Stormwater a Problem and a Resource

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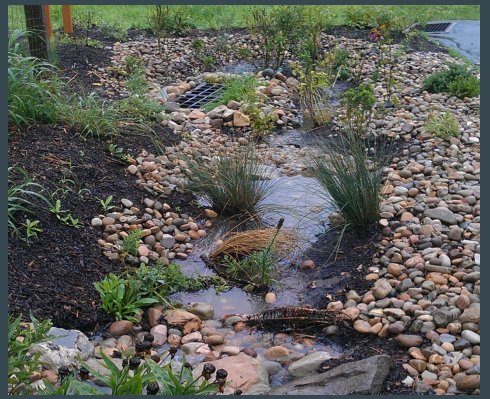

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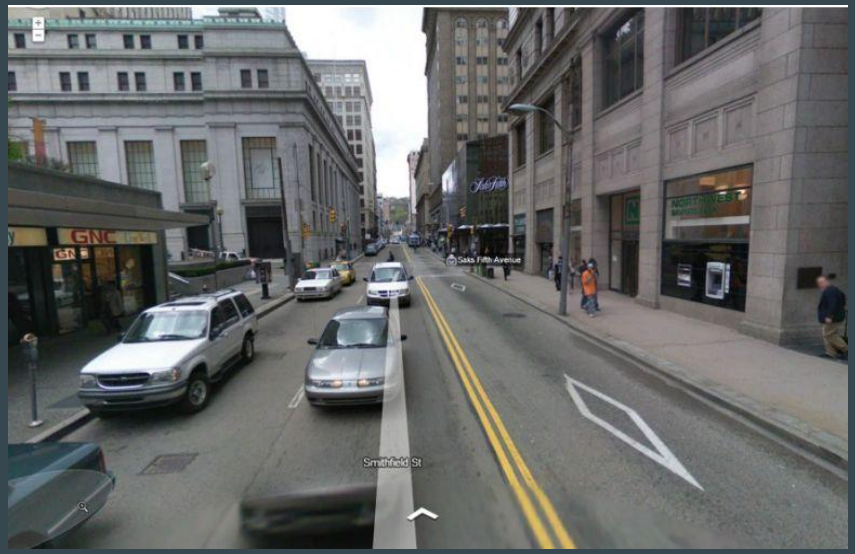
Presentation Outline

- The problem with stormwater runoff
  - Development's effect on stormwater management
- How is stormwater currently managed?
  - Problems associated with current management methods
- The future of stormwater management, treating stormwater as a RESOURCE!
  - Stormwater harvesting
  - Rain gardens
  - Depaving and Naturalized Lawns
- How to begin to plan a stormwater runoff project and incorporate it into future projects
  - Stormwater management at the residential scale

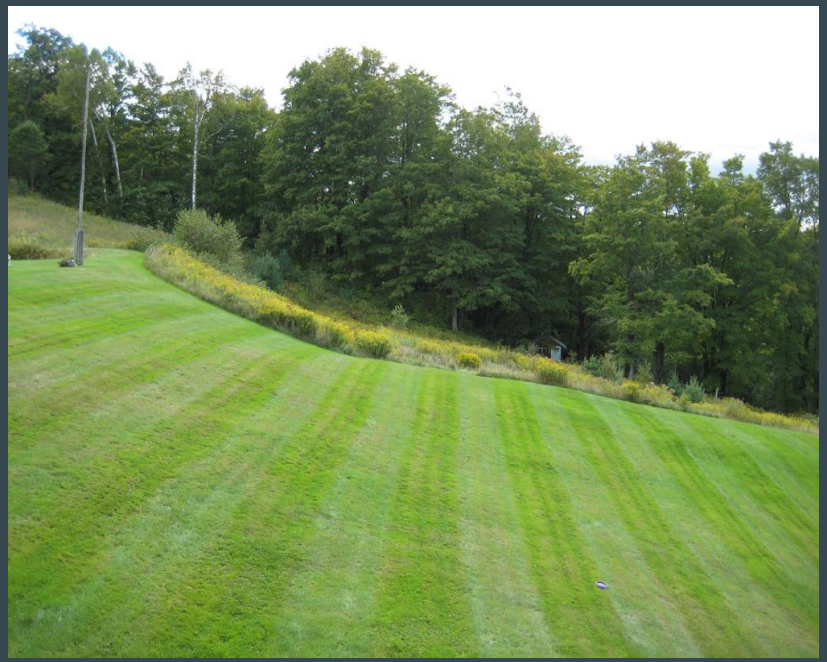
Stormwater management is the term used to describe the management of runoff, or precipitation that falls on the surface of the earth and flows over land. Stormwater runoff occurs when precipitation from rain or snowmelt flows over the land surface.

