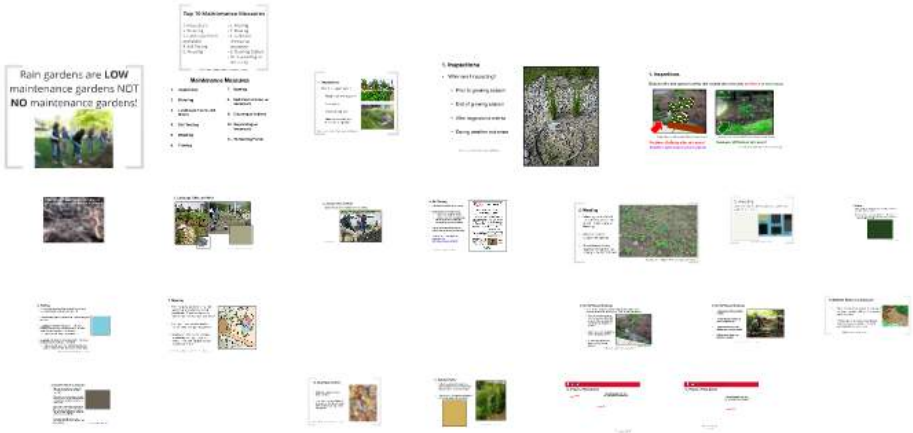
