# Rain Gardens –

## *beautiful solutions to water pollution*

Greene County Master Gardeners

# Rain Gardens

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# Protecting the surface water in our community by managing the rain water from our yards

# What is a Rain Garden?

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- It is an appealing, landscaped, shallow depression,
- planted with perennial plants, and
- designed to capture and filter stormwater runoff from impervious surfaces like rooftops and driveways.
- It is NOT a water feature.
- It does NOT “hold” water like a pond.
- It does NOT attract mosquitoes. But it can attract birds and butterflies.

# Appealing, isn't it?

# Demonstration Garden at Recycling Center - Springfield

# What is their history?

- Rain gardens were first used in Maryland in the early 1990's to deal with non-point source pollution threatening the Chesapeake Bay.
- Based on the designs for bio-retention basins used at large construction sites.
- Designed for smaller residential lots.
- Many communities have started using rain gardens to deal with stormwater runoff from residential properties and parking lots.

# Why would anyone want to install such a garden?

- Rain gardens help reduce stormwater flow and the movement (filtering) of pollutants into local waterways.
- Rain Gardens help control flooding,
- enhance the beauty of yards, and
- provide habitat for wildlife.
- Rain Gardens allow 30% more water to soak into the ground and help recharge the ground water supply.

# Why do we keep talking about stormwater? Isn't this a session on Rain Gardens?

# Let’s start at the beginning…

**When it rains, a large amount of water…**

**Runs off of impervious surfaces** → **Enters the stormdrain system** → **Goes straight to the stream**

# What happens to the stormwater runoff from your house NOW?

# Downspout to…where?

# Gutter to…where?

# Drainage pipe to…where?

# Roadside ditch & culvert to… where?

# “Take Home Message” #1

- Stormwater flow can be FAST and can cause
- Erosion, resulting in
- Shoreline damage,
- Decreased sediment,
- Ugliness

# “Take Home Message” #2

- Stormwater flow can carry POLLUTANTS – fertilizers, pesticides, petrochemicals, pet wastes, grass clippings, leaves, yard debris, trash, dirt and debris from roof, lawns and driveways, rubber and heavy metals from tires, etc.


Oil Leaks

# So… how do you start to manage stormwater from your own property?

- Think about your house and yard – roof, patio, driveway, gutters, downspouts.
- What are the drainage patterns: how does the water move?
- Think about your yard – how does the water flow across your property during a storm event?
- **<u>What is the low point</u>?**
- **Do an infiltration/percolation test.**

# Just upstream of THAT is where you will put your Rain Garden!

- Up-slope of areas where water collects
- Down-slope of water sources - downspouts and driveways, sump pump outlets, etc.
- > 10 feet from house foundations
- > 25 or more feet from septic system
- Away from buried utility lines
- Not in area between street and sidewalks
- Slope of between 1% to 10% is best
- In full sun, if possible

# How big will my Rain Garden be?

- The garden can be any size, but an IDEAL garden is one which is capable of capturing and holding the water from the source (roof, driveway, yard).
- Size depends on depth, soil type and amount of runoff that will drain to it.
- You may want to divide the volume from your house into more than one piece to manage all of the flow – therefore, you may want more than one rain garden.

# How do I get water to my garden?

- Reroute the water from the downspout (or the driveway or the patio) to the Rain Garden area:
  - extend downspout
  - construct a rocky swale
  - run PVC pipe underground to the garden

# Downspout extender

# Underground PVC or Corrugated pipe

# Rock Swale to shunt water to the garden

# Rain Chain or Stacked Rocks


# Rain barrel

http://www.rainbarrelsandmore.com

# More Rain Barrels

# Does the shape of my garden matter?

- You will want to choose a shape that matches the rest of your landscaping.
- BUT… the LONGER side of the garden should run perpendicular to the flow of the water.
- AND a good rule of thumb is that the garden should be twice as wide as long.

# Building the garden – what do you need?

- Tape measure
- Shovel
- Rake
- Carpenter's level
- Wooden or plastic stakes
- String
- Trowel
- Hand tamp
- Wheel barrow

# Also . . . Lots of friends!

# Backhoe! Just kidding, but wouldn’t this be nice for most of our garden projects!

# Getting Started

- Determine perimeter of garden.
- Start to dig – bottom of garden must be flat and level so that the water which enters the garden is evenly distributed to allow for maximum percolation.
- Place excavated soil at the down-slope edge to form a berm.

