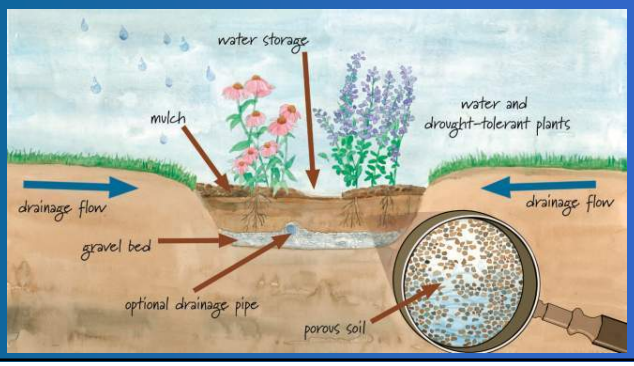
Using Rain Gardens to Reduce Runoff—Slow it down, spread it out, soak it in!

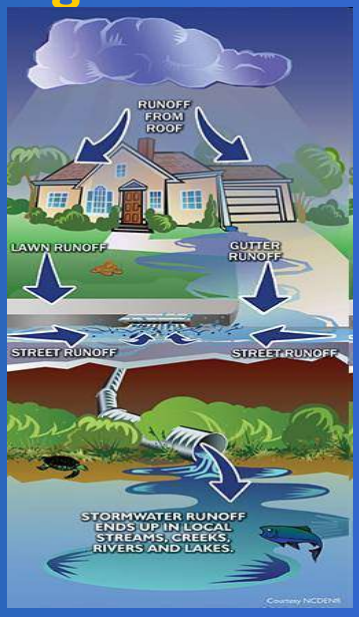
What is a rain garden?

- Bowl-shaped garden
- Captures and absorbs stormwater
- Functional garden

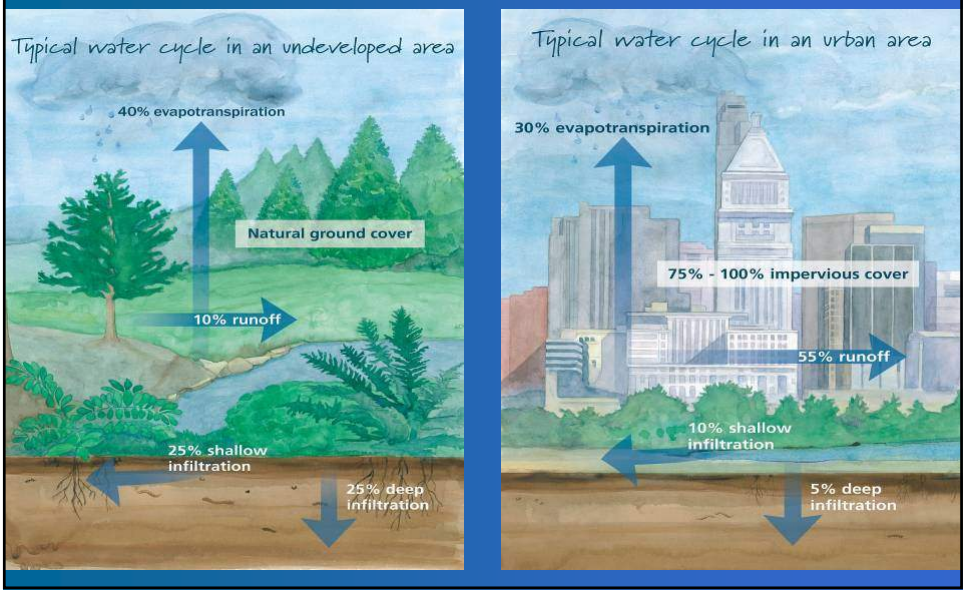


Why do we need rain gardens?

