



# Stormwater Pollution Prevention for Homeowners

## Rain Gardens

### What is a rain garden?

Rain gardens are shallow depressions landscaped with plants, which collect rainwater from an impervious surface. The idea is to collect rainwater and have it soak into the ground rather than flowing over the ground, thus potentially polluting streams and waterways. To help increase infiltration, many rain gardens use a mixture of soil, sand, and organic matter. A mix of native shrubs and perennials is used, and the garden is mulched. Plants are used that are able to adapt to wet conditions but can tolerate dry spells as well. A properly designed rain garden will become a beautiful flowering garden that will attract pollinators and birds, thus helping to enhance the environment.

### What are the benefits of a rain garden?

- Reduces amount/volume of stormwater runoff
- Filters pollutants in stormwater runoff
- Reduces flooding in your community
- Enhances your yard's beauty and appeal
- Stabilizes soil
- Recharges groundwater
- Provides habitat for wildlife and butterflies
- Low maintenance



### What types of plants are suitable for a rain garden in Carroll County?

When selecting plants for your rain garden, choose native plants that tolerate fluctuating between wet and dry. Native plants are more likely to thrive in our local environment. They also provide bird/wildlife habitat and attract pollinators and birds. Below are some great examples of native plants to choose for Carroll County. If you have pets, be sure to check which plants are toxic to dogs and cats before choosing your plants.



#### Shrubs

- Chokeberry
- Silky Dogwood
- Itea
- Spicebush
- Red Osier Dogwood
- Winterberry
- Sweetbay Magnolia
- Witch hazel

#### Perennials

- Milkweeds
- Turtlehead
- Ironweed
- Penstemon
- Coneflowers
- Monarda
- Joe Pye Weed
- Cardinal Flower
- New England Aster
- Obedient Flower
- Black Eyed Susans
- Boneset

#### Grasses

- Indian Grass
- Little Bluestem
- Switchgrass

#### Does a rain garden create a pond?

If properly constructed, the rainwater will soak into the ground within 24-48 hours after a storm.





## What are the steps to create a rain garden?

The following summarizes the basic steps to adding a rain garden to your yard. If you decide to move forward, consult a detailed manual that describes the specific steps and considerations in designing

and building your rain garden before proceeding. Several sources of additional information have been included in this brochure.

(This is not an exhaustive list, and many others may be found with a quick internet search.)

Plan → Prepare → Construct → Maintain

### 1. Plan

\* **Location** – Choose an area of your yard that:

- Gets water from runoff;
- Preferably is sunny;
- Is at least 10 feet from a building foundation and slopes away from the house;
- Would not interfere with existing tree roots or underground utility lines (contact Miss Utility);
- Is outside of a stream floodway; and
- Is at least 100 feet from a well and 50 feet from a septic system.

\* **Drainage** – Test the soil for proper drainage. Your drainage may influence the location and/or the materials that will be used in the rain garden to improve infiltration. A simple at-home test can be done to test how fast your soil will drain. Dig a 1-foot deep hole where you would like to put your garden. Fill it with water, and time how long it takes to drain. If it takes more than 1 day to drain, you may need to find another location, put 4 inches of washed gravel under the planting soil, or put an under drain in. You also can take a soil sample to be tested for

excessive acidity or alkalinity and/or clay, which could indicate poor drainage. The University of Maryland Extension Service

provides a list of Regional Soil Test Labs for Home Gardeners. ([https://extension.umd.edu/sites/extension.umd.edu/files/docs/programs/hgic/HGIC\\_Pubs/HGNoa\\_SoilTestLabs%209\\_2015.pdf](https://extension.umd.edu/sites/extension.umd.edu/files/docs/programs/hgic/HGIC_Pubs/HGNoa_SoilTestLabs%209_2015.pdf))

\* **Design (& Templates)** – An easy way to design your garden is to search online for a template to help you determine types of plants and placement in garden. Many templates provide the specific type of plants to use and layout for planting them.

