

# *RAIN GARDEN MANUAL*

## *for HOMEOWNERS*

Protecting our water, one yard at a time



# What is a Rain Garden?

A rain garden is an attractive, landscaped area planted with perennial native plants which don't mind getting "wet feet." They are beautiful gardens, built in depressions, which are designed to capture and filter storm water runoff from impervious surfaces around the home, such as rooftops and driveways.



The benefits of rain gardens are multiple and include their ability to perform the following functions:

- ☞ Help keep water clean by filtering storm water runoff before it enters local waterways.
- ☞ Help alleviate problems associated with flooding and drainage.
- ☞ Enhance the beauty of individual yards and communities.
- ☞ Provide habitat and food for wildlife including birds and butterflies.
- ☞ Recharge the ground water supply.

## *Why Do We Need Rain Gardens?*

As development increases, there are more demands placed on our local environment. Impervious surfaces associated with development, such as rooftops, driveways and roads, are areas that shed rainwater. Construction activity on development sites usually compacts the soil, limiting the ground's capacity to absorb water. Taken together, these factors reduce the ability of our landscape to absorb and filter storm water.

Impervious surfaces can negatively affect our environment as they increase storm water runoff. Consequently they increase the chance for pollution to enter our waterways through our storm drainage systems, including sewers and open ditches, which flow untreated to our streams and lakes. The type of pollution that results from storm water runoff is called nonpoint source pollution. Studies by the United States Environmental Protection Agency (USEPA) have shown that a substantial amount of the pollution in our streams, rivers and lakes is carried there by runoff from our own yards and gardens. Some of the more common nonpoint source pollutants include fertilizers, pesticides, pet wastes, grass clippings and yard debris. An easy way to help keep these pollutants out of our local waterways is to install a rain garden!

## ***Installing Your Own Rain Garden***

Installing a rain garden can be a fairly simple process, involving a shovel and a bit of physical energy. This manual will guide you through the process of building a rain garden on your property.

The size and style of your garden will depend on a number of factors including: the size of your yard, whether you are trying to create a formal or informal looking garden, and the amount of money you want to spend. *Remember, you can never have a rain garden that is too large or too small!* Any size rain garden can contribute to solving local water quality problems and will be a beautiful addition to your property!



*Milkweed is a popular rain garden plant species because of its ability to tolerate wet soil conditions. Here, one is visited by a female monarch butterfly.*

## **RAIN GARDEN Q & A**

### **Is a rain garden a pond?**

Rain gardens are not ponds. If properly designed, they should hold water for a maximum of 48 hours.

### **Will a rain garden attract mosquitos?**

No! A common misconception of any water feature near the house is that it will attract mosquitos. Mosquitos need standing water for 7-12 days to complete their life cycle. A properly installed rain garden should not hold water long enough for mosquito larvae to complete their life cycle. Rain gardens also have the advantage of attracting dragonflies, which are predators of mosquitos. In short, a rain garden will not make a mosquito problem worse, and could possibly improve it by helping to eliminate standing water.

### **Are rain gardens hard to maintain?**

No! That is the beauty of using native plants in your rain garden! Native plants are well adapted to their natural surroundings and do not require fertilizers or pesticides.

### **Is a rain garden expensive?**

It doesn't have to be. If you purchase plants, and do the work yourself, the cost will be about \$3 to \$5 per square foot. If you hire a landscape consultant to design, construct, select and install plants, the cost will increase to about \$10 to \$15 per square foot.



# Placing and Sizing Your Rain Garden

This section of the manual covers rain garden planning basics -- where to put the garden and how large it should be based on your soil type, slope, and drainage area. Following the instructions in this section will help ensure your rain garden is successful. There is a rain garden worksheet on page 18 where you can perform and record your calculations.

## *Finding the Right Location for Your Rain Garden*

Rain gardens can be placed near your home to catch runoff from your roof, or farther out in your lawn to collect surface water draining across your property. Do a bit of rainy day sleuthing to discover the drainage pattern on your property. Find out where runoff flows and locate areas where water collects. Typically, the largest sources of runoff are rooftops, paved surfaces, slopes, and compacted soils.

