



# Rain Gardens for Illinois



## WHAT IS A RAIN GARDEN?

Do you have a wet basement, water that pools on your property, or a winter skating rink that results from downspout water rushing down your driveway? With a little effort, you can put that water to work and create a very attractive landscape feature! A rain garden is a vegetated depression specially designed to capture and use rain and snowmelt, collectively known as storm water.

Rain gardens receive storm water runoff from upstream drainage areas such as roofs, driveways, and lawns. Water that pools in rain gardens nourishes the plants and filters into the soil. Rain gardens imitate natural filtering systems such as wetlands.

You don't have to be an engineer to make a rain garden, and the numerous economic and environmental benefits will last for years!

## RAIN GARDEN BENEFITS

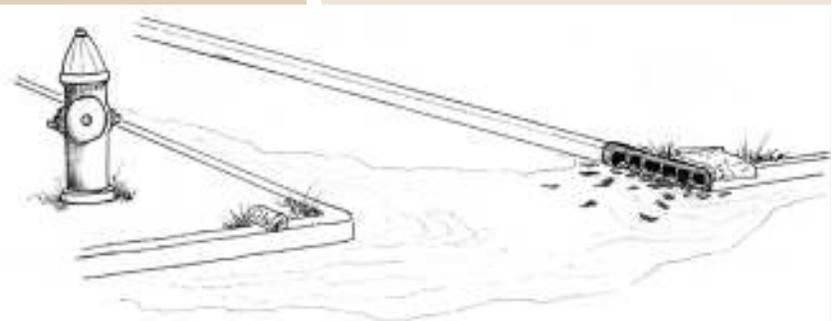
Rain gardens provide a number of benefits:

- offer a unique, beautiful landscape feature
- provide habitat for plants and wildlife such as hummingbirds and butterflies
- reduce flooding and water damage
- absorb more water than traditional lawns
- recharge ground water
- remove pollutants from storm water

## WHY WORRY ABOUT STORM WATER?

Precipitation that is unable to filter into the ground moves into basements and streets, sometimes causing flood damage. As storm water flows downhill across lawns and impermeable surfaces, it picks up debris, soil, and chemical contaminants. This polluted water runs into storm drains and empties into rivers and lakes, often without treatment.

The influx of storm water into Illinois waterways not only makes our water resources less clean, but also causes the destabilization of banks and increases downstream flooding. Waterways need to be protected from the negative impacts of storm water because they are a source of drinking water, recreation, and wildlife habitat.



## BASIC STEPS FOR CREATING A RAIN GARDEN

1. Choose a location
2. Determine rain garden size
3. Call JULIE
4. Dig the depression
5. Install inflow and outflow conveyances
6. Mulch the rain garden
7. Plant the rain garden
8. Water and weed regularly

Please refer to the text in this brochure for more details on each step.

## SELECTING A LOCATION FOR THE RAIN GARDEN

Rain gardens are a great way to reduce storm water runoff and beautify the landscape in residential, commercial, and industrial settings. The first step of installing a rain garden is deciding where to put it! Suitable locations include courtyards, lawns, flower beds, and swales along roads or sidewalks. Avoid spots that are unlikely to receive storm water from upstream or uphill surfaces.

The most efficient way to determine the location of your rain garden is to observe your property during and after a rainfall. Note both where the water comes from and the area it travels to and pools. An ideal spot for a rain garden is an existing depression where water collects but also filters over time. Or, create your own depression close to an existing downspout. You can also be neighborly and intercept water that flows off your property.

A few more factors to consider when deciding on the location of your rain garden include:

- place rain garden at least 10 feet from building foundations
- avoid underground utility lines, septic fields, and tree roots
- the water table should be greater than 2 feet deep
- a location with partial or full sunlight will dry out faster and allow the use of native prairie plants



## SOIL TESTING

If you need help determining the properties of your soil, you can submit a sample for particle size analysis at a soil testing laboratory. The University of Illinois Extension maintains a list of laboratories located in Illinois and neighboring states.

When you have a location in mind, dig a small hole approximately 6 inches deep and determine the soil type and water permeability. Sandy soils are gritty, whereas clay soils are sticky when wet. Fill the hole with water and observe how long it takes to drain. The soil is suitably permeable if the water disappears in 24 hours. Sandy, permeable soils are ideal because rain gardens should drain within a few days. When clay soil is present or permeability is low, you can:

- relocate the rain garden to more permeable soil
- amend the soil with sand and organic matter
- create a water garden

## DIGGING THE RAIN GARDEN

Before digging the rain garden, determine the surface area, depth, and shape that are appropriate for your site and drainage conditions. A shape that works well is a bean-shape, with the long side facing upslope in order to catch as much storm water runoff as possible. Your rain garden should be approximately 10-30% of the drainage areas providing runoff. The depth of the rain garden should generally be 3-12 inches. If clay soils are present, the rate of water percolation into the ground will be low and therefore the rain garden should be relatively shallow and large in area. If the soil has good permeability ( $\geq 1$  inch/hour), the rain garden can be on the deeper and smaller side of the suggested ranges.