\* **Size** – The size and depth of your rain garden should be based on accommodating the amount of impervious surface area in your yard and plant size choices.

\* **Plant Selection** – Choose native plants that are drought and wet resistant. Consider whether your rain garden will be in full sun, partial sun,

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Extension Office –  
Carroll County  
700 Agriculture Center  
Westminster, MD 21157  
Hours: 8:00am - 4:30pm  
Phone: (410) 386-2760  
<https://extension.umd.edu/carroll-county>

How do I calculate the size rain garden I need?

Divide the square footage of impervious area (roof, driveway, etc.) by 12. This will give you the volume needed in your rain garden in cubic feet.





or full shade and factor that into your plant choices. Identify other materials needed, such as mulch and compost.

- ✿ **Construction** – Determine what tools you will need for excavation and planting and whether you will do it yourself or hire a contractor. Calculate how deep you will need to dig.

*Is a rain garden expensive to build and maintain?*

As with any gardening project, the cost depends on location, size, labor required, and what plants are used. You will save a substantial amount if you do it yourself.

## 2. Prepare

- ✿ Prepare your site for construction, including marking the outline of the area of your garden and where you will dig.
- ✿ Purchase your plants and other materials and have them ready.

## 3. Construct

- ✿ Dig to the shape and depth needed. Dig deep enough to put back 6-12 inches of planting soil, 2-3 inches of mulch, plus 6 inches for water to pond. Total depth should be 14-24 inches.
- ✿ Make the bottom flat, but do not compact the bottom
- ✿ If your garden is located on a slope, construct a berm on the downhill side of the garden to help contain the water. Plant the berm with grass or other plants to keep it from eroding.
- ✿ Lay out your plants where you want to plant them and plant them in the soil. Water immediately.

- ✿ Finish your garden with a strong edge. Edging with stone, brick, or thick grasses will help keep out weeds. However, the edging must be low enough for water to flow into the garden.
- ✿ Spread 2-3 inches of mulch.

## 4. Maintain

Once established, rain gardens require very little maintenance. By using native plants, you will eliminate the need for fertilization and pesticides, and your garden will be more successful.

- ✿ Water every 7-10 days until the plants are established, if it doesn't rain.
- ✿ If water ponds more than 1 day, remove and replace the top couple inches of soil.
- ✿ Replace mulch annually or when needed.
- ✿ Pull weeds regularly.
- ✿ Clear rain garden of debris periodically.
- ✿ Cut back and remove deadheads in the early spring.
- ✿ Do not fertilize the rain garden.



*Will mosquitoes breed in a rain garden?*

Since the water will soak into the ground within a day or two, mosquitoes will not lay eggs in it.



*Photo by Brian Ash at English Wikipedia*



**If each homeowner implemented a few simple activities, our combined efforts could have a big impact in our local streams and waterways for current and future generations!**

## Additional Online Resources

### Maryland



*Build Your Own Rain Garden.* Chesapeake Bay Foundation.  
*Create a Rain Garden* website. Blue Water Baltimore.  
<https://www.bluewaterbaltimore.org/protect/create-a-rain-garden/>

*Homeowner Guide for a More Bay-Friendly Property: Rain Gardens.* Chesapeake Stormwater Network.  
<http://chesapeakestormwater.net/wp-content/uploads/downloads/2013/11/3.-Section-4.1-Rain-Gardens-w-Appendices.pdf>

*Rain Gardens* webpage. University of Maryland Extension.  
<https://extension.umd.edu/watershed/rain-gardens>

*Rain Gardens: A greener approach to landscaping* website. Alliance for the Chesapeake Bay.  
<https://www.allianceforthebay.org/2011/05/rain-gardens-a-greener-approach-to-landscaping/>

