Rain Gardens

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Master Rain Gardener
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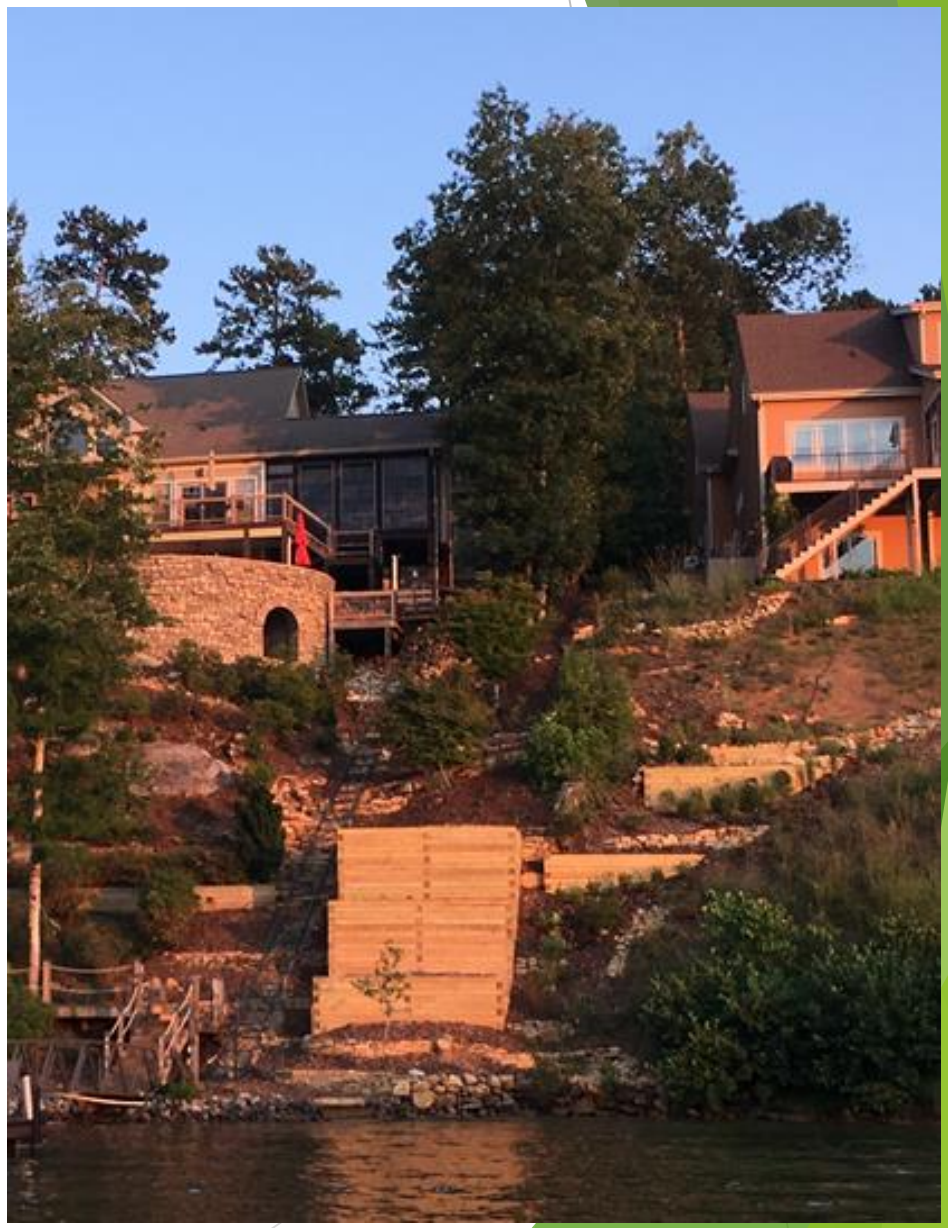
A little about me, and why I care about Rain Gardens

- Master Gardener
- Master RAIN Gardener
- Certified in Native Plant Studies, Clemson University
- I spend a lot of time walking in Keowee Key and cruising the shorelines of Lake Keowee, often on a paddle board.
- I see clearly the effects of heavy rains on landscapes, especially steep slopes.
- Did you know? A ONE INCH RAINFALL, ON A ONE-THOUSAND SQUARE FOOT IMPERVIOUS SURFACE (ROOF, DRIVEWAY) PRODUCES 600 GALLONS OF WATER!! Let's remember that, as we continue our discussion and thoughts…

