

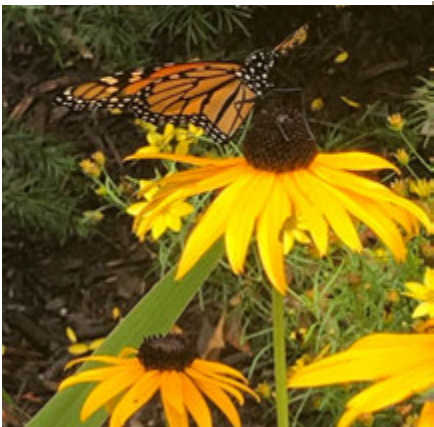
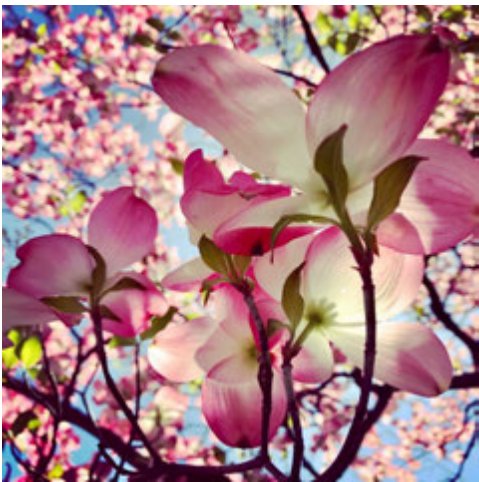
Conservation Gardening

Amanda Rockler, Watershed Restoration Specialist
University of Maryland Sea Grant Extension
arockler@umd.edu

UNIVERSITY OF
MARYLAND
EXTENSION

**FEARLESSLY
FORWARD**





UMD Sea Grant Extension + Maryland DNR = Watershed Restoration Specialists



Eric Buehl, Mid and Upper Eastern Shore



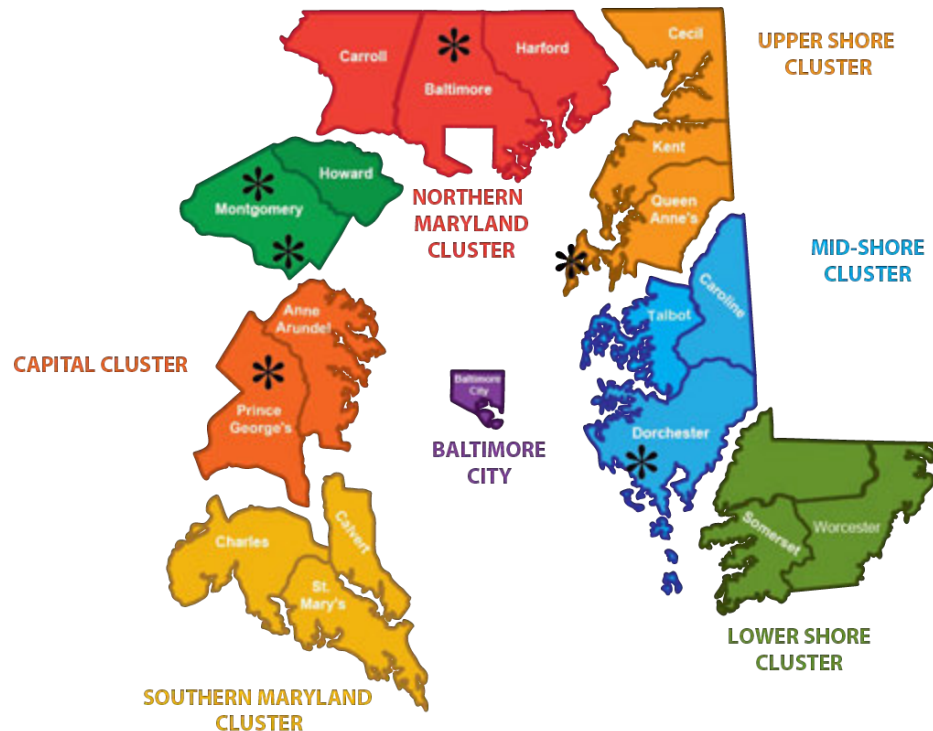
Jennifer Dindinger, Lower Eastern Shore

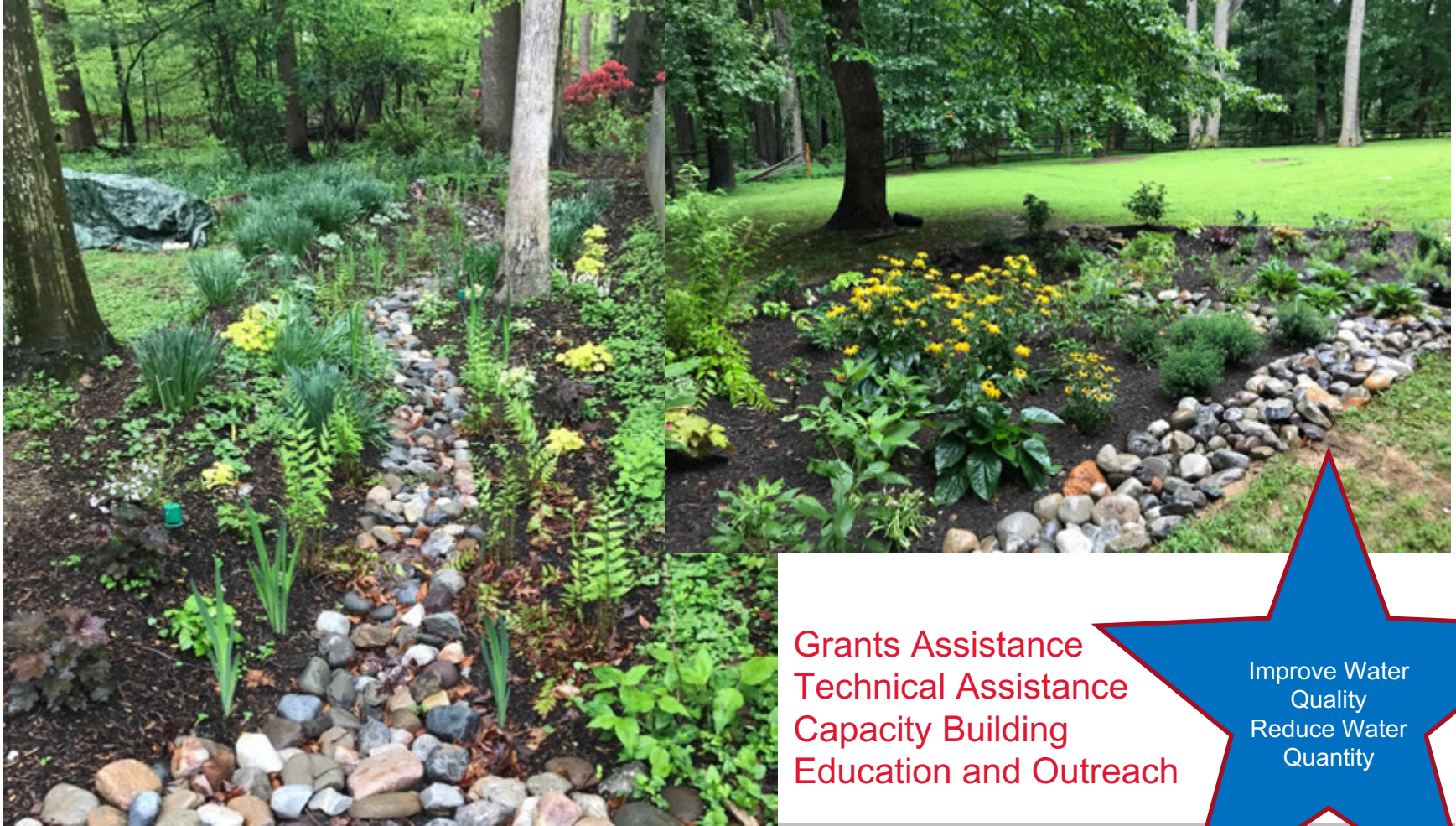


Amanda Rockler, Capital/Central Maryland



Jackie Takacs, Southern Maryland





Grants Assistance
Technical Assistance
Capacity Building
Education and Outreach

Improve Water
Quality
Reduce Water
Quantity

The Chesapeake Bay Watershed



Overall Health Index



Dissolved Oxygen



Nitrogen



Phosphorus



Chlorophyll a



Water Clarity



Aquatic Grasses



Benthic Community



Blue Crab



Bay Anchovy



Striped Bass

BY REGION | Overall

Scores (%)

80 to 100 (Very Good)