*Rain Gardens Across Maryland.* University of Maryland Extension.  
[https://extension.umd.edu/sites/extension.umd.edu/files/docs/articles/Rain\\_Gardens\\_Across\\_MD.pdf](https://extension.umd.edu/sites/extension.umd.edu/files/docs/articles/Rain_Gardens_Across_MD.pdf)

### Other

*How to Build a Rain Garden to Filter Run-Off.* This Old House.  
<https://www.thisoldhouse.com/how-to/how-to-build-rain-garden-to-filter-run>

*Gardening.* NC State webpage.  
<http://www.ces.ncsu.edu/depts/hort/consumer/factsheets/>

*Oregon Rain Garden Guide: A Step by Step Guide to Landscaping for Clean Water and Healthy Streams.* Oregon State University.  
<http://seagrant.oregonstate.edu/sgpubs/oregon-rain-garden-guide>

*Plants for Constructed Wetlands and Rain Gardens.* Ruth, Cliff.  
<http://www.ces.ncsu.edu/copubs/env/water/018/RaingardenPlantsBrochure.pdf>

*Rain Gardens: A Rain Garden Manual for South Carolina.* Carolina Clear Home webpage. Clemson University.  
[http://www.clemson.edu/public/carolinaclear/cc\\_toolbox/index.html](http://www.clemson.edu/public/carolinaclear/cc_toolbox/index.html)

*Rain Garden Design and Construction.* Northern Virginia Soil and Water Conservation District.  
<http://www.fairfaxcounty.gov/nvswcd/raingardenbk.pdf>

*Rain Garden Design Templates for Maryland.* Low Impact Development Center.  
<http://lowimpactdevelopment.org/rain-garden-templates-for-maryland/>

*Rain Garden Handbook for Western Washington Homeowners.* Washington State University.  
[http://pierce.wsu.edu/Lid/raingarden/Raingarden\\_handbook.pdf](http://pierce.wsu.edu/Lid/raingarden/Raingarden_handbook.pdf)

*Rain Gardens: A Do-It-Yourself Guide for Homeowners in Middle Tennessee.* Patty Ghertner. Cumberland River Compact.  
<http://cumberlandrivercompact.org/about/our-work/rain-gardens/>

*Rain Gardens: A How-to manual for homeowners.* Wisconsin Department of Natural Resources.  
<http://dnr.wi.gov/topic/shorelandzoning/documents/rgmanual.pdf>

*Rain Gardens Technical Guide.* Virginia Dept. of Forestry.  
<https://forsyth.ces.ncsu.edu/wp-content/uploads/2016/03/RGmanual2015.pdf?fw=no>

*Start-To-Finish Rain Garden Design: A Workbook for Homeowners.* Faribault County Soil & Water Conservation District.  
<http://www.faribaultcountyswcd.com/FileLib/Rain%20Garden%20Design%20Templates.pdf>

*Stormwater Management Manual for Western Washington* webpage. Dept. of Ecology. State of Washington.  
<http://www.ecy.wa.gov/programs/wq/stormwater/manual.html>

Three Rivers Garden Alliance  
<http://raingardenalliance.org/>

*Note: Not an exhaustive list or an endorsement of any of these sites.*

### For more information, help, or guidance regarding stormwater and your home, contact:

**Carroll County Department of  
Land & Resource Management**  
Phone: 410-386-2506

**OR your municipality:**

Hampstead	410-374-2761
Manchester	410-239-3200
Mount Airy	410-795-6012
New Windsor	410-635-6575
Sykesville	410-795-8959
Taneytown	410-751-1100
Union Bridge	410-775-2711
Westminster	410-848-9000

To report a concern about pollutants or possible illegal dumping into the storm drain system, contact:

**Carroll County Resource Management Bureau,  
Environmental Inspection Services Division**  
Phone: 410-386-2210

For general information about stormwater pollution prevention, visit the "Protecting Carroll County Waters" webpage at:

<http://ccgovernment.carr.org/ccg/plan/npdes/>