Examples of steep slopes



Rainfall in Keowee Key

- 2018 Total rainfall: 63 inches
- 2019 Rainfall to date: 40 inches (5/26/19; This time 2018: 31”; 2017: 27”)
- Number of “Rain Bombs” when we receive more than one inch of rain in a 24-hour period:
- 3 times/month in 2018; 5/6 times in Jan/Feb; April 19-20, 2019, 6-8+ inches; June 7-9, 2019, +/-6 inches
- One can debate whether climate change is caused by human behavior or not, but experts do agree that climate change is occurring!
- (Source: Wellesley College Albright Institute livestream session with John Podesta and William K. Reilly, former chair of Environmental Protection Agency, 1/16/2019)

Heavy rains can cause EROSION

What can we do to keep our soil and rainwater from washing into the lake, or down the street?

SOLUTION:
A RAIN GARDEN

Here are some benefits:

- Stormwater run off control
- Pollution control
- Create a point of interest
- Create habitat

Principles of Stormwater Mitigation

- Collect water runoff near the source
- Slow it down
- Soak it in
- Filter it
- Apply it to the landscape
- Create habitats for wildlife

RAIN GARDEN DEFINED

- A depressed garden, designed to receive and temporarily retain water run off
- Includes an influx and outflow
- Includes a berm
- Water can be directed to garden through downspouts, extenders, or river rock.
- Can be located on a relatively flat area, or on a slope
- Designed to capture one-inch of rainfall and infiltrate the water within three days