# Select site

# Spray paint or mark the perimeter

# Remove sod

# Loosen and remove soil

# Where did the dirt go?

# Make a flat, level bottom

# Double inspect the levelness

# Create a berm

# Why do I need a berm?

- Water flowing into the garden will naturally flow to the low side and try to escape .
- A BERM keeps the water in the garden: this berm should be shaped and hand tamped to make sure it is solid.
- Then, it should be protected from erosion.

Photo by Roger Bannerman

# Install a rock swale

# What kind of soil do I put in my garden?

- You can reuse some of the soil you dug out of the garden space, but you will amend the soil to make it act more like a sponge.
- A good soil mix for a rain garden is:
  - Sand: 50-60%
  - Organic matter (compost): 10-15%
  - Topsoil: 30-40%
- Mix well in the excavated area.

# Fill with soil/sand mixture

# What kind of plants do I put in my garden?

- Choose hearty native plants, if possible, considering their height and color.
- Native plants tend to be more tolerant of wet and dry conditions and temperatures because they grow deeper roots.
- Native plants attract birds and butterflies – always good!
- Use plants that bloom at different times to create a long flowering season.
- They are more disease resistant.

# Factors to consider when selecting plants

- Moisture tolerances
- Sun preferences
- Plant size
- Plant aggressiveness
- Seasonal interest
- Salt tolerance
- Selections for birds and butterflies

# Planting native plants

# Should I use mulch?

- Mulch looks good in gardens, but be sure to use pine bark or similar “non-floating” mulches to avoid a “bathtub” ring after a rain shower. Gravel can work very well.

# Completed mulched garden

# Will my Rain Gardens be hard to maintain?

- For the first year or so, maintenance will include weeding and **watering** to help the plants become “established.”
- Long-term maintenance is like any other garden – mulching and adding organic material like compost.
- The berm will have to be checked and stabilized periodically.
- Adding compost will replenish organic material plants need to grow, increase water retention and keep plants from becoming droughty in late summer.

# Be adventurous, experiment and design for your own site

- Native prairie garden
- Native part shade to shade garden
- Bird and butterfly garden
- Shrub garden
- Mixed sunny garden
- Mixed shade garden

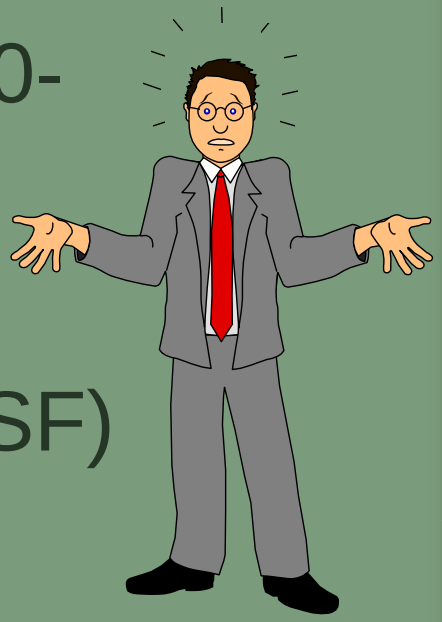
# Sizing & Materials Example

- Rooftop drainage area = 25 ft x 42 ft = 1050 SF
- Rain Garden Area @ 20% = 210 SF; Mine = 12 ft x 16 ft =192 SF
- Rain Garden at 190 SF and 8 inches depth = ~ 5 Cu Yd of sand/soil/humus
- Creek rock = .4 Cu Yd
- Mulch at 190 SF = ~ 1.25 - 1.7 Cu Yd at depth of 2 - 3 inches

# Cost Example

For a 12 x 16 garden:

- Plants: ~$200-$250 (retail; cheaper if you use wholesale or transplants)
- Soil mix/rocks/mulch: ~$220-$250 (retail bulk)
- Labor: free (use friends!!)
- Total: $500 (~$3.30-$4.00/SF)
- Excludes taxes  & delivery



# Additional Details to Think About

- Make sure you don't place a garden somewhere where it will cause a water problem for your neighbor.
- Make sure you don't place a garden where it will block the view-lines at street intersections.
- Maintain the garden – remember, you've purposefully shunted rain water to this spot – if you neglect the spot, the rain water might become a problem.
- Watch out for buried water lines, septic systems, and electrical cables!
- CALL BEFORE YOU DIG! 800-362-2764

# “Take Home Message” #3
# Rain Gardens can

- Capture and filter polluted stormwater runoff
- Recharge ground water
- Help control flooding and erosion
- Provide habitat for wildlife
- Enhance beauty of yards

# Time to dig and plant!

# Thank you!

- Rain Gardens: *Protecting our water one yard at a time*. . . *We can do it!*

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