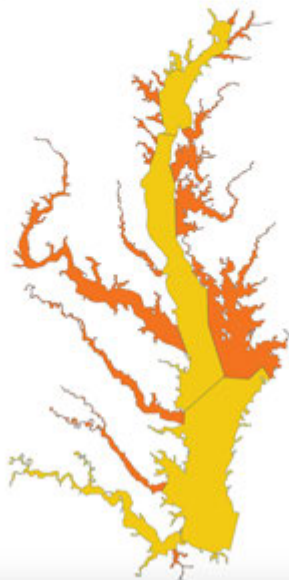
60 to <80

40 to <60

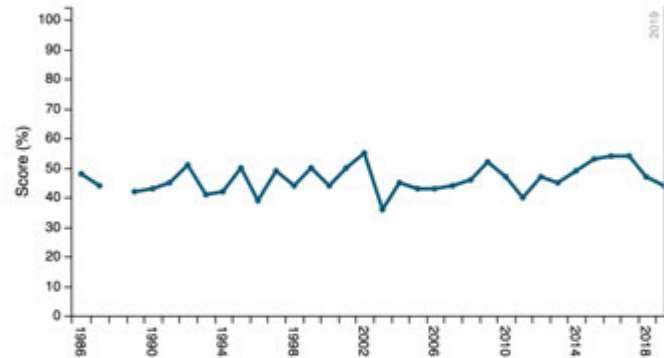
20 to <40

0 to <20 (Very Poor)

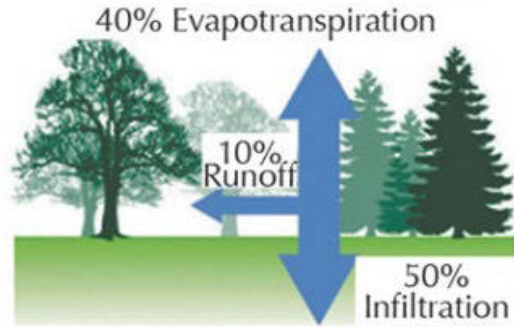
Not Scored



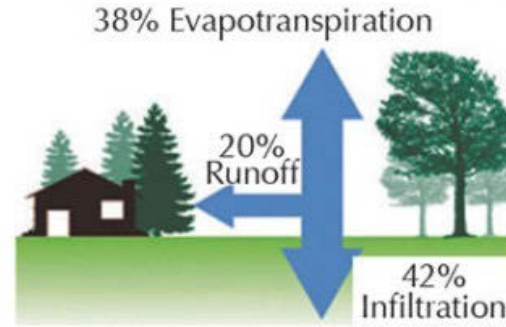
TRENDS | Overall



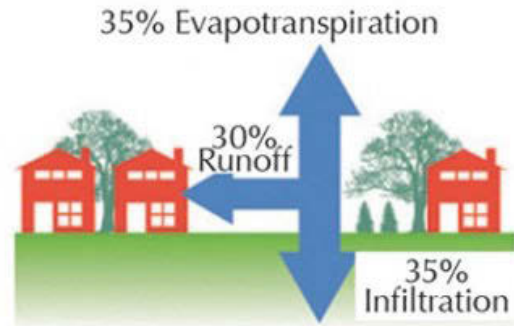
EFFECTS OF IMPERVIOUSNESS ON RUNOFF AND INFILTRATION



Natural Ground Cover
0% Impervious Surface

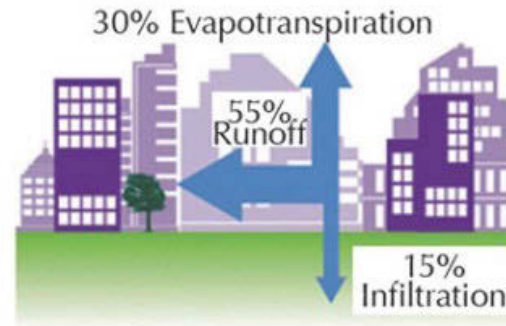


Low Density Residential (e.g. rural)
10–20% Impervious Surface



**Medium Density Residential
(e.g. subdivision)**

30–50% Impervious Surface



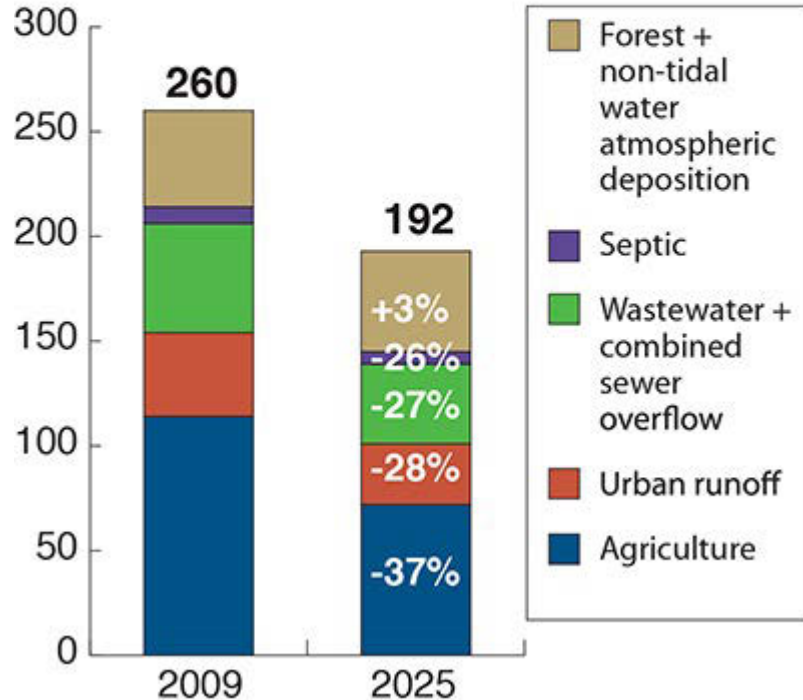
**High Density
Residential / Industrial / Commercial**

75–100% Impervious Surface

Sources and Sectors

Targets for Bay Nitrogen, by Source

(Millions of pounds)