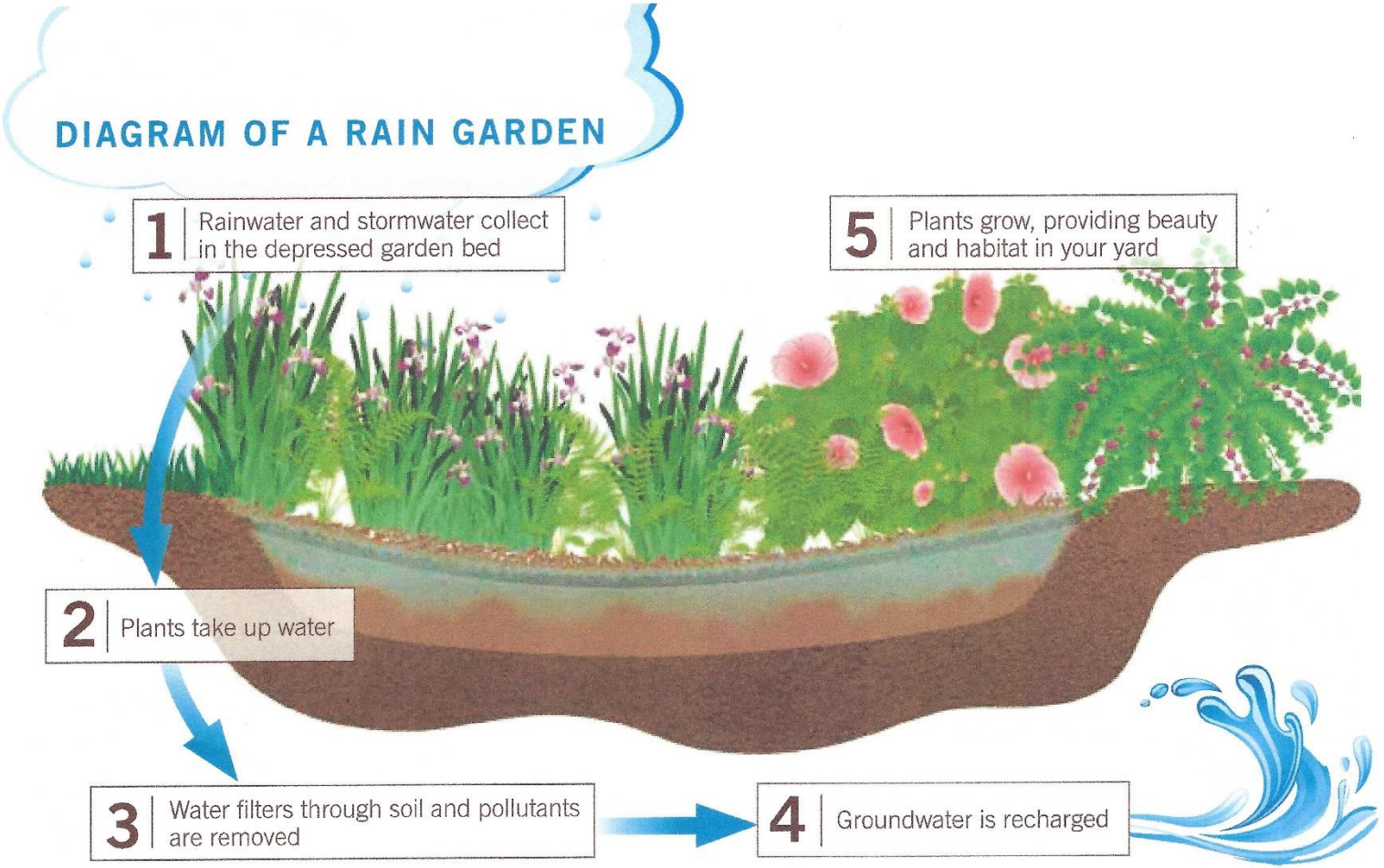


Image credit: A Guide to Rain Gardens in South Carolina, courtesy of Kim Counts Morganello and Amy