Some helpful tips are listed below to help you determine the best location for your rain garden:

- ☞ Rain gardens should be a minimum of ten (10) feet from your home and your neighbors' homes, to prevent damage from water seepage.
- ☞ Rain gardens should not be placed over or near the drain field of a septic system.
- ☞ Because these areas are already poorly drained, rain gardens should not be placed in an area of your yard where water collects. They should be placed up-slope of these areas to reduce the amount of water that flows into them.
- ☞ Rain gardens should not be placed within existing drainage ways such as swales and ditches.
- ☞ Sunny or partly sunny locations are best for rain gardens, but shade gardens are possible.
- ☞ Rain gardens should be integrated with your landscape. They can have a formal or informal look based on your preference.
- ☞ Rain gardens should not be installed under large trees. Trees have extensive root systems that may be damaged in the rain garden excavation process. In addition, they may not be able to adapt to the extra moisture being held by your rain garden.
- ☞ Check with your local building department before installing your rain garden as some of the installation requirements may conflict with local ordinances or zoning regulations.
- ☞ Make yourself aware of underground service lines or utilities. Remember to "Call before you dig!" 1-800-362-2764 for underground utilities and 1-800-925-0988 for oil and gas lines.

## *How Large Should Your Rain Garden Be?*

Your rain garden can be any size. The *ideal* situation is to create a rain garden that will absorb all the rain that would normally flow away from your home. However, a typical residential rain garden is usually between 100 and 300 square feet.

The size of your rain garden will depend on the factors listed below:

- ☞ The depth of the garden
- ☞ The amount of runoff from the roof and/or lawn that will drain to the garden
- ☞ The type of soil in the garden

This information, along with the size factor from the tables on page 8 will help you determine the surface area of your rain garden.



*Rattlesnake Master is a unique plant species for your rain garden because of its ability to attract a variety of pollinators. Here, it is visited by a Summer Azure.*

## **HISTORY OF THE RAIN GARDEN**

Rain gardens were first used in Maryland in the early 1990s to address nonpoint source pollution threatening the Chesapeake Bay. The rain garden was developed based on the idea of the bioretention basin. Initially designed as a Best Management Practice (BMP) to minimize the impacts of development and storm water runoff, bioretention basins are depressions which collect and hold storm water runoff. Slowing the flow of surface runoff allows time for pollution to settle out of the water before it continues to the nearest river or lake.

While bioretention basins are primarily used to contain water from a substantial drainage area, rain gardens are designed for use on smaller, residential lots. This gives home owners the ability to reduce the amount of storm water runoff that flows from their yards.

## DETERMINING THE DEPTH OF YOUR RAIN GARDEN

1. Set one stake at the uphill side of your rain garden and another stake at the downhill side.
2. Tie a string at ground level to the uphill stake.
3. Secure the other end of the string to the downhill stake, ensuring that the string is level.
4. Measure the width (in inches) between the two stakes. Next, measure the height (in inches) between the ground and the string of the downhill stake.
5. Divide the height by the width and multiply the result by 100. This will give you the percentage slope of the area where you wish to build your rain garden.
6. Record your percentage slope on line 1 of the worksheet, p. 18.
7. Find your percentage slope in the box below and determine the depth of your rain garden. Record that depth on line 2 of the worksheet, p. 18.

Slope	Depth
< 4%	3 to 5 inches
5% - 7%	6 to 7 inches
8% - 12%	8 inches maximum

## Rain Garden Depth and Slope

The slope of your land will greatly influence the depth of your rain garden. The ideal depth of a rain garden is between four (4) and eight (8) inches deep. A rain garden that is less than four inches deep will need to be larger in size to provide enough capacity to store water from heavy rains. However, a rain garden that is deeper than eight inches might hold water for too long. In general, slopes over 12% are not suitable for rain gardens. Installing a rain garden in a flatter part of your yard will reduce the amount of preparation needed to build your rain garden. To determine the depth of your rain garden, use the guidelines in the sidebar to the left.

## Directing Water to Your Rain Garden

There are several options for directing roof water to your rain garden. You can simply disconnect a downspout near the ground and reroute it to your rain garden. Rerouting the water from your downspout can be accomplished by creating a grassy swale, a rock-lined channel, or by extending the downspout across your lawn. Another option is to run a PVC pipe underground from your downspout to the rain garden. To slow the velocity of the routed rain water and prevent erosion, you may need to install landscape fabric, rocks or bricks at the outlet of the pipe.



Additionally, you may also want to install a rain barrel at your downspout to capture roof runoff for use in your rain garden or other parts of your yard. The overflow from the rain barrel can be directed into your rain garden by way of a grassy swale, rock lined channel or a drip hose.

*Rain barrels can also be used to collect roof runoff. Water from the barrel can be used to water plants throughout your yard and overflow can be directed into your rain garden.*

