservation.



For Additional Assistance:

The Rusk County Land & Water Conservation Department offers technical assistance for shoreline restoration. Call the office to get advice about plants, shrubs, and trees appropriate for your property and directions on how to get them established.

To Reach Us:

Land & Water Conservation	(715) 532-2162
Zoning	(715) 532-2156
UW-Extension	(715) 532-2151