Scaroni, Clemson University Extension

Minimum measurements:

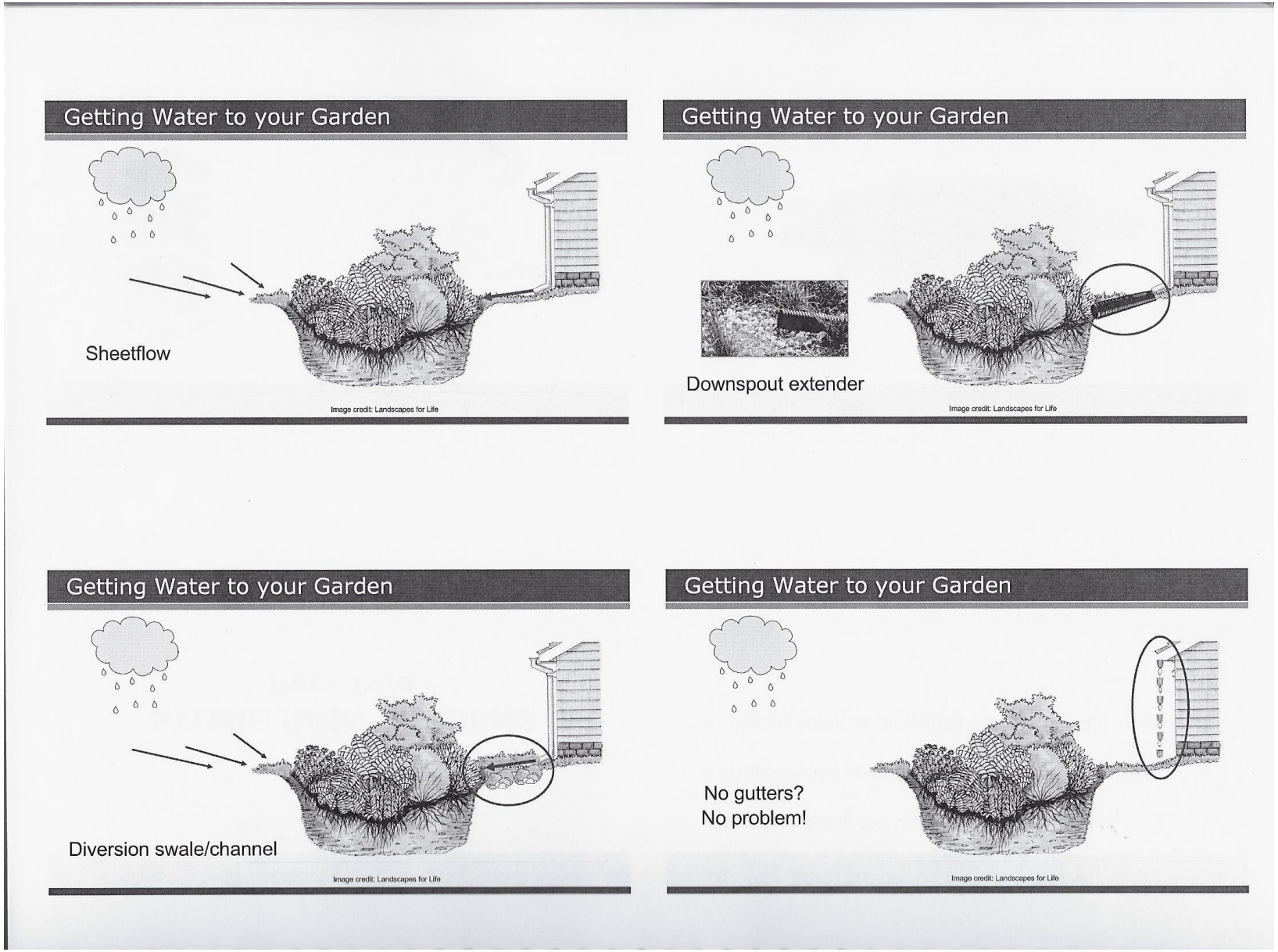
8-10 feet long, in the direction of the water flow