The problem with runoff occurs in developed and disturbed areas.

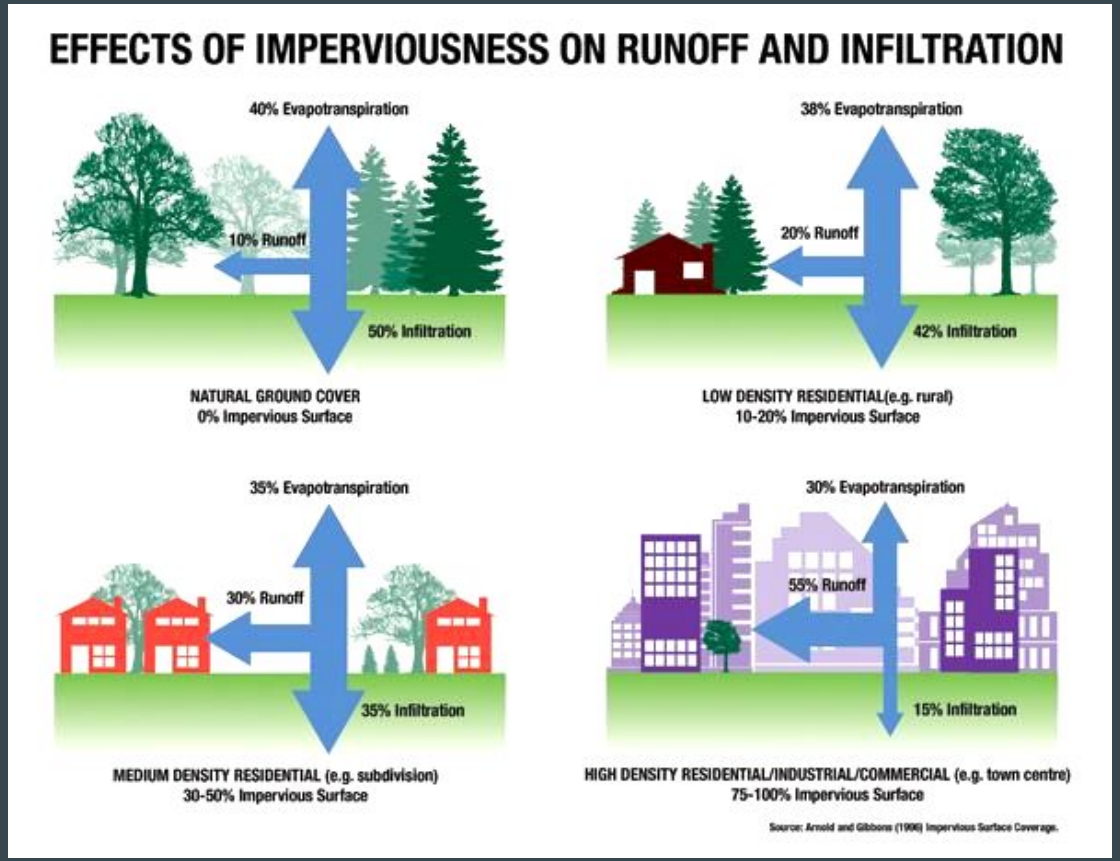
The abundance of roads, driveways, parking lots, rooftops, lawns, and other surfaces that prevent water from soaking into the ground greatly increases the runoff volume created during storms.



The problem with runoff...yes, lawns. Lawns have a runoff rate that differs slightly from paved areas (depends on a variety of factors).



Development's effect on the water cycle...



We have an abundance of impervious surfaces...

100 ft^2 generates approximately 62 gallons of runoff during a 1” precipitation event. These images represent over 10 million ft^2 of impervious surface.

