



Belmar Community Rain Garden  
Belmar, Monmouth County, NJ



# INSTALLING YOUR RAIN GARDEN

## Key Points:

- Before installing the rain garden, it is essential to contact New Jersey's "One Call" system to get a free markout of underground utilities.
- Avoid compacting the soil of the rain garden during the installation phase.
- Planting native plants will not only be easier to maintain, but they also provide food and habitat for native animal populations.

**DO NOT FORGET!**

Know what's below.  
Call before you dig. **811**  
**1-800-272-1000**  
NJ One Call

## Installing your Rain Garden

### Getting Started

You have completed the necessary steps of planning and designing - now it is time to install your rain garden!

Before you begin the installation process, there are several important things to consider. First, it is most effective to start the actual construction of the rain garden in the spring when the abundant rains will allow for best plant establishment and easier digging. A summer or autumn start will also work, but the plants may need more watering until they become established.

Go outside to the site or your rain garden. Referring to your sketches and notes from Chapter 2, use a garden hose, rope, or spray paint to layout the shape of the rain garden. Make sure that the placement of the rain garden does not conflict with any of the utility markouts including underground gas, water, sewer, cable, telephone, and electric.



Village School  
Holmdel, NJ

### INSTALLATION STEPS:

1. Remove existing grass
2. Excavate to desired elevation and grade
3. Add soil amendments
4. Prepare berm (if necessary)
5. Prepare overflow
6. Level the base (lowest area)
7. Plant native species
8. Apply mulch
9. Water plants

## Remove Existing Grass

Removing the existing grass can be done by digging with a shovel, renting a sod-cutter from a local hardware store, or hiring a landscape professional to do the work with a backhoe. Refer to [www.water.rutgers.edu](http://www.water.rutgers.edu) for a listing of landscape professionals trained in rain garden installations. Although a bit more costly, using a landscape professional may be advantageous, particularly if your rain garden is large and deep. The backhoe that a licensed operator uses will not only remove the grass, but it will easily dig deep into the ground. Regardless of the removal method, take out large chunks of grass with roots intact. This sod can be reused on the rain garden's berm or on other patches of the yard lacking grass.

ReBuilder's Source, Sustainable South Bronx  
Bronx, New York City, NY



## Excavate to Desired Depth and Slope

Using either a shovel or a backhoe, excavate the area to the desired depth. Remember that the soil infiltration test determines the appropriate depth of the rain garden. At this point, the hole that you dug should appear wide and flat. Now, consider how the edges of the rain garden meet the existing grade. Ideally, edges should maintain a gentle slope, perhaps a 3:1 slope or flatter. This means that if the rain garden has a depth of eight inches, the sides will slope down gradually for 24 inches, or three times the depth.

## Add Soil Amendments

You have already determined whether or not your rain garden needs soil texture amendments and/or soil quality amendments (refer to page 26 in the previous chapter), so now it is time to add these necessary amendments.

Adding soil texture amendments consists of adding coarse sand and compost (loamy topsoil) to loosen up the soil and improve the drainage. First remove about four to six inches of the native soil (or even up to eight inches with heavy clay soils) from the base, or the deepest part, and set it aside temporarily. Use a rototiller to break up the soil that remains within the base. If you do not have a rototiller available, use shovels and rakes instead. Add about an inch of loamy topsoil and coarse sand at a time to the base of the rain garden, combining it with a small amount of the extra soil that you removed previously. Use the rototiller to work this soil mixture into the rain garden's soil; repeat these steps several times until you have added about two to three inches of loamy topsoil and coarse sand. Once you have built the soil of the base back up to the desired depth, level the base by raking and grading it. Refer to the diagram on page 25 for more information. You may have excess native soil material that can either be used for the berm or for a different area of your yard.

For the soil quality amendments, refer to the recommendations from the RCE Soil Testing Laboratory. The soil test results will specify the exact amendments needed, the proper quantity of these amendments, and the installation process.

