

Rain Gardens



A Homeowner's Guide to Construction and Maintenance



Stearns County Soil & Water Conservation District
www.StearnsCountySWCD.net
(320)251-7800 x 3



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Rain Gardens

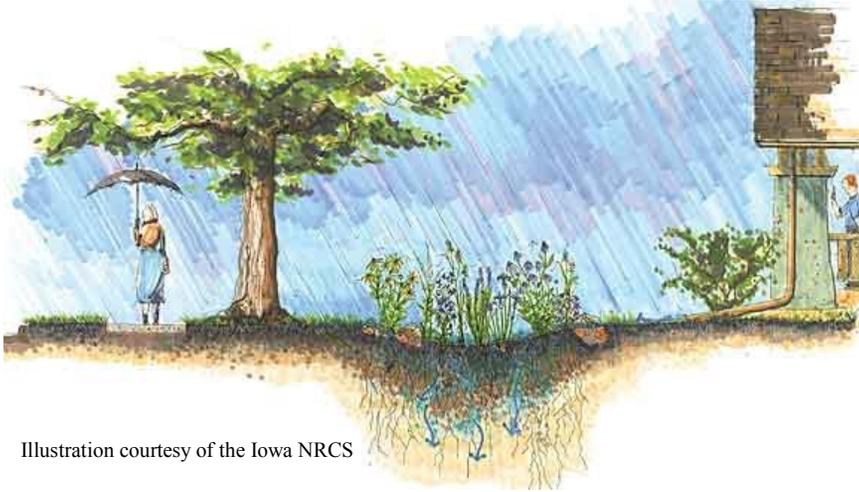


Illustration courtesy of the Iowa NRCS

Homeowners across the country are recognizing the benefits of purposely planted rain gardens, shallow depressions planted with native vegetation that soak up rain water, mainly from roof tops, sidewalks and/or driveways. After a rain event, the rain garden collects runoff from the surrounding area and stores it for a maximum of 24 - 48 hours until the water slowly filters into the ground. Compared to a conventional patch of lawn, a rain garden allows approximately 30% more water to soak into the ground.

Why are Rain Gardens Important?

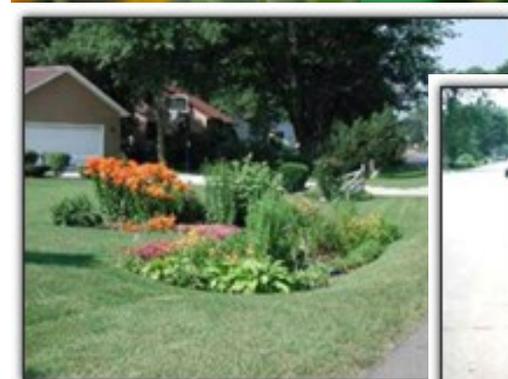
As development replaces forests and agricultural land, increased stormwater runoff from impervious surfaces becomes a problem. Stormwater runoff from developed areas increases flooding, carries pollutants from streets, parking lots, and even lawns into local rivers and lakes, leading to impairment of our water resources.

Other Questions?

Contact the Stearns County Soil & Water Conservation District at **(320) 251-7800 x 3** for more information.

References:

- Rain Gardens; Capturing and Using the Rains of the Great Plains. Published by North Dakota, Natural Resources Conservation Service, April 2007.
- Living Landscapes in Minnesota: A Guide to Native Plantscaping. Published by Natural Resources Conservation Service, October 2007.
- Rain Gardens; A how-to manual for homeowners. Published by Wisconsin Department of Natural Resources and University of Wisconsin-Extension.



Wild Flower photos courtesy of "Minnesota Wild Flowers" by Teresa Boardman.



Rain Garden photos courtesy of the Rain Garden Network

Resources to create and design a rain garden:

Create a Rain Garden

www.bluethumb.org

Rain Gardens; A how-to manual for homeowners

<http://dnr.wi.gov/topic/shorelandzoning/documents/rgmanual.pdf>

Rain Gardens; Planting with Water Quality in Mind

www.citilink.com/~stack/rain/index.htm

Iowa's Rain Garden Design and Installation Manual

<ftp://ftp-fc.sc.egov.usda.gov/IA/news/RainGardens.pdf>

Project Cost Calculator

www.bluethumb.org/media/docs/ProjectCostCalc.xls

Minnesota Business Directory

www.mnerosion.org/?page_id=88

Planting Resources:

Native Plant Brochure

www.bluethumb.org/media/docs/native_plants.pdf

MPCA Plants for Stormwater Design

www.pca.state.mn.us/publications/manuals/stormwaterplants.html

DNR Landscaping with Native Plants

www.dnr.state.mn.us/gardens/nativeplants/index.html

All programs and services are available without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

By reducing stormwater runoff, rain gardens can help minimize the negative impacts and stress placed on water resources. While an individual rain garden may seem like a small thing, collectively they produce substantial neighborhood and community environmental benefits.