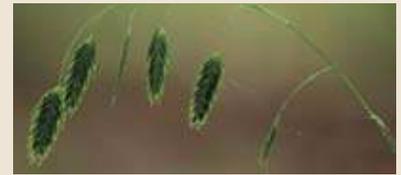
It is best to dig your rain garden in the spring or early summer. The sides should be gently sloped, so that the rain garden resembles a saucer instead of a bowl. Use soil you have excavated to level out the bottom. The excess soil can also be used to create a berm on the downslope side of the rain garden. When working on the berm, you can install a rock-lined overflow spillway or a drain pipe so that you have more control of the rate of water loss. This extra step is only recommended if you are concerned about the rain garden overflowing during unusually strong storms and the soil is high in clay. Direct storm water to the rain garden with a downspout extension or shallow channel. Water can also come from sump pump outlets. Add decorative rock to soften the impact of incoming water.

## PLANTING THE RAIN GARDEN

- Use native species because they are adapted to local conditions, benefit wildlife, have deep root systems, and are often perennial
- Avoid species that are aggressive or exotic
- Choose plants with different bloom times so the rain garden remains colorful during the growing season
- Remove existing vegetation to reduce plant competition (non-toxic techniques include sod cutters and layers of black plastic or newspaper)
- Place species according to moisture tolerance, light requirements, and plant height (ex. wettest spot in rain garden should have the more moisture-tolerant species)
- Consider clumping species for visual effect
- Add 2-4 inches of mulch to help remove pollutants, maintain moisture, and prevent erosion and weeds



## NATIVE PLANTS



**River Oats**



**Gray Sedge**



**New England Aster**



**Swamp Milkweed**



**Golden Alexander**



**Virginia Bluebells**



**Great Blue Lobelia**



**Cardinal Flower**

## PLANTS FOR SUN AND SHADE

### SUNNY GARDEN

Common Name	Height	Color	Bloom Time
Blue Flag Iris	2-3'	Blue	May-Jun
Cardinal Flower	2-4'	Red	Jul-Sep
Golden Alexander	1-2'	Yellow	May-Jun
Great Blue Lobelia	2-4'	Blue	Aug-Sep
Mountain Mint	2-4'	White	Jul-Sep
New England Aster	1-5'	Purple	Aug-Oct
Palm Sedge	1-3'	Green	Apr-Jun
River Oats	2-3'	Green	Jul-Oct
Swamp Milkweed	2-4'	Pink	Jul-Aug

### SHADY GARDEN

Common Name	Height	Color	Bloom Time
American Bellflower	2-6'	Violet	Jun-Oct
Black Snakeroot	4-9'	White	Jun-Jul
Bottlebrush Grass	2-5'	Green	Jun-Aug
Cinnamon Fern	2-4'	Green	No flower
Dutchman's Breeches	1'	White	Apr-May
Gray Sedge	1-3'	Green	May-Sep
Jack-In-The-Pulpit	1-2'	Green	Apr-Jul
Orange Jewelweed	2-5'	Orange	Jun-Sep
Virginia Bluebells	1-3'	Blue	Apr-May

## MAINTAINING THE RAIN GARDEN

The care needed to maintain a functioning rain garden does not differ greatly from a regular flower garden. Fertilizers are not needed, but compost can be blended into the soil to increase nutrients. Consider fencing the rain garden initially to keep your plants safe from hungry herbivores!

During the first year, the rain garden will need regular watering (~1 inch/week) and weeding. Over time, the plants will grow larger and develop deep root systems. Simultaneously, the need for weeding and watering will decrease.

Each spring, remove the dead material from the previous growing season. In the spring and fall, replenish the mulch and make sure the inflow and outflow conveyances are clear of debris.

## MOSQUITOES

Mosquitoes will not breed successfully in well-drained rain gardens. It takes 10-14 days for a mosquito to fully develop from egg to adult. Rain gardens should filter water completely within a few days.

## OTHER RESOURCES

More details about rain gardens are available from:

Wisconsin Department of Natural Resources' "Rain gardens: A how-to manual" (<http://dnr.wi.gov/org/water/wm/nps/rg/rgmanual.pdf>)

North Carolina State Cooperative Extension's "Designing rain gardens (bio-retention areas)" (<http://www.engr.uga.edu/service/outreach/Stormwater%20BMP/BioretenionOverview.pdf>)

This rain garden brochure is a product of Prairie Rivers Network. To learn more, call us to schedule a rain garden presentation. If you build a rain garden, please send your stories and pictures to [info@prairierivers.org](mailto:info@prairierivers.org).

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