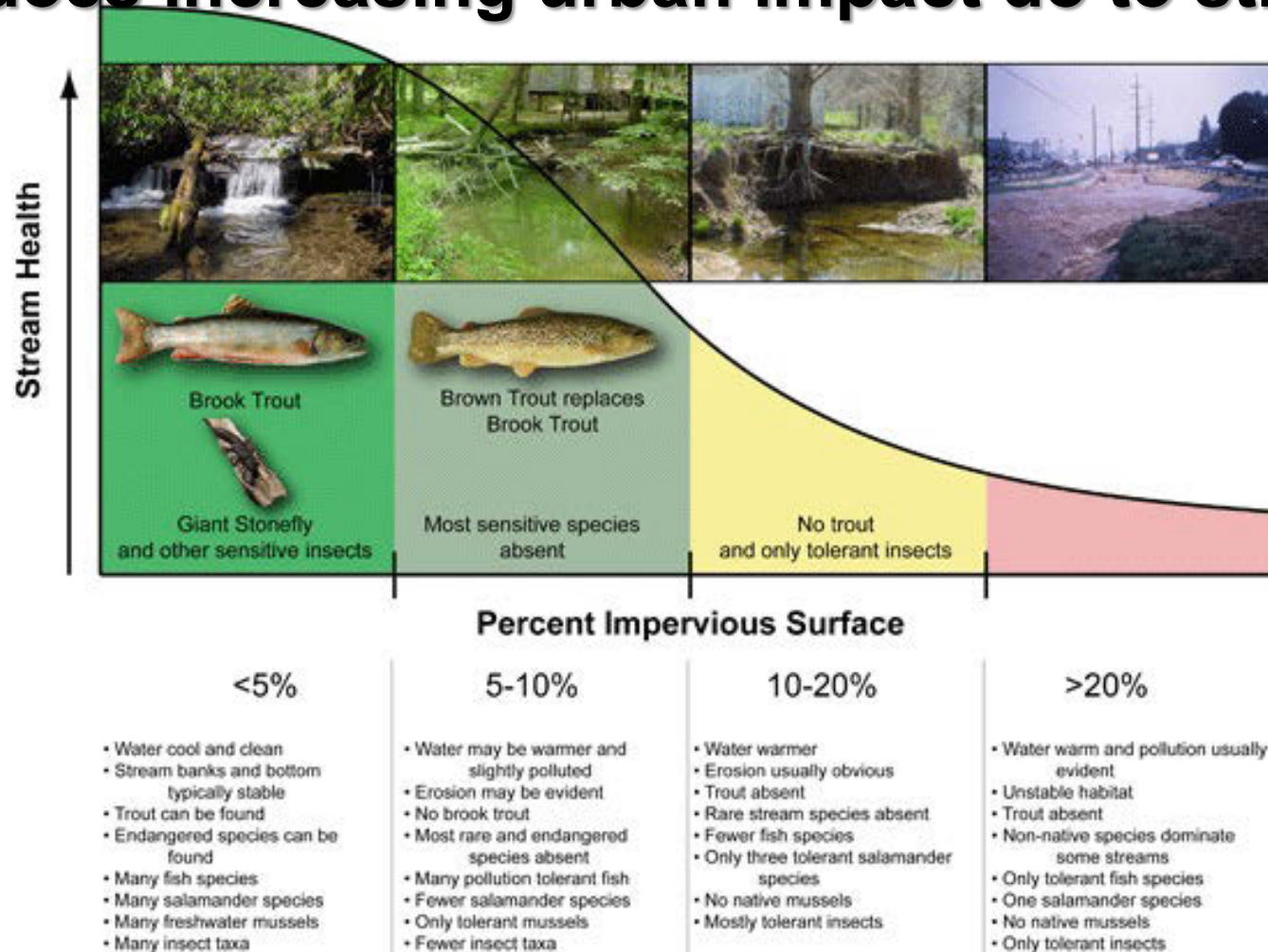


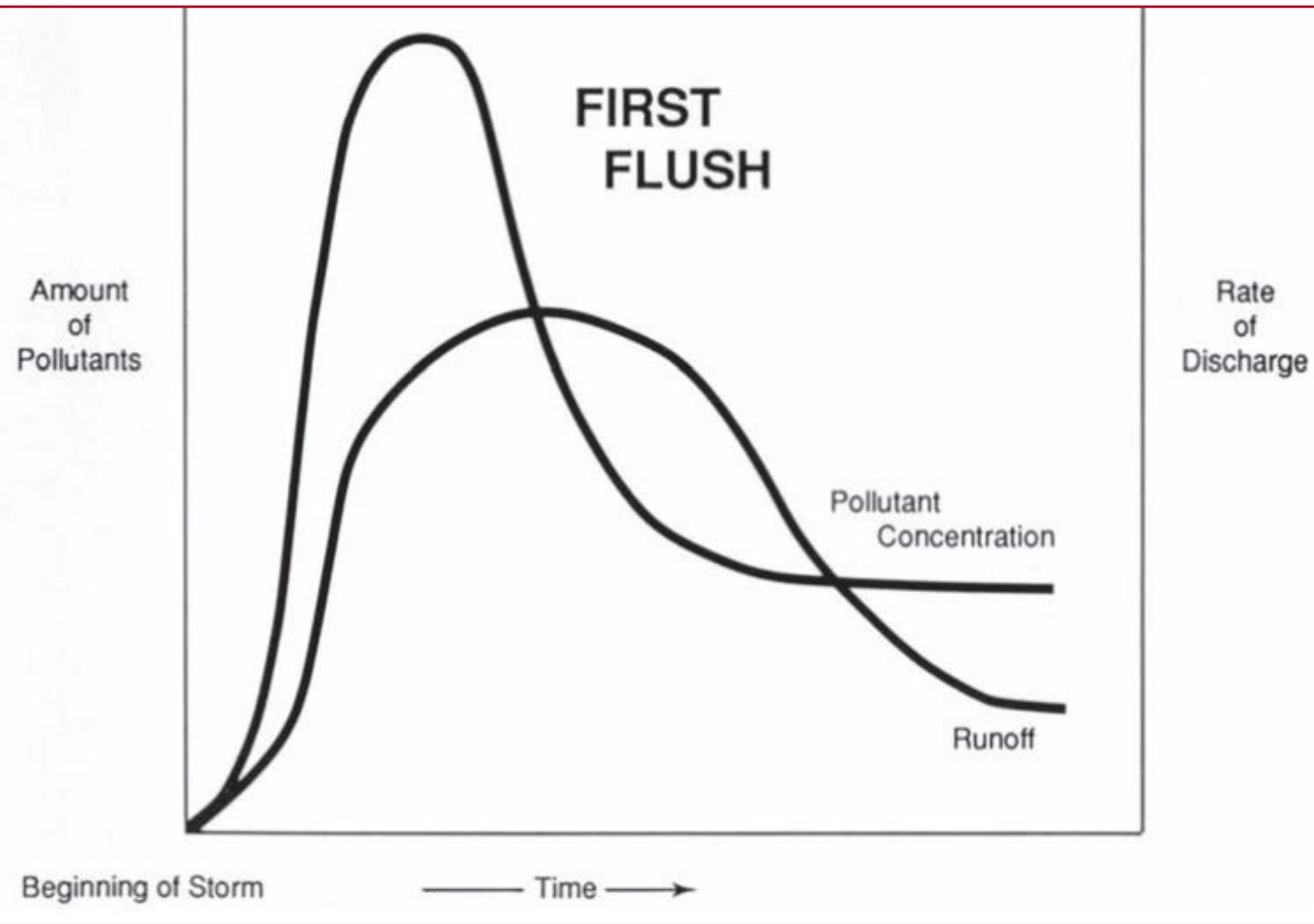
Stressors on Bay health identified in the total maximum daily load (TMDL):

Nitrogen, Phosphorus, & Sediment

- ✓ Forests
- ✓ Agriculture
- ✓ Wastewater Treatment Plants
- ✓ Septic Systems
- ✓ Urban or Stormwater Runoff

What does increasing urban impact do to streams?





TOO MUCH, TOO FAST!