2 or more feet wide

10-12 inches deep; use excavated soil to create berm

Decide location for Rain Garden:

- Identify desired impervious surface area(s)
- Identify water flow paths
- Identify desired rain garden space
- Avoid utility wires, large tree roots
- Slope less than 15% is ideal; create terraces with large rocks/boulders, if slope is steep



In Keowee Key, the two most likely ways to get water to your garden are:

Downspout extender
and/or

Diversion swale, using landscape rocks

Create a Rain Garden:

- Use downspouts or river rock to channel water from source to garden
- Gather helpers to **DIG A HOLE**
- Use dirt from hole to create berm
- Add **organic matter** and **sand**
- Stabilize inflow and outflow with rock

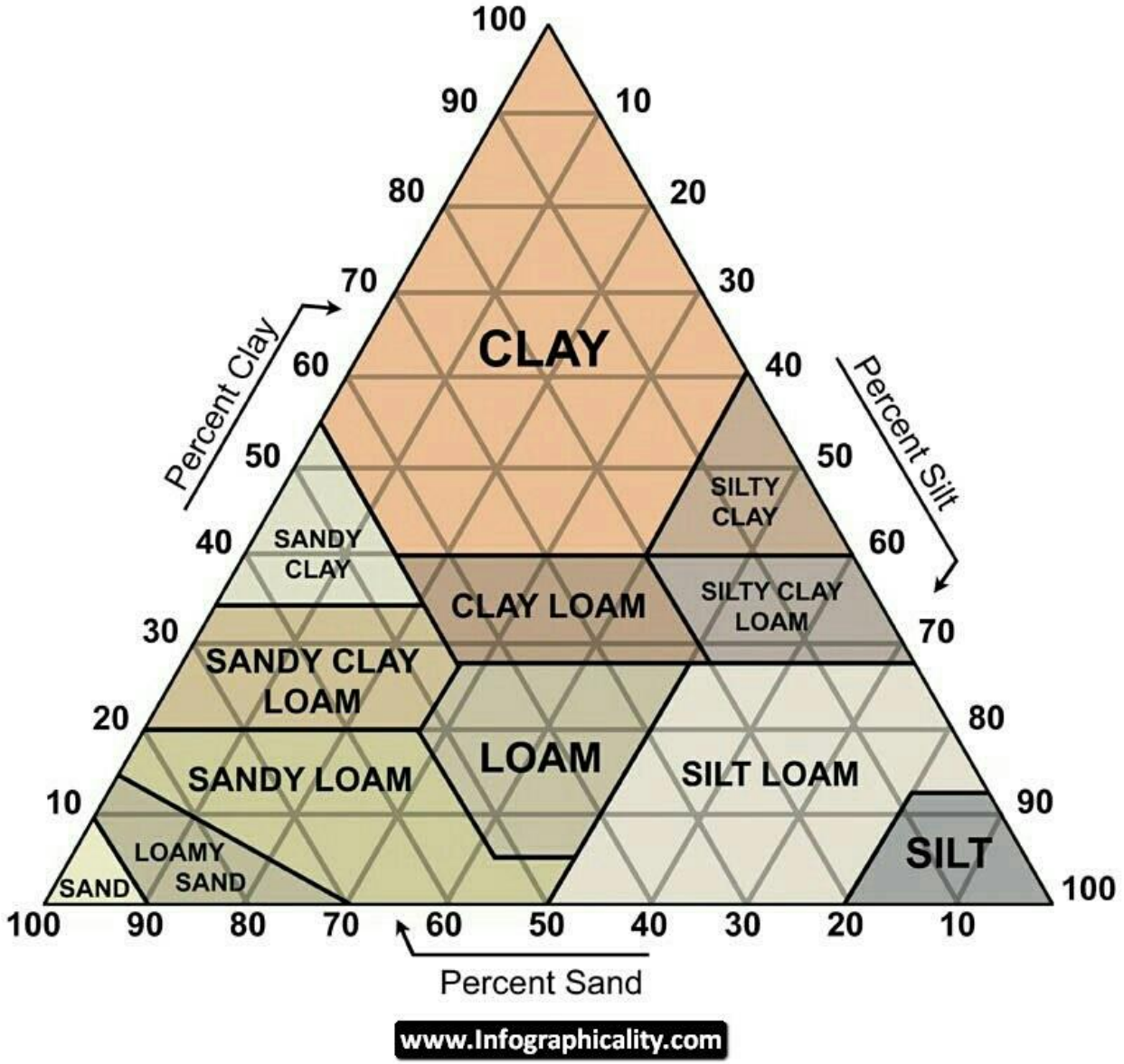
Soil preparation

DIG TWO CUPS SOIL, AND HAVE IT TESTED BY CLEMSON

COST IS SIX DOLLARS

TAKE SOIL SAMPLES TO CLEMSON EXTENSION OFFICE IN WALHALLA, OR TO THE SOILS LAB ON W. CHERRY ROAD, IN CLEMSON

Soils Triangle



Recipe for soil in rain garden

Soil depth in rain garden basin: 12 inches
Recipe for soil mixture:

- 50-60% sand
- 20-30% organic matter
- 20-30% existing soil

In Upstate South Carolina, we should add LOTS of sand and organic matter.
Clay is compacted; it does not drain well.

Plant selection

- Plants on outer border, near berm should tolerate drought
- Plants in center should tolerate flooding
- Use the same principles as you do elsewhere in your landscape:

Right plant, right place

Sources for plant selection

- Carolina Yards Database:

https://www.clemson.edu/extension/carolinayards/plant-database/index.html

Selections:

Upstate region, SC Native plants (yes!),

Plant type, Sunlight,

Soil type, Soil pH, Soil moisture (submerged in center vs. edge of berm),

Wildlife (Deer resistant),

Stormwater (Rain Garden)

- Native Plants for Wildlife, by SCNPS, see NWF.org website under “Resources”
- Deer Resistant plants, see NWF.org website under “Resources”

Plants for SHADY Rain Gardens

BUSHES:

- Carolina Allspice, Spicebush (Calycanthus floridus)
- Yaupon Holly (Ilex vomitoria, and cultivars)

PERENNIALS AND FERNS:

- Lady Fern (Athyrium, various species)
- Orange Coneflower, various coneflowers (Rudbeckia species: Rudbeckia spp. (R. fulgida, R. hirta, R. laciniata, R. maxima, R.subtomentosa, R. triloba)
- Joe Pye Weed (Eutrochium purpureum)

Plants for PART SUN Rain Gardens

BUSHES:

- Buttonbush (Cephalanthus occidentalis) *grows wild on Skipper Lane at edge of lake
- Carolina Allspice, Spicebush (Calycanthus floridus)
- Dwarf Fothergilla (Fothergilla gardenii)
- Sweet Pepperbush, Summersweet (Clethra alnifolia)
- Swamp Azalea (Rhododendron viscosum) **not deer resistant

PERENNIALS:

- Butterfly Weed (a Milkweed; Asclepias tuberosa)
- Columbine (Aquilegia species)
- Orange Coneflower, Black-eyed Susan (Rudbeckia, species)
- New York Ironweed, Tall Ironweed (Vernonia angustifolia, V. noveboracensis)
- Turtlehead (Chelone, various species: C. lyonia and C. obliqua)
- Upland River Oats (Chasmanthium latifolium; a grass/sedge)

The final touch: MULCH and its benefits

- Protects roots
- Helps recycle nutrients
- Regulates soil temperatures
- Helps prevents disease
- Stabilizes soil
- Improves soil structure as it decomposes
- Improves soil drainage
- Controls weeds
- Reduces irrigation needs
- Adds beauty
- Creates uniform appearance

Aim for 3-4 inches of mulch, to begin

Use cedar mulch, preferably not dyed

Example of rain garden, in bloom, with border and outflow