The problem with runoff...this abundance of stormwater runoff causes a variety of environmental, safety, and public health issues.

And it’s not just about quantity...this abundance of impervious surfaces causes significant water quality issues.

Traditional management methods...where does stormwater runoff go?

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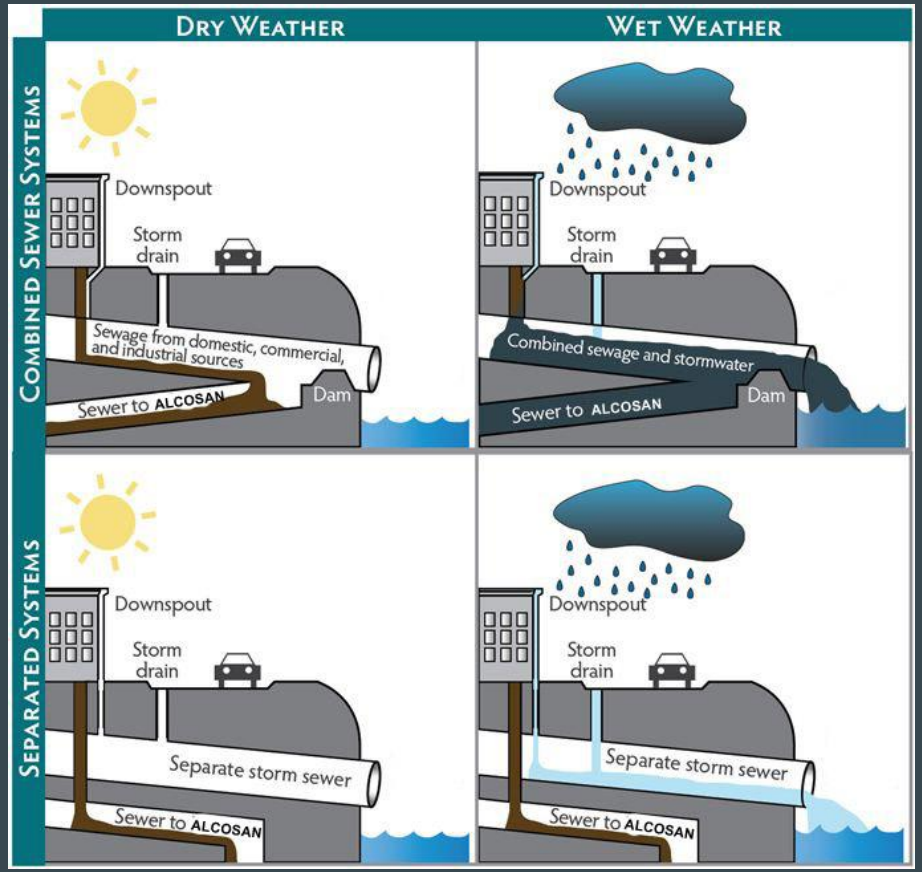
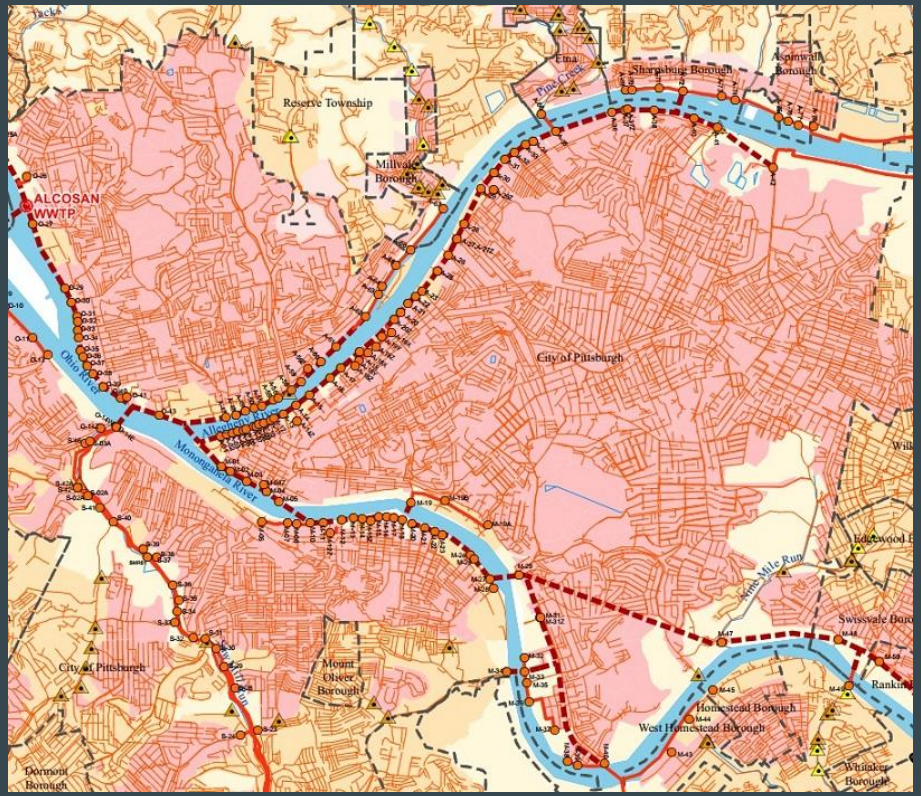
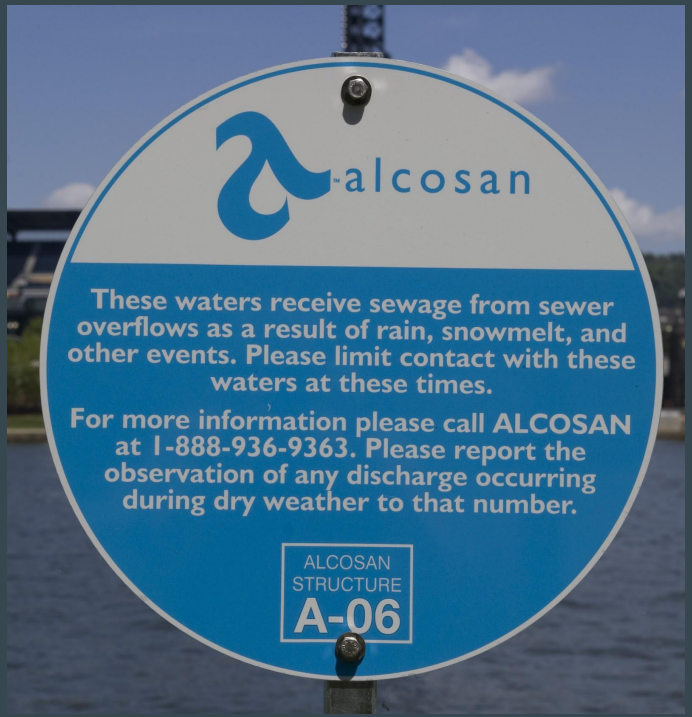
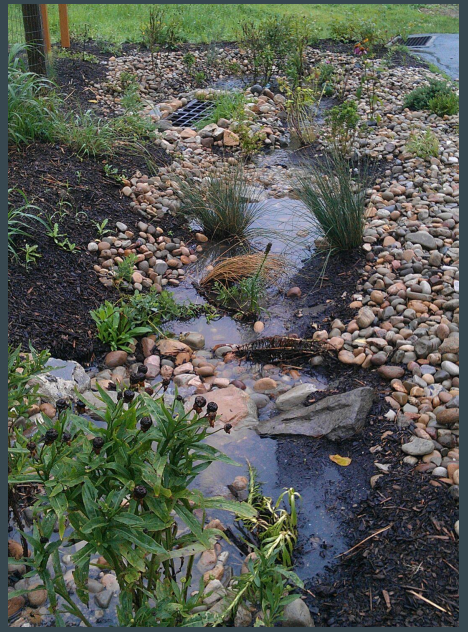