## TOOLS + MATERIALS NEEDED:

- Rakes and shovels
- Rototiller
- Wheelbarrow
- Triple-shredded hardwood mulch
- Plants
- Soil amendments, if necessary: fertilizer, pH adjustments (lime), coarse sand (bank run)
- Optional: decorative stone, signage, seating, pipe extensions, pavers for path
- Work crew (friends, neighbors, and family)

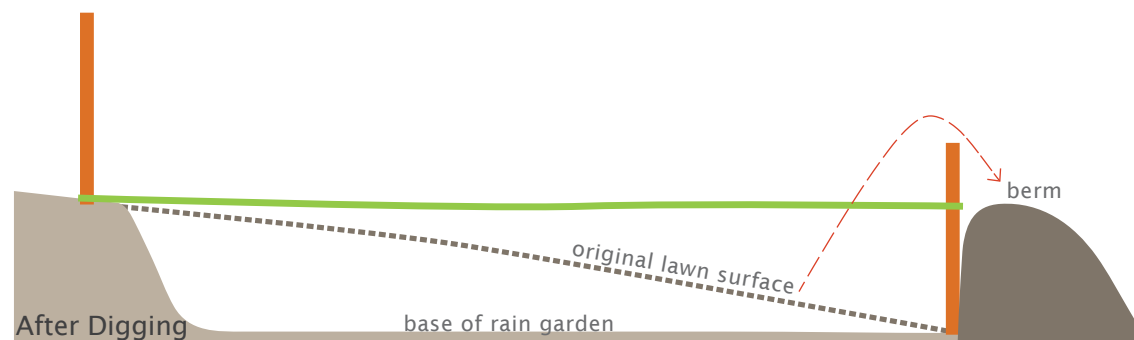
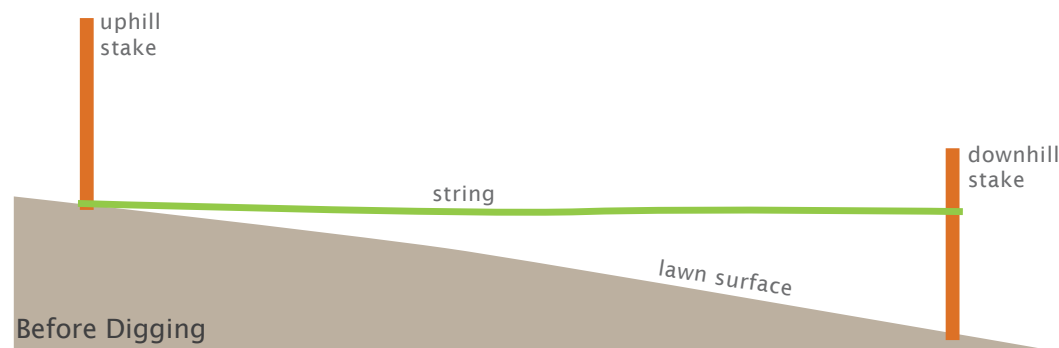


## Prepare the Berm

Next, you may need to create a berm for the rain garden. As the diagram below illustrates, a berm is the mound of soil found along the rain garden's downhill side which acts as a barrier to control and contain stormwater during heavy rain storms. It is important to note that a berm may not be necessary if the rain garden is located on a level area in your yard. Use the soil that you shoveled out of the base to build the berm. Plant grasses, particularly native species, on the berm to help filter and slow down the flow of water leaving the rain garden.



## Building the Berm



## Prepare the Overflow

Once you have built the berm, you can prepare the overflow drainage area, which is a notch, or lowpoint, in the berm. This typically consists of river stone and landscape fabric and will serve as a way for stormwater to exit the rain garden during heavy rain events. First, to reduce weed growth, line the area with landscape fabric. Spread river stone out over the fabric, at a depth of three to six inches. The stone placed at this outlet point will slow the water, reducing erosion. Make sure that the overflow directs the flow of water away from structures and towards vegetated areas or a stormwater catch basin.

## Level the Base

Before planting any plants, it is important to carefully level the base of the rain garden to prevent ponding in any one area. As the image above indicates, to check for level use two stakes, mason string, a string level, and a ruler or meter stick. Tie the string tightly between the two stakes, using the string level to ensure the string is level. Use the ruler to measure from the level mason string to the ground surface to ensure that the base is level. Repeat this process several times, ensuring an even surface throughout the entire base of the rain garden. If the base is not level, use a shovel and rake to correct it.