- Stormwater runoff is one of biggest problem facing waterways
- Impervious surfaces increase runoff = increase flow in our streams



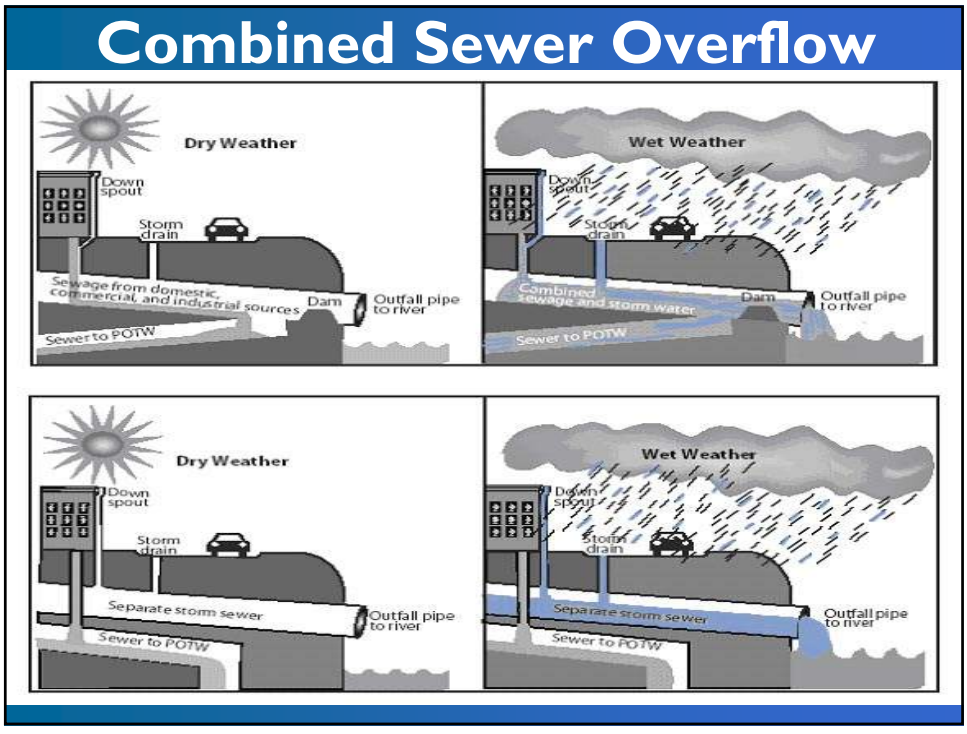
Pervious vs Impervious



Increased Stormwater Runoff

- Leads to:
  - Degraded water quality
  - Loss of habitat and aquatic life
  - Increased flooding
  - Stream erosion
  - Increased CSO problems


Eroded streambanks


Combined Sewer Overflow
Dry Weather
Down spout
Storm drain
Sewage from domestic, commercial, and industrial sources
Dam
Outfall pipe to river
Sewer to POTW
Wet Weather
Down spout
Storm drain
Combined sewage and storm water
Dam
Outfall pipe to river
Sewer to POTW
Dry Weather
Down spout
Storm drain
Separate storm sewer
Outfall pipe to river
Sewer to POTW
Wet Weather
Down spout
Storm drain
Separate storm sewer
Outfall pipe to river
Sewer to POTW

What is Low Impact Development (LID)?

- Practices that mimic natural processes to:
  - Infiltrate
  - Evapotranspirate
  - Reuse
- Retain water on-site
  - Rather than convey to storm sewers
- Control stormwater runoff
  - Slow it down, spread it out, soak it in!

Examples of LID Practices

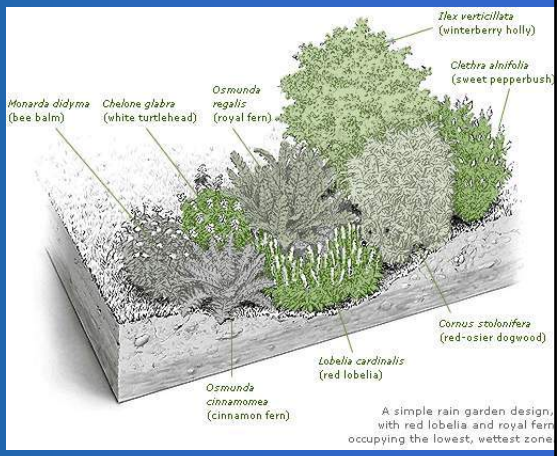
Rain gardens …

- Slow it down, spread it out, soak it in!
- Reduce runoff
- Remove pollutants
- Recharge ground water
- And are beautiful