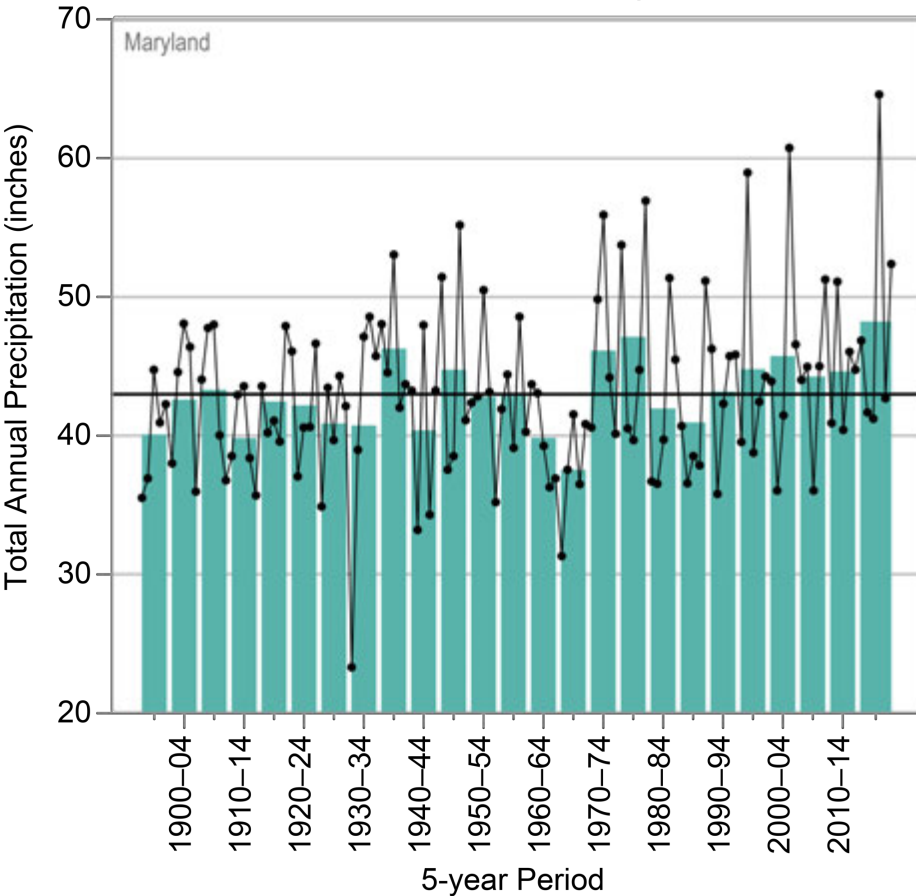
SEDIMENTATION/SILTATION



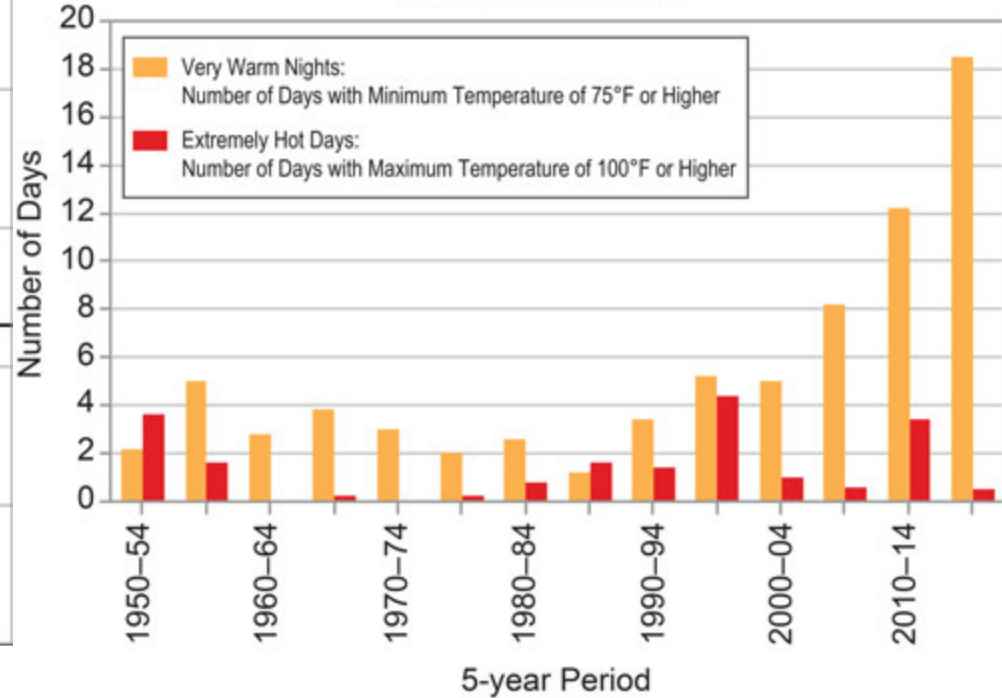
NUTRIENTS



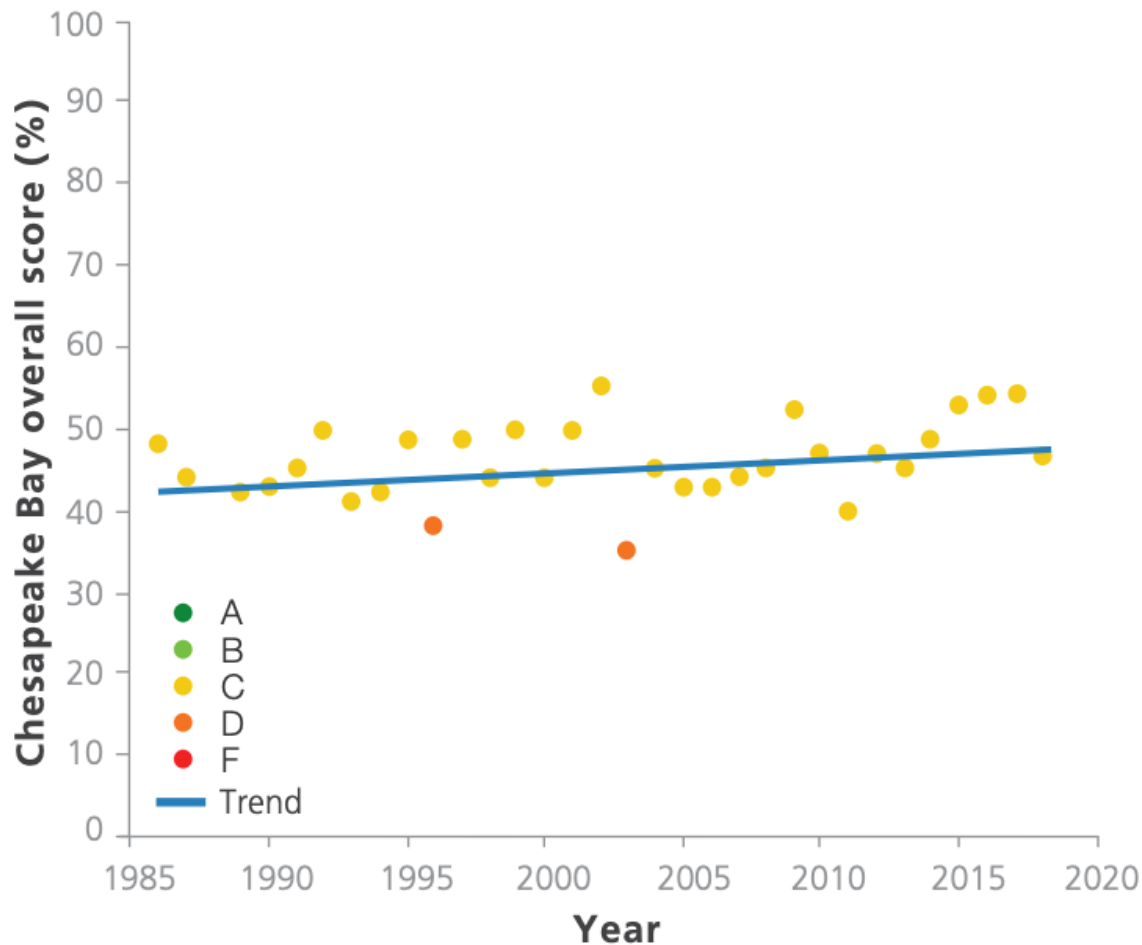
Observed Annual Precipitation



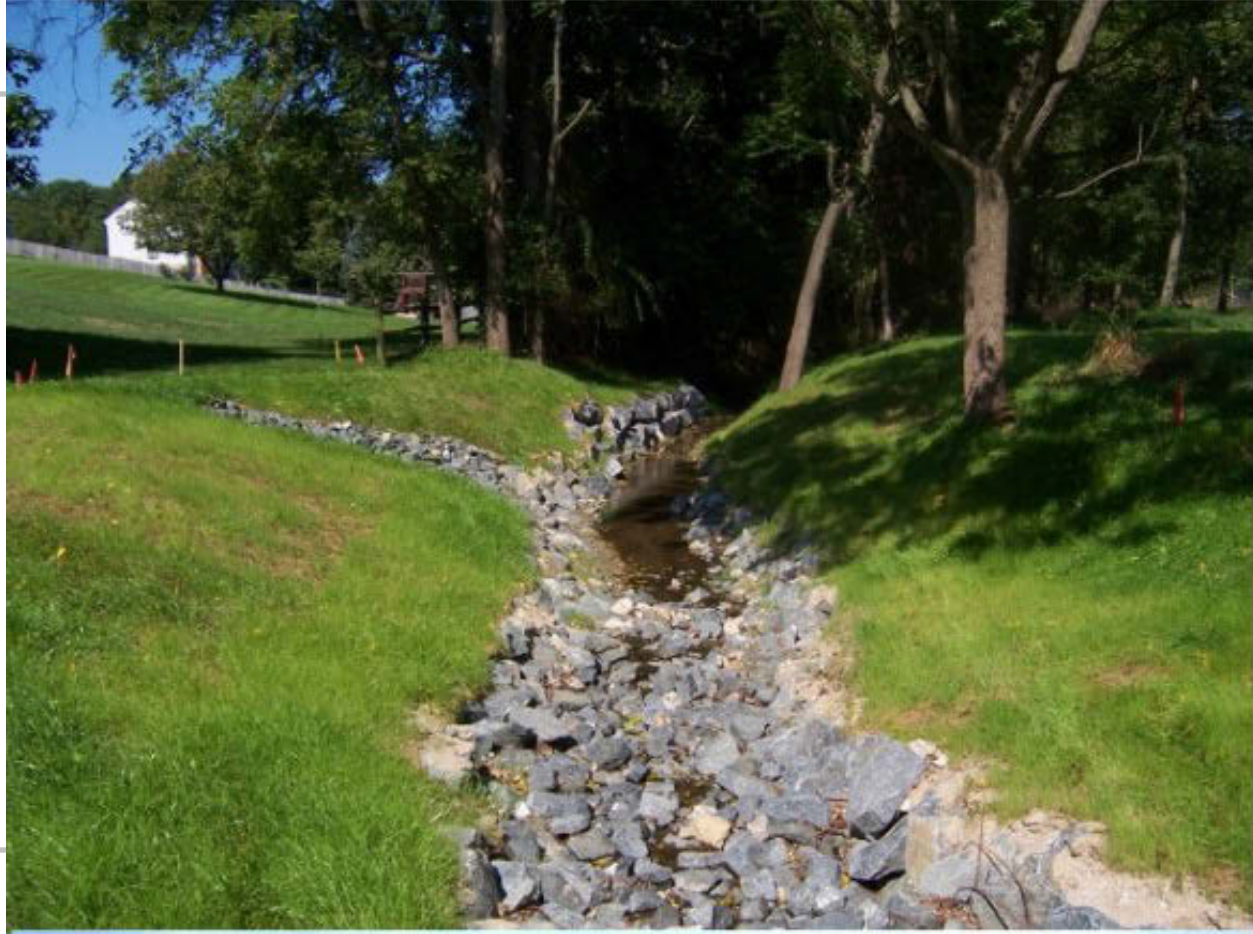
District of Columbia



Chesapeake Bay health scores increasing over time *



Large scale stormwater solutions...