Rain gardens work for us by:

- Increasing the amount of water that filters into the ground, which recharges local and regional aquifers.
- Helping protect communities from flooding and drainage problems.
- Helping protect rivers and lakes from pollutants, such as lawn fertilizers and pesticides, oil and other fluids that leak from cars, and a number of harmful substances that wash off roofs and paved areas carried by stormwater runoff.
- Enhancing the beauty of yards and neighborhoods.
- Providing valuable habitat for birds, butterflies and many beneficial insects.



The use of native vegetation provides habitat for birds, butterflies and insects adding beauty and diversity to your landscape.

Photos Courtesy of Top Notch Tree Care and IA NRCS
Cover photo courtesy of 'Minnesota Wild Flowers' by Teresa Boardman

Planning the Placement and Construction of Your Rain Garden

Where to establish a rain garden

Locate the rain garden to intercept runoff from roofs, yards, driveways and lawns. Determine where existing runoff flows.

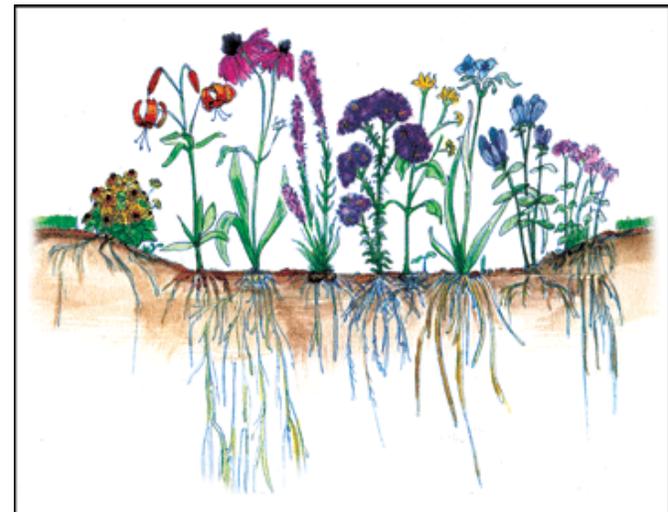
- It should not be built within 10 feet of foundation walls.
- Do not place directly over a septic system. Placement should be 50 feet away from septic leach fields.
- It should not be built within 50 feet or less of a drinking water well.
- Do not place where water already ponds. The goal is to encourage infiltration, wet patches in your yard indicate slow infiltration rates.
- It is better to build in full or partial sun, not directly under a big tree.
- Should not be built over buried utilities or where mature plants could obstruct overhead utilities or drivers' vision.
- Do not construct a rain garden where prohibited by local ordinances or where subject to disturbance.

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How to maintain a rain garden

Rain gardens will require maintenance each year, a bit more the first two years.

- As a general rule, plants need 1 inch of water per week. Water immediately after planting and continue to water twice a week (unless rain does the job) until the plugs are established.
- Control Weeds. Placing plant labels next to each individual grouping will help aid in determining which plants are weeds.
- Apply and renew mulch as needed to conserve water and control weeds.
- Many native species have strong stems and will stay standing even after a snowfall. Allow the year's growth to stand over winter, providing visual interest, wildlife habitat, and good quality water harvested from snow. In early spring, remove previous year's growth by mowing or clipping before new growth initiates.



One of the benefits of native prairie plants is their extensive root systems, which improve the ability of the soil to infiltrate water and withstand wet or erosive conditions.

Planting and Maintenance of your Rain Garden

How and what to plant in a rain garden

Rain garden plant selection should reflect maintenance needs and growing conditions of the site.

- Select plants that have a well established root system. Usually one or two-year-old plants will have root systems that are beginning to circle or get matted.
- Native or non-native species of flowers, grasses, shrubs, and trees can be used. **Do not plant species that are considered invasive.**
- Use potted or bare-root plants rather than seeds. Plant from May to September.
- Place the more water tolerant species near the bottom and drought tolerant species near the edges. Native species are adapted to local conditions and may be more tolerant of diseases and drought, compared to some non-native species.
- Planting spaces will vary depending upon species and desired appearance. Generally, 12 - 18 inches between plants is adequate. A diversity of plant species will provide an array of color and texture, and attract a variety of insects and wildlife.
- Dig each hole twice as wide as the plant plug and deep enough to keep the crown of the young plant level with the existing grade. Make sure the crown is level and then fill the hole and firmly tamp around the roots to avoid air pockets.
- Apply double-shredded hardwood mulch evenly over the bed approximately 2 inches thick, but avoid burying the crowns of the new transplants. Ordinary woodchips tend to float and should be avoided.



The rain garden is capturing surface water runoff from both the rooftop and the driveway.