In addition, prior to planting, you may want to check the infiltration rate of the rain garden. This can also be conducted after planting, but it is much easier to modify and rework the soil without plants in the ground. Use a garden hose to soak and fill a small area of the rain garden. After the area has been soaked, fill with approximately two inches of water. Examine the area to make sure that it drains within an hour. If the garden drains adequately, install the plants as soon as possible. Wet soils will help the plants adjust easier to their new surroundings. In contrast, if it does not drain well, mix coarse sand into rain garden soils before planting to improve drainage. For more information, refer to the image of sand wicks on page 23.

### Install the Plants

You are now ready to plant. First, look at any sketches or planting plans you developed during the design/planning phase. Mark out the location of each plant, making sure to maintain the recommended distances between each plant. Using a rope to outline the planting scheme may help.

Avoid compacting the soil during planting. To do this, minimize the amount that people walk through the garden during planting. If the rain garden is large, put a temporary pathway of mulch down where you expect to walk. Remove the mulch before you plant.

Protect plants from extreme sun and wind exposure. Keep them cool and moist prior to planting.

Dig a planting hole that is both deep and wide enough to let the roots hang vertically to the bottom of the hole. Keep in mind that the depth should be approximately the same as the plant's original container. Refer to the image on the top right.



Watch out for root-bound plants. Take the plant out of its container and observe for overgrown roots wrapped around the outside of the rootball. The roots of root-bound plants will continue to grow in a circle, confined to the shape of its original container. To ensure that the plant grows freely in the ground, make several vertical cuts down the sides of the rootball, and pull the roots apart. Refer to image on bottom left.

Place the plant so that the surface of the ground is slightly below the base of the plant. The rootball should be entirely enveloped by soil.

To reduce the number of air pockets around the roots, backfill the hole and water the plants.

### Apply the Mulch

Once the plants are in the ground, apply mulch. Along with maintaining moisture and coolness, the layer of mulch will thwart weed growth. Add approximately two to three inches cover, making sure to leave about an inch of space surrounding the plant stems. When spreading the mulch, use the empty plant containers to protect small plants. Triple shredded hardwood mulch with no dye is preferred for rain gardens.

### Water the Plants

Lastly, do not forget to water the plants! Plants should be watered immediately after planting and twice a week, unless it rains, until well established. Establishment usually occurs after the first year, when the plants will only need water during hot, dry spells. Using soaker hoses, at least for the first year, will make it much easier for you to maintain your rain garden.

The following pages contain photographs documenting each of these steps of building a rain garden. This specific rain garden installation occurred at the Gloucester County 4-H Fairgrounds in March 2008 as part of the Rain Garden Training for Professional Landscapers, funded by a United States Department of Agriculture (USDA) National Institute for Food and Agriculture (NIFA) National Water Program grant ([www.usawaterquality.org](http://www.usawaterquality.org)).



Delineate the rain garden, using either spray paint, a rope, or a garden hose.



Remove existing grass with either a shovel or machinery. If using machinery, the heavy weight of the machinery can compact the soil. Be sure to only run the machinery along the edge of the rain garden, not directly on top of it.



Dig the rain garden to its appropriate depth based upon the soil infiltration test.





Add soil amendments if necessary. Use a rototiller or shovel to combine amendments with existing soil. Loosen and prepare the soil.



Shape the rain garden bed. Create a berm and an overflow area (outlet) for the water.



Level the base (lowest area) of the rain garden to prevent ponding. Use a ruler, two stakes, and something level to check for an even surface. If the base is not level, use a rake and shovel to smooth it out.





Before planting, place each plant in the desired locations. Dig a hole of equal depth, but slightly wider, to the size of the container. Take the plant out of the container, loosen the roots, and plant.



Use empty plant containers to protect small plants. Apply two to three inches of mulch throughout the rain garden.



Water plants, either by installing a soaker hose or watering manually.





At time of installation



First growing season



Second growing season