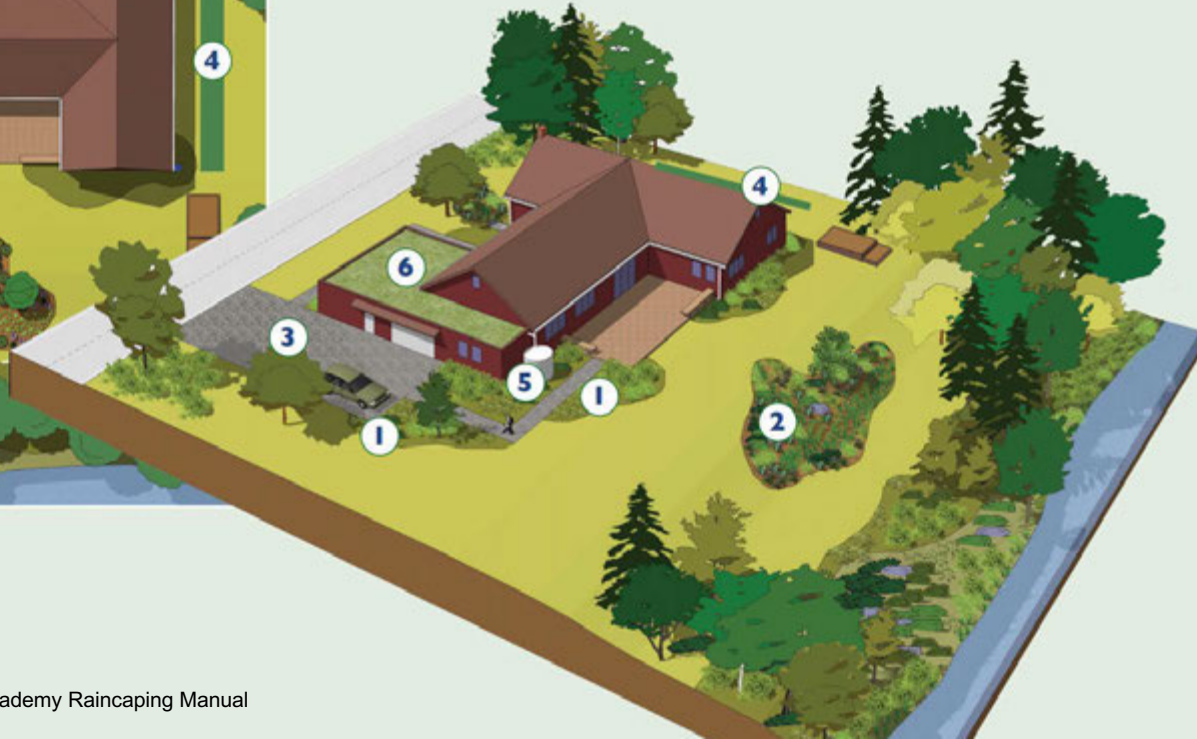


Small-Scale Stormwater Solutions



- ① Conservation Landscapes
- ② Rain Gardens
- ③ Permeable Hardscapes

- ④ Infiltration Practices
- ⑤ Rainwater Harvesting
- ⑥ Green Roofs



Typical Community Scenario

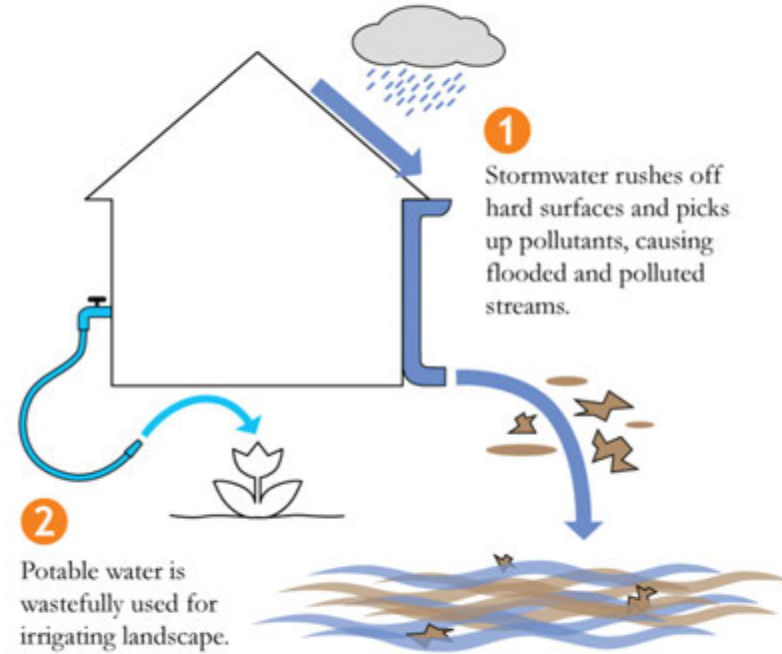
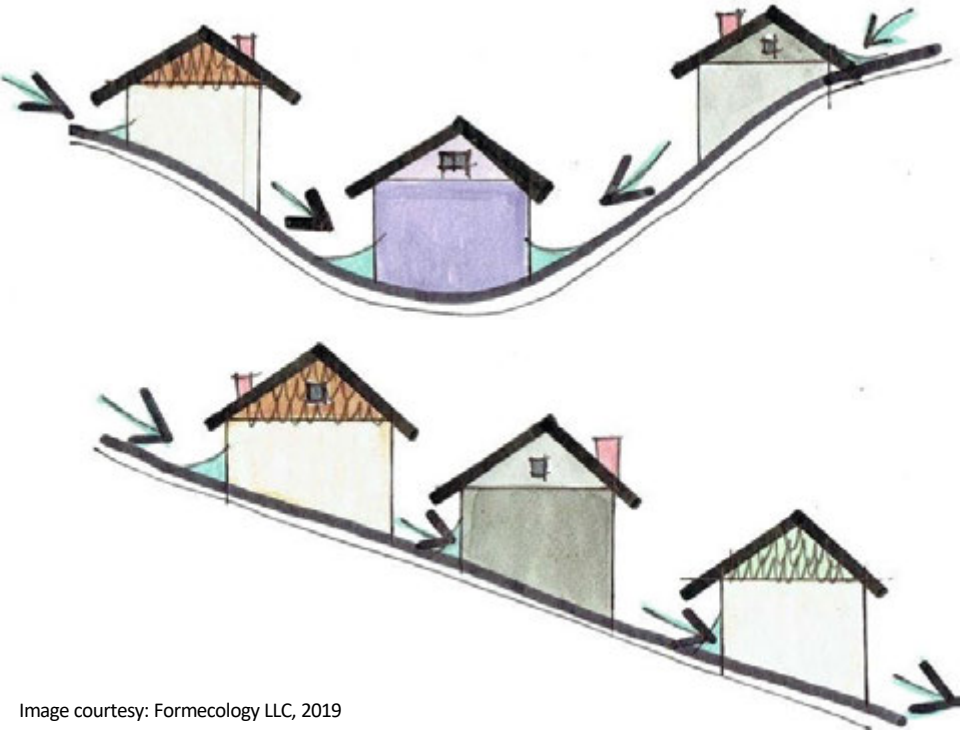