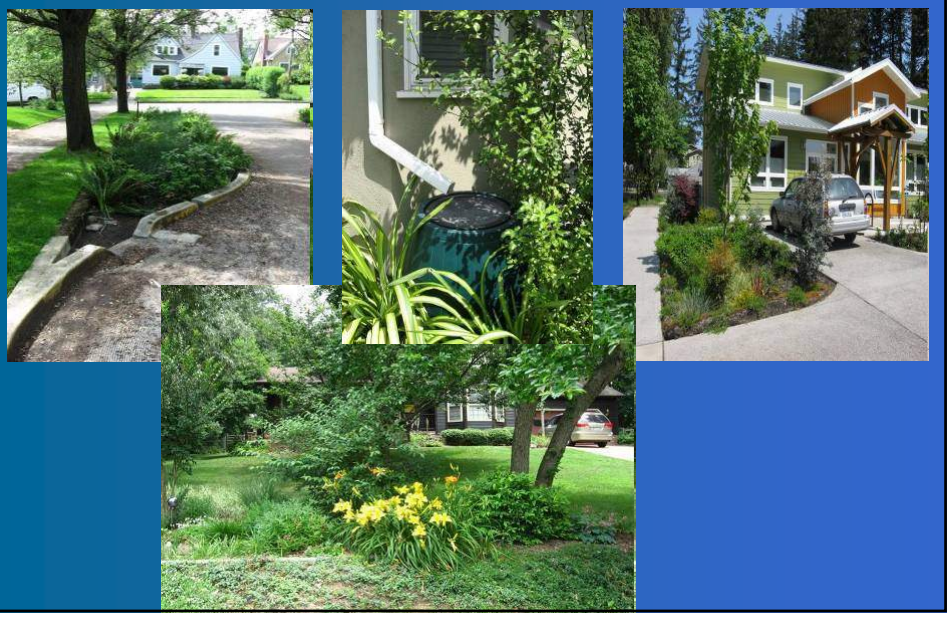
Beautiful and Functional

Rain gardens 101

- Bioretention
- Affect of soil type
- Water ponding



Rain gardens come in many shapes & sizes…



Rain garden Ready

- Locate a good place
- Test your soils
- Determine size
- Build
- Plant

Location, Location, Location

- At least 10 ft. from house
- Not on top of septic system
- A sunny spot is best

Soil Particle Size Matters

- Sandy, Silty or Clayey soils?
- Sand= fastest infiltration
- Clay = slowest infiltration
- Clay soils = bigger garden

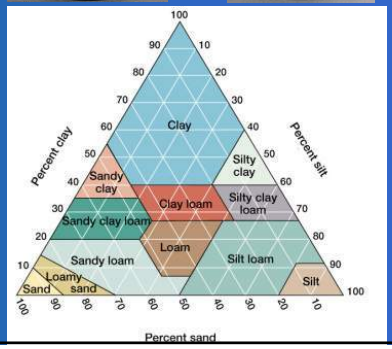
Soil Amendment

- Based on two factors:
  - Type of plants
  - Existing soil
- Add peat moss/compost/sand

Water enters the rain garden, then dissipates slowly into the ground

Simple Soil Test

- Soil Texture Analysis
  - weather.nmsu.edu/teaching_Material/soil456/soiltexture/soiltext.htm
- Determines percent
  - Clay
  - Silt
  - sand



Infiltration Test

- Dig hole: 8”wide X 8” deep
- Fill hole with water
- Mark water level with stick
- Check watch and record time
- Measure water drop-
  - 1 hour, every 15 min.

Ponding Perfection

- Size matters
  - Based on drainage area
- No more than 24 hours
- Include overflow
  - Away from house

Building Basics

- Keep garden level
- Pound uphill/downhill stakes
  - 10-15’ apart
- Use carpenter’s level to tie horizontal string to both stakes

Choosing Plants

- Native
- Plants that tolerate some ponding and drought
  - Zones
- Wildlife value

Choosing Plants

- Local Horticultural Society
- Master Gardener Group
- Local agency rain garden manuals
  - Fish and Wildlife Guide

Costs

- Varies
- Range $2-12/square foot
- Depends on:
  - Size
  - Materials
  - Labor
  - Design

Performance

- Reduces runoff
  - Retains 90% of storm events
- Removes pollutants
  - 65-90%
    - Sediment, nutrients, heavy metals

Maintenance

- 1st Year
  - Plant establishment
  - Plant removal and replacement
- Annually
  - Weeding
  - Removal (if needed) and replacement of mulch