City of Pittsburgh...stormwater is combined into the same pipe as sewage and piped to ALCOSAN...





Outlying municipalities...separate systems transport sewage to a treatment facility, while stormwater is often discharged to the nearest stream, river, or water body.



Tools for Homeowners...a homeowner can manage runoff by incorporating a variety of techniques, smaller-scale systems that mimic natural hydrological processes, and respecting the age old mentality that water that comes from the sky is a RESOURCE!

Stormwater harvesting techniques, collecting runoff in barrels, cisterns, and planters

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Rain Gardens capture runoff in a vegetated basin and often pond for a day or two after the storm.

Rain Gardens are appropriately sized to manage contributing flows, often from 7:1 to 5:1, depending on project goals

Rain Gardens can be retrofitted at a variety of scales and in a variety of locations

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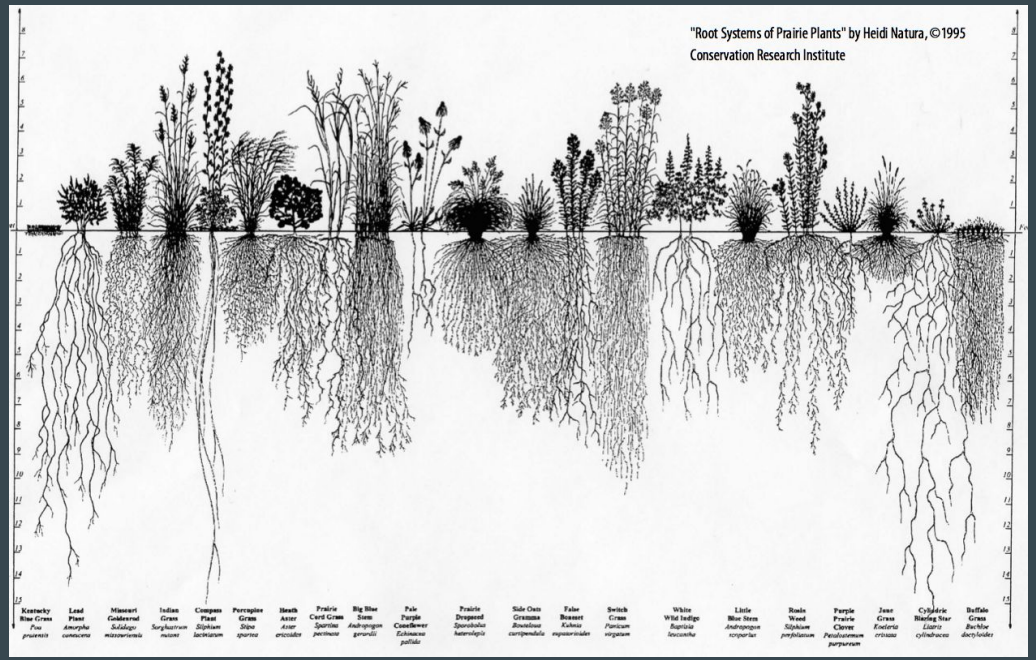
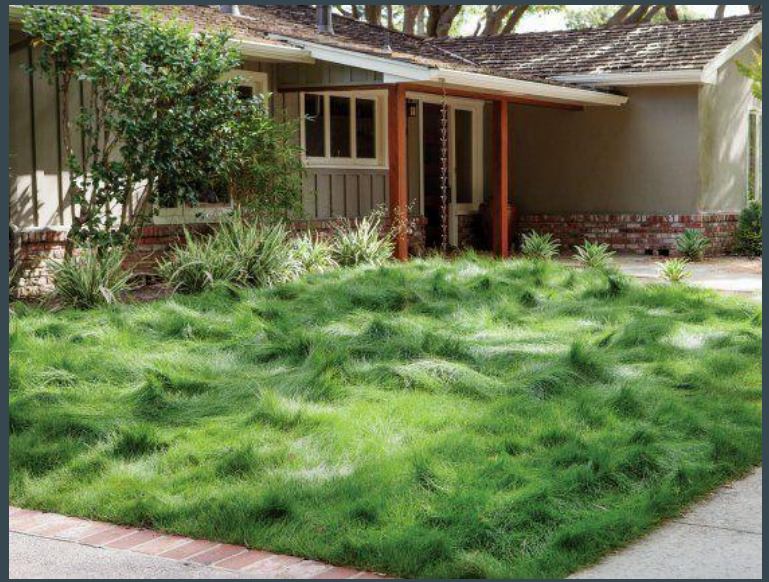
Rain Gardens have fairly specific site requirements