Image courtesy: Formecology LLC, 2019

UNIVERSITY OF
MARYLAND
EXTENSION

Image Courtesy of City of Rockville

FEARLESS IDEAS

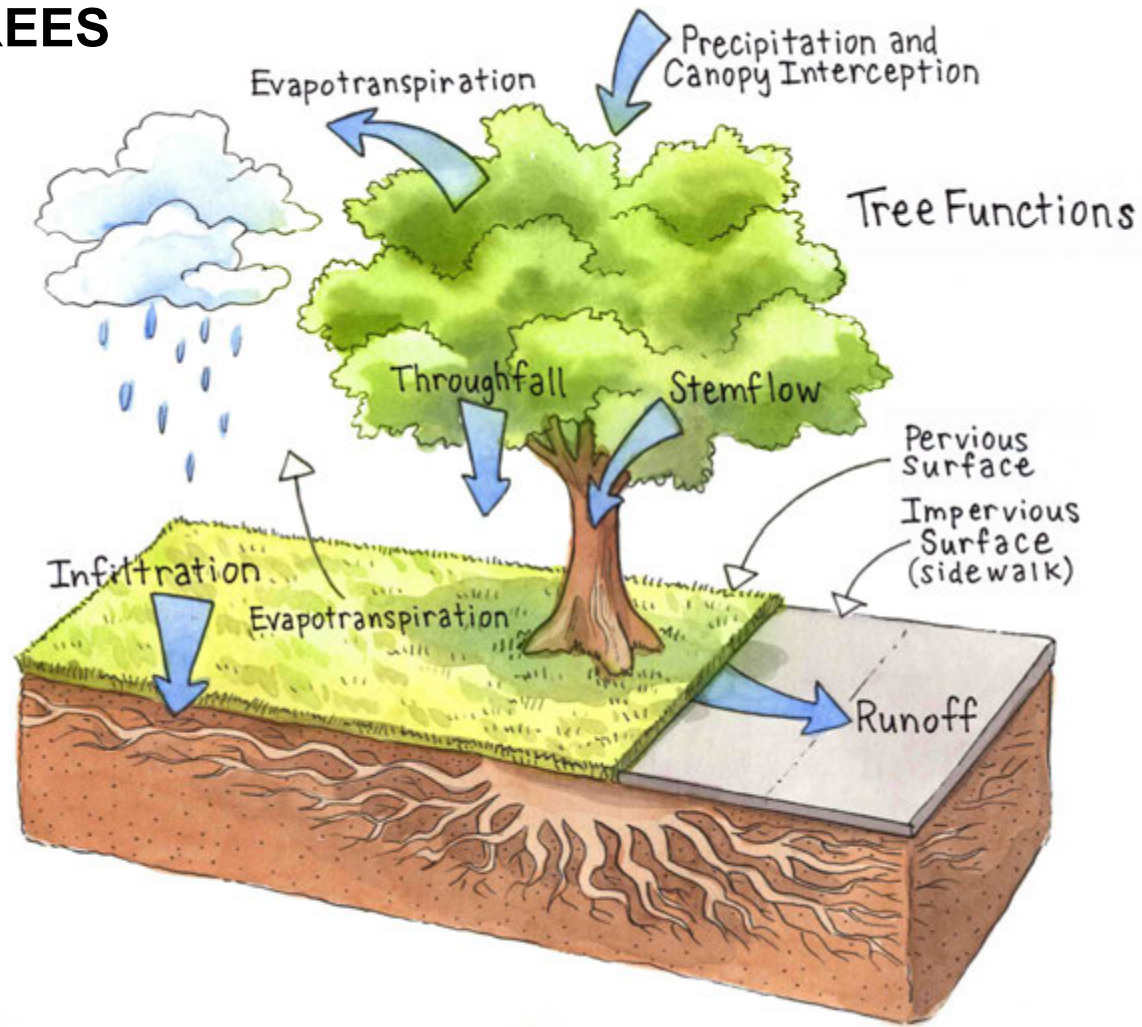
NOOOOOOOOOOOOOOOOOOOOO!!



Rain Barrels & Cisterns



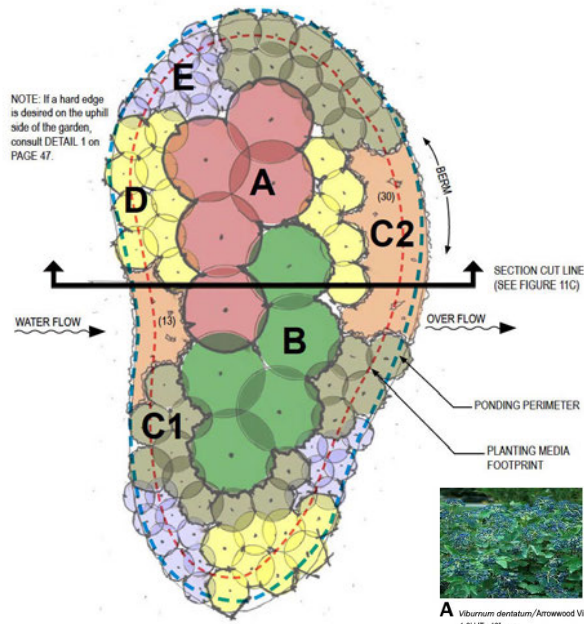
TREES



Rain Gardens



NOTE: If a hard edge is desired on the uphill side of the garden, consult DETAIL 1 on PAGE 47.



A *Viburnum dentatum*/Arrowwood *Viburnum*
4-6' HT.-42" o.c.
• Medium height deciduous shrub which produces white flowers in late Spring



C1 *Aster novae-angliae* 'Purple Dome'/
New England Aster; 1.5-3' HT.-24" o.c.
• Dwarf perennial that blooms through September with vibrant purple flowers



D *Rutsbeckia fulgida*/Black Eyed Susan
2' HT.-24" o.c.
• Native, yellow flowering perennial that blooms from June to October

Note: o.c. = on center spacing



B *Panicum virgatum* 'Shenandoah'/
Red Switchgrass; 3-4' HT.-42" o.c.
• Medium height grass with color interest Spring through Fall

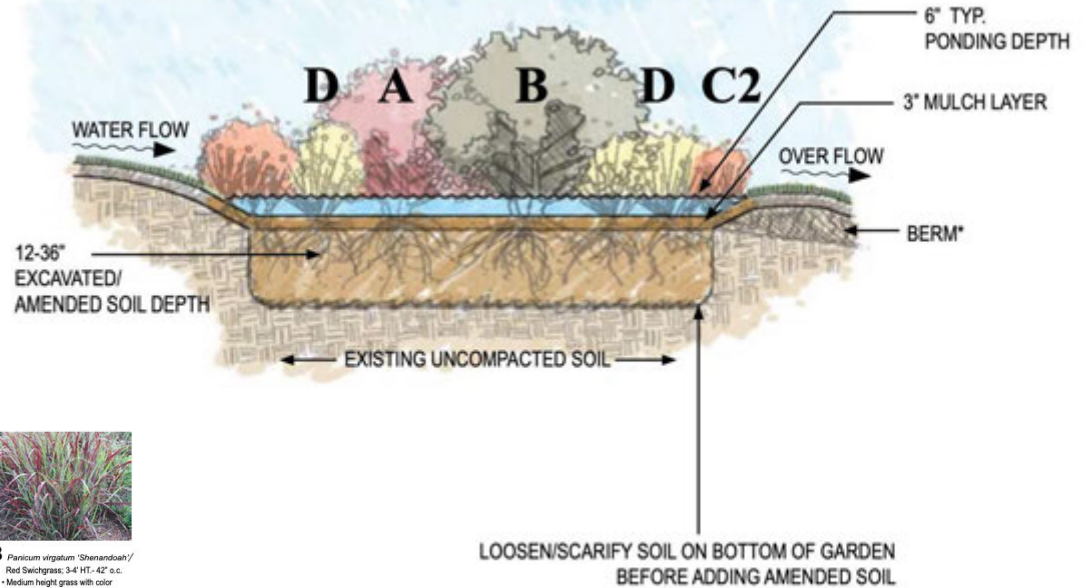


C2 *Iris versicolor*/ Blue Flag Iris
24-30" HT.-12" o.c.
• Swordlike leaves with large, violet-blue flowers in late Spring



E *Asclepias tuberosa*/Butterfly Milkweed
1-2' HT.-18" o.c.
• Medium height perennial with orange flowers in early Summer

Note: o.c. = on center spacing



Conservation Landscapes



Conservation landscaping is a type of landscaping that benefits the environment by improving water quality, preserving native species, and providing wildlife habitat.

