Rain Gardens

An Introduction

Rain gardens are small, shallow low spots, planted with native wildflowers and wetland plants that soak up rainwater and snowmelt from driveways, parking lots, sidewalks, sump pumps, and roof downspouts. Rain gardens catch and absorb stormwater, allowing the water to filter into the ground instead of being transported by storm sewers to rivers and lakes. This is important because stormwater carries pollutants from streets, parking lots and from lawns (fertilizers and pesticides) into our local streams and lakes. The development of natural areas has decreased the earth's ability to naturally cleanse stormwater, leaving us with impervious surface and the need to catch and redirect stormwater. You can think of wetland areas as giant sponges with the ability to absorb rainwater. When those wetlands are removed for developments, we create a ripe situation for floods and pollution. Wetlands also work as natural filters and wetland plants have the ability to take up, or break down, pollutants.

By building rain gardens, homeowners can help restore some of the functions that have been lost due to destruction of native wetlands Rain gardens are usually smaller than 100 square feet and six-to-twelve inches deep. These shallow ponds hold water from several hours to several days, and then they become dry in between rainstorms.

Some of the benefits of rain gardens include:

- Lower cost than traditional storm water infrastructure such as detention basins and curb and gutter.
- Slower and decreased overland water flow, resulting in lower soil erosion, stream silting, bank erosion, and improved water quality of local lakes and streams.
- Because the water soaks into the ground there is greater recharge of groundwater aquifers.
- Restoration of native ecologic functioning, increased biological diversity, and providing habitat for birds, butterflies and insects.
- Increased neighborhood beauty. The City of Maplewood in Minnesota offered neighborhoods the option of rain gardens instead of curb and gutter.

Where to put your rain garden...

- The goal of the rain garden is to encourage infiltration of rainwater. Don't be tempted to put the rain garden in an already wet area of your property.
- Be sure to site you rain garden at least ten feet away from your house so that the rainwater does not seep into the foundation of your house.
- Consider how to incorporate your garden into the rest of your landscape and how far or close to the house you want it.
- Use a rope or garden hose to create the outline of the shape you'd like for your garden.
- Soil type is also a factor in determining the location and size of your garden. Clay soils have the slowest infiltration rate and rain gardens need to be larger to accommodate this.

Size and depth of your rain garden

- The water sources for this rain garden included a basement sump pump and one of four house rainspouts. The rubber liner was placed under the sump pump outlet to prevent erosion from the force of the water.
- The surface area of the rain garden can be any size (up to your energy level). The recommended size for home rain gardens is between 100 and 300 square feet. The rain garden in these photos is 100 square feet in size and was derived at as a best guess as to the surface area of my house and volume of water from the sump pump. If you prefer not to guess, a very good rain garden handbook can be found at http://clean-water.uwex.edu/pubs/home.htm#rain
- Rain gardens are usually 4 to 12 inches deep.
- It is important that the rain garden itself be level. If your site is not level, you will have to bring in soil to raise the downhill part of the garden. However, it is best to have a slight slope down to your garden for the water to run downhill.
- The picture on the left shows the berm created while digging out the garden. The berm acts like a low wall on three sides of the garden and holds in the water. The berm should be placed on the outside of the string. This garden was dug about 8 inches deep.

- The photo above on the right shows the downspout from the rain gutter and the corrugated pipe connector.
- **Caution** - Before digging call your local utility and ask them to locate buried utilities for you. This is usually a free service. For my rain garden, I knew that the pipe from my propane tank led to the house in the area I wanted my garden. I dug very carefully to locate the pipe and then marked it with stakes so I would not harm it. Afterwards, I placed rocks over the pipe location to remind me not to plant there.

- The pipe is typical drainpipe from a hardware store. Do not buy the perforated type of pipe. You want to carry all of the rainwater from the rainspout to your garden. (photo to the right)
- In Duluth we experience sanitary sewer overflows which can cause raw sewage to run into our lakes, rivers and Lake Superior. To correct this situation residents were asked to disconnect their foundation (footing) drains from the sanitary sewer system. For more information on Duluth stormwater and sewer systems please visit www.duluthstreams.org. I wanted to experiment with using water from my basement sump pump to see if it was possible to use it in a rain garden.
- One of the truly rewarding aspects of my rain garden is that when it is full of water, birds, chipmunks and squirrels drink and bathe in it.
- I used PVC pipe that was already channeling the sump pump water outside of my house. I buried the pipe in a shallow trench and covered the exit pipe with rocks to hide it.
- **Caution** - The process of making PVC is rather toxic to people and the earth. Please consider using alternative materials. To learn more about the problems with PVC please go to www.bluevinyl.org.
- The photos below show the garden after a rain. The sump pump completely fills the basin and takes about 3 to 4 hours to drain.

- Choosing plants for a rain garden is similar to other gardens. You need to consider height, sun requirements, and color. However, a rain garden is unique in that the plants must tolerate both saturation and dry periods.

- Plants for this demonstration garden were donated by Boreal Natives www.prairieresto.com/boreal_natives.shtml and included sedges and wet plants for the middle (wettest) portion of the garden and wildflowers towards the edges.
- I used moss-covered rocks (from an old rock pile left on my land by a farmer) to enhance the garden and to hide the water pipes. The photo below shows the rain garden in full summer growth. The garden is dry in between rains.

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