Naturalized lawns and Lawn Reduction can reduce runoff leaving your property



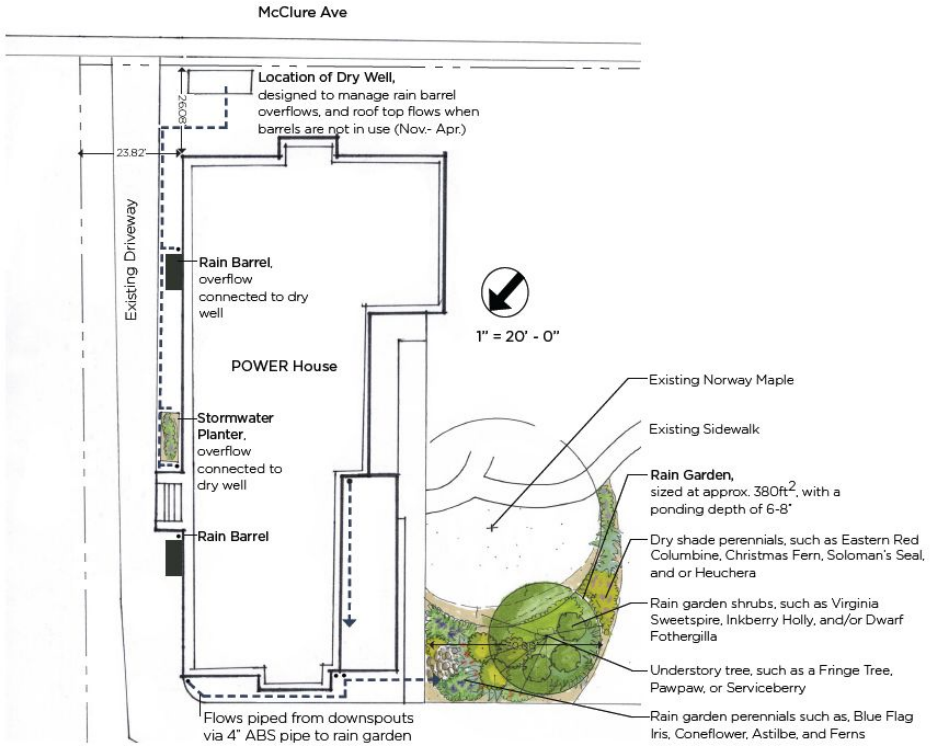


Naturalized lawns and Lawn Reduction can reduce runoff leaving your property

These projects are often referred to as green infrastructure

Planning for a stormwater management project always begins with understanding the amount of runoff you are going to manage, as well as developing goals as to how much of that runoff can be managed on a particular site

		Inches of Rain					
Surface Area (sq. feet)		**0.25**	**0.5**	**0.75**	**1**	**1.5**	
Downspout 1	200	31	62	94	125	187	
Downspout 2	300	47	94	140	187	281	
Downspout 3	550	86	171	257	343	514	
Downspout 4	222	35	69	104	138	208	
Downspout 5	400	62	125	187	249	374	
Total Roof Area	**1672**	**261**	**521**	**782**	**1042**	**1563**	Gallons generated



Proposed Plant Images

Trees


Fringe Tree


Serviceberry


Pawpaw

Shrubs


Inkberry Holly


Virginia Sweetspire


Dwarf Fothergilla

Grasses, Perennials, and Ferns


Purple Astilbe


Soloman's Seal


Heuchera


Harvest Moon Coneflower


Ostrich Fern


Foamflower


Blue Lobelia


Blue Flag Iris


Eastern Red Columbine

Thank you!

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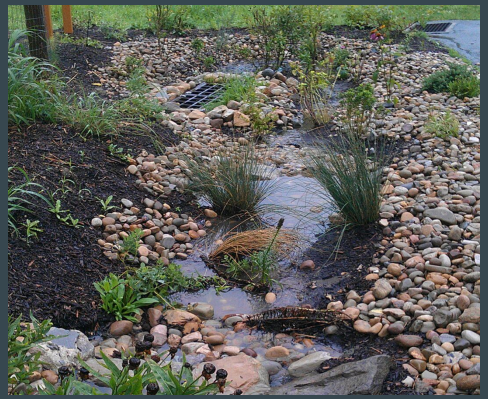

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