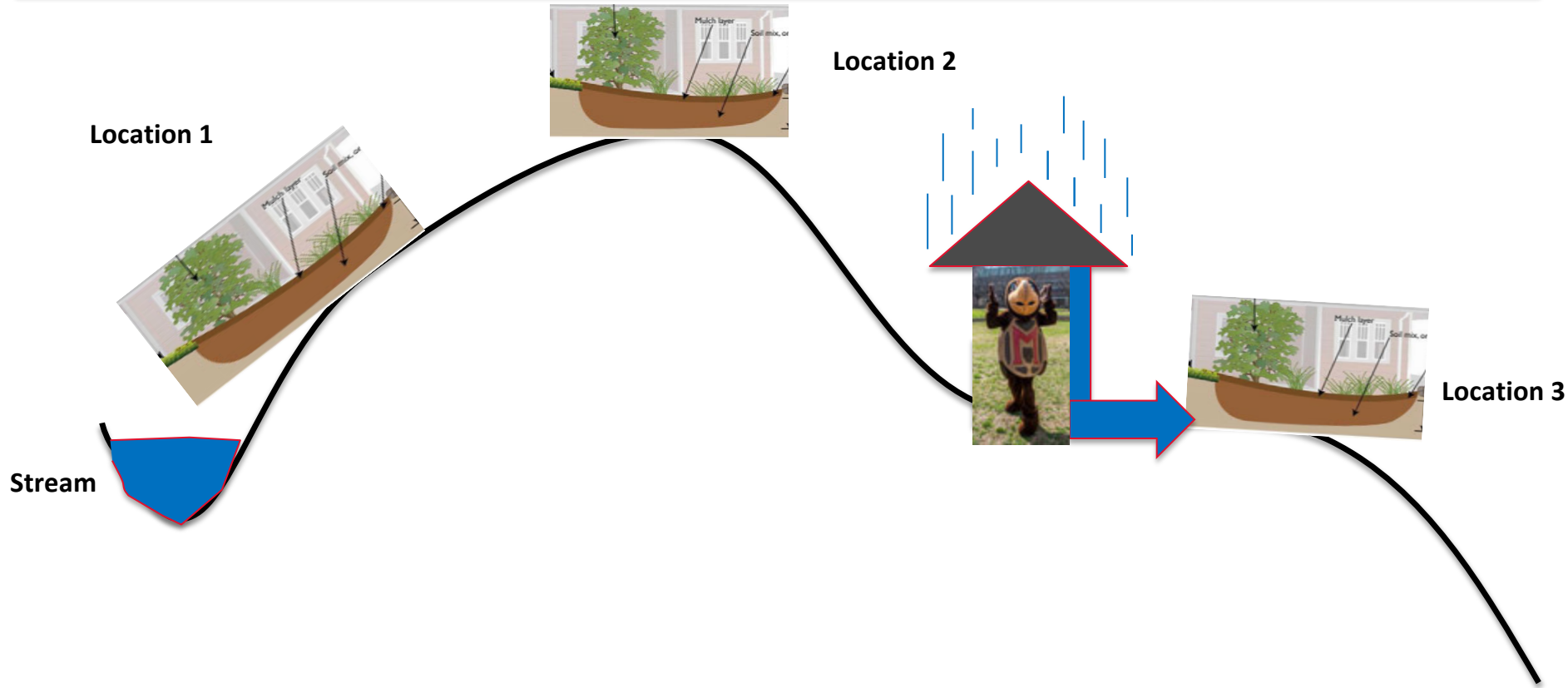
Conservation Landscaping

- ✓ Reduces air and water pollution
- ✓ Conserves non-renewable resources such as fuel and water
 - ✓ Helps maintain regional biodiversity
 - ✓ Helps eradicate non-native invasive species



"Landscaping with specific goals of reducing pollution and improving the local environment."

Conservation Landscape Practices: Where?



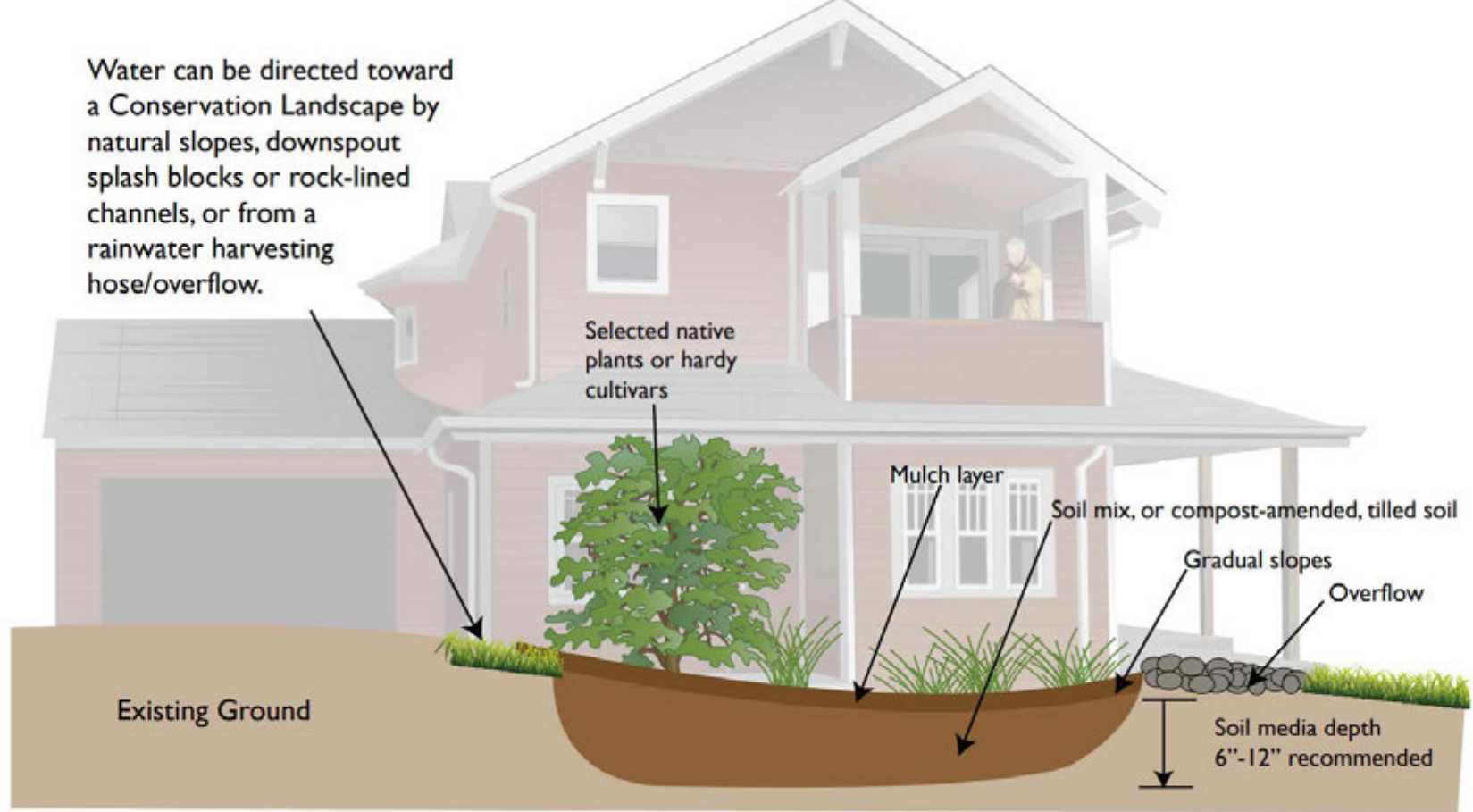
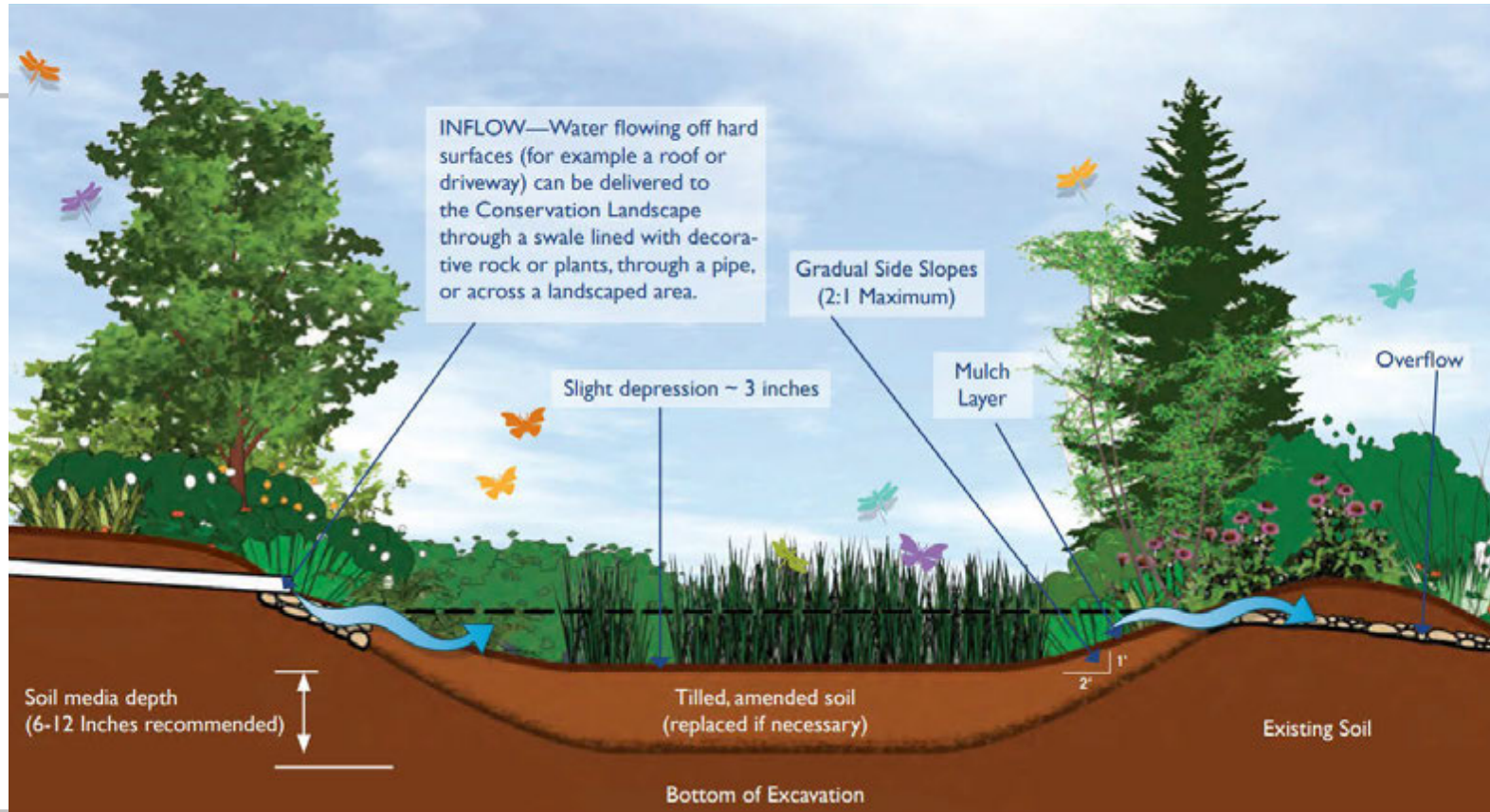