Illustration courtesy of Top Notch Tree Care



Popular Native Plant Species used in Rain Gardens

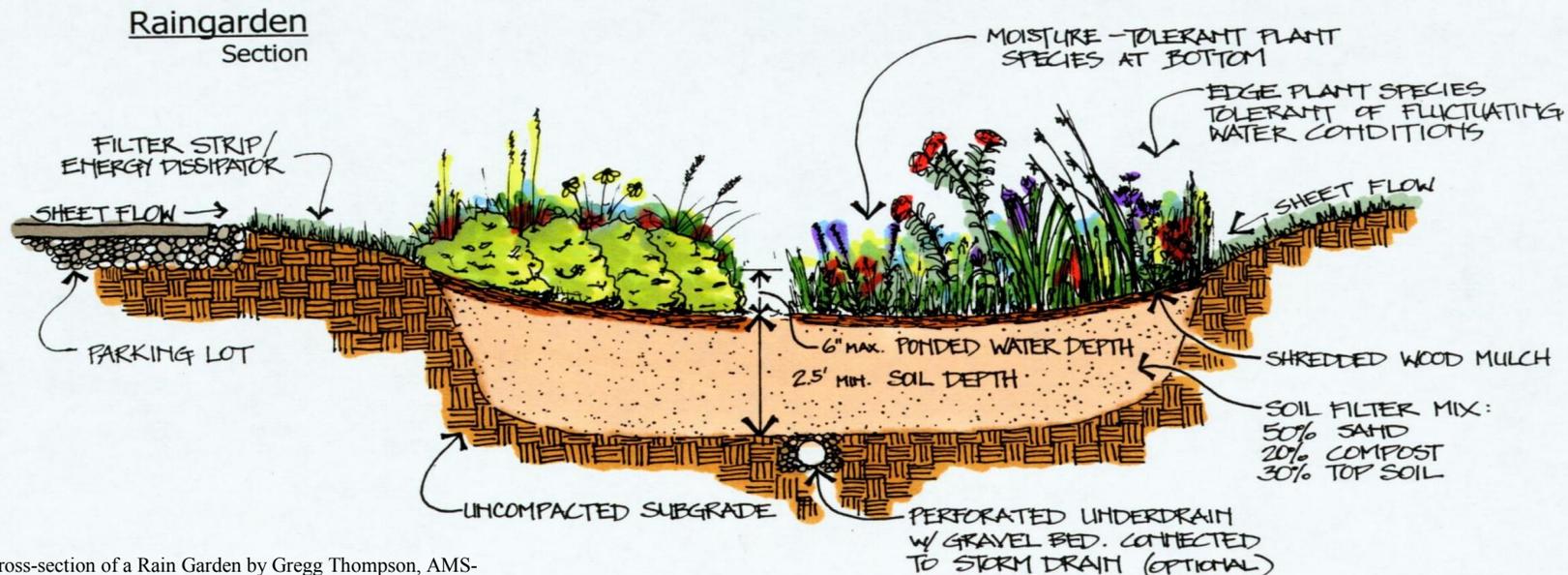
Photos: (Left) Rough Blazing Star, (Right) Columbine
Photos courtesy of "Minnesota Wildflowers" by Theresa Boardman.

How to build a rain garden

Most rain gardens can be constructed with tools homeowners already have, such as shovels, rakes, and roto-tillers.

- **Do your homework first.** References that are included in this packet provide detailed information to help guide people through the process of planning, construction, and planting of a rain garden.
- Locate a proper site. Choose an area that captures the most runoff and requires the least amount of digging and earth moving to achieve a level collection area.
- Calculate the area of all runoff surfaces that will collect in the rain garden.
- Mark the outline of your rain garden. The area of your Rain garden should equal about 10% of the impervious drainage area. If you are digging into an existing lawn, digging time can be reduced by killing the grass first. A chemical such as Round-Up can be used, but a more environmentally friendly approach is to place black plastic over the lawn until the grass dies.

- Evaluate soil compaction, texture and infiltration.
- Dig a 4 - 18 inch deep basin with a flat bottom and gently sloping sides. Excavated material can be placed on the downhill side to create a berm. Avoid compaction during construction.
- Loosen 6 - 12 inches of the natural soil below the bottom of the rain garden.
- Large designs or sites with high clay content soils may require over-digging the basin 1-2 feet deeper, backfilling with a well-blended mix of 70% sand and 30% organic matter such as yard compost, and shaping the top of this material into a basin.
- Excavated soils can be used on the downhill side to create a berm that ensures water will be of uniform depth within the basin. Part of the berm should be slightly lower than the inlet to allow for controlled overflow from extreme runoff events.
- To prevent erosion, cover the berm with mulch or plant grass. Use straw or erosion-control blanket to protect the berm from erosion while the grass takes root.



Cross-section of a Rain Garden by Gregg Thompson, AMS-WCD