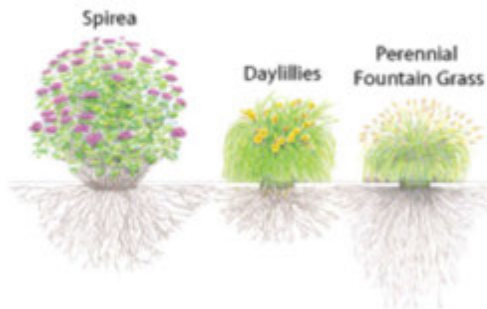
Figure 1.1. *Overview of a Conservation Landscape*

Design Elements of a Conservation Landscape



Getting to the Root of the Problem

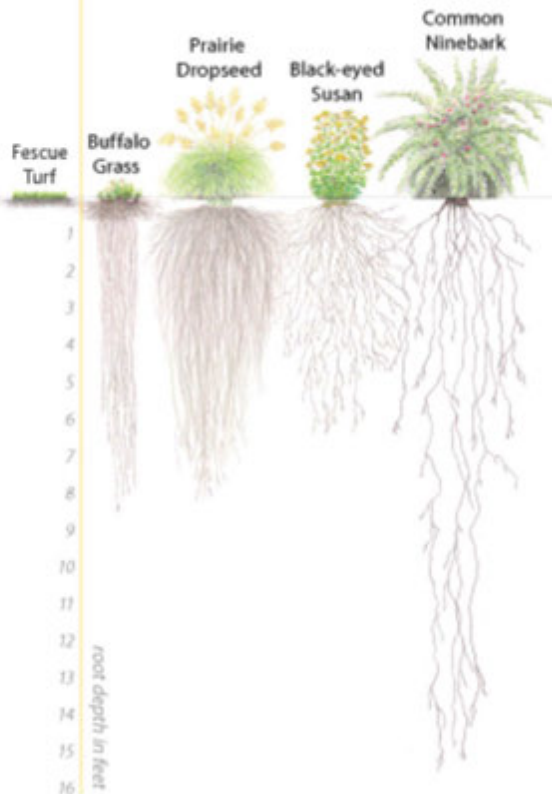
Non-Natives



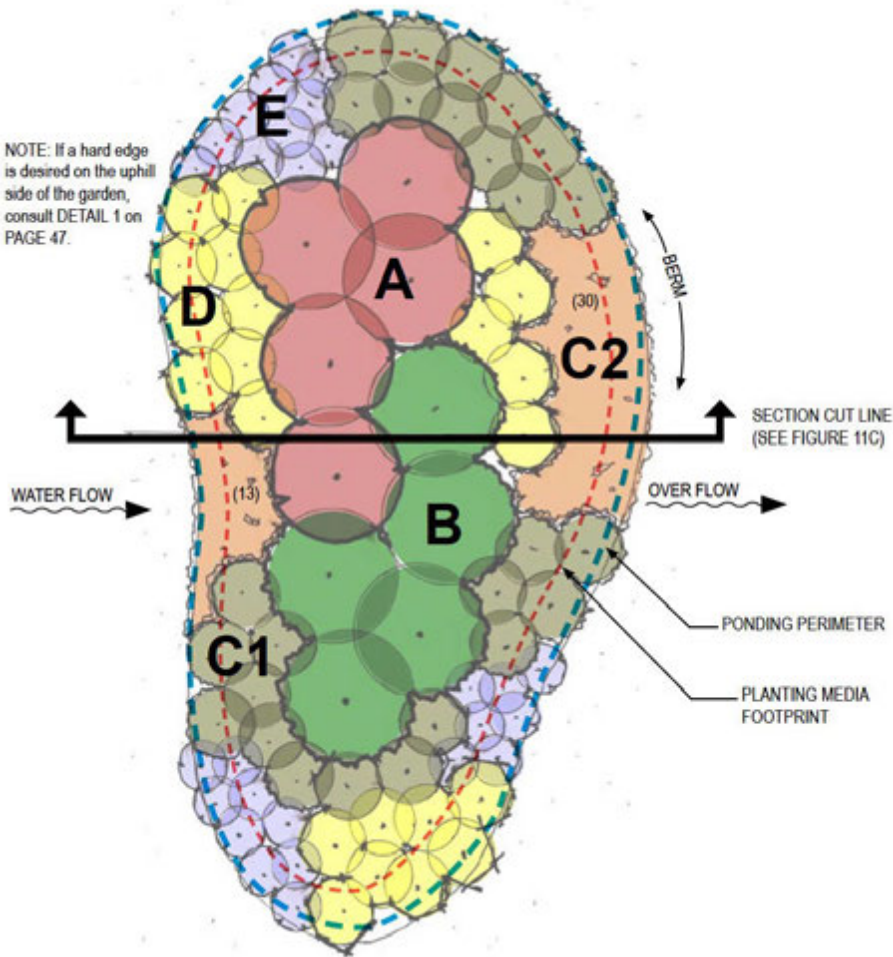
Root systems play a large part in rainwater infiltration. The goal is to store more water in root systems and to allow water to return to groundwater storage.

Courtesy of Mid-America Regional Council

Natives



NOTE: If a hard edge is desired on the uphill side of the garden, consult DETAIL 1 on PAGE 47.



A *Viburnum dentatum*/Arrowwood *Viburnum*
4-6' HT.- 42" o.c.
• Medium height deciduous shrub which produces white flowers in late Spring



B *Panicum virgatum* 'Shenandoah'/Red Switchgrass; 3-4' HT.- 42" o.c.
• Medium height grass with color interest Spring through Fall



C1 *Aster novae-angliae* 'Purple Dome'/New England Aster; 1.5-3' HT.- 24" o.c.
• Dwarf perennial that blooms through September with vibrant purple flowers



C2 *Iris versicolor*/Blue Flag Iris
24-30" HT.- 12" o.c.
• Swordlike leaves with large, violet-blue flowers in late Spring



D *Rudbeckia fulgida*/Black Eyed Susan
2' HT.- 24" o.c.
• Native, yellow flowering perennial that blooms from June to October



E *Asclepias tuberosa*/Butterfly Milkweed
1-2' HT.- 18" o.c.
• Medium height perennial with orange flowers in early Summer

Note: o.c. = on center spacing

Before and After







RESOURCES

UMD Sea Grant Extension:
Extension.umd.edu/watershed

**Watershed Stewards Academy(WSA)
RainScaping Manual:**
<http://aawsa.org/wsa-rainscaping-manual-2>

**WSA Conservation Landscaping Design
Tool:**
<http://aawsa.org/conservation-design-tool/>

Chesapeake Network – Conservation Landscapes Fact Sheet
<https://chesapeakestormwater.net/wpcontent/uploads/2022/07/9677-1.pdf>

Montgomery County –Conservation Landscaping Templates
https://www.montgomerycountymd.gov/water/Resources/Files/rainscapes/CL_PlantingDesignsTemplates.pdf

Chesapeake Bay Native Plant Database:
<https://www.nativeplantcenter.net/plants/>

Chesapeake Bay Landscape Professionals (CBLP):
CBLpro.org

Rebate/Incentives:

Montgomery County RainScapes
Prince George's RainCheck
Howard County CleanScapes
D.C. RiverSmart Homes
Virginia – VCAP program
Elizabeth River RiverWise Homes



QUESTIONS? Thank YOU!

Amanda Rockler
arockler@umd.edu



University of Maryland Extension programs are open to any person and will not discriminate against anyone because of race, age, sex, color, sexual orientation, physical or mental disability, religion, ancestry, national origin, marital status, genetic information, political affiliation, and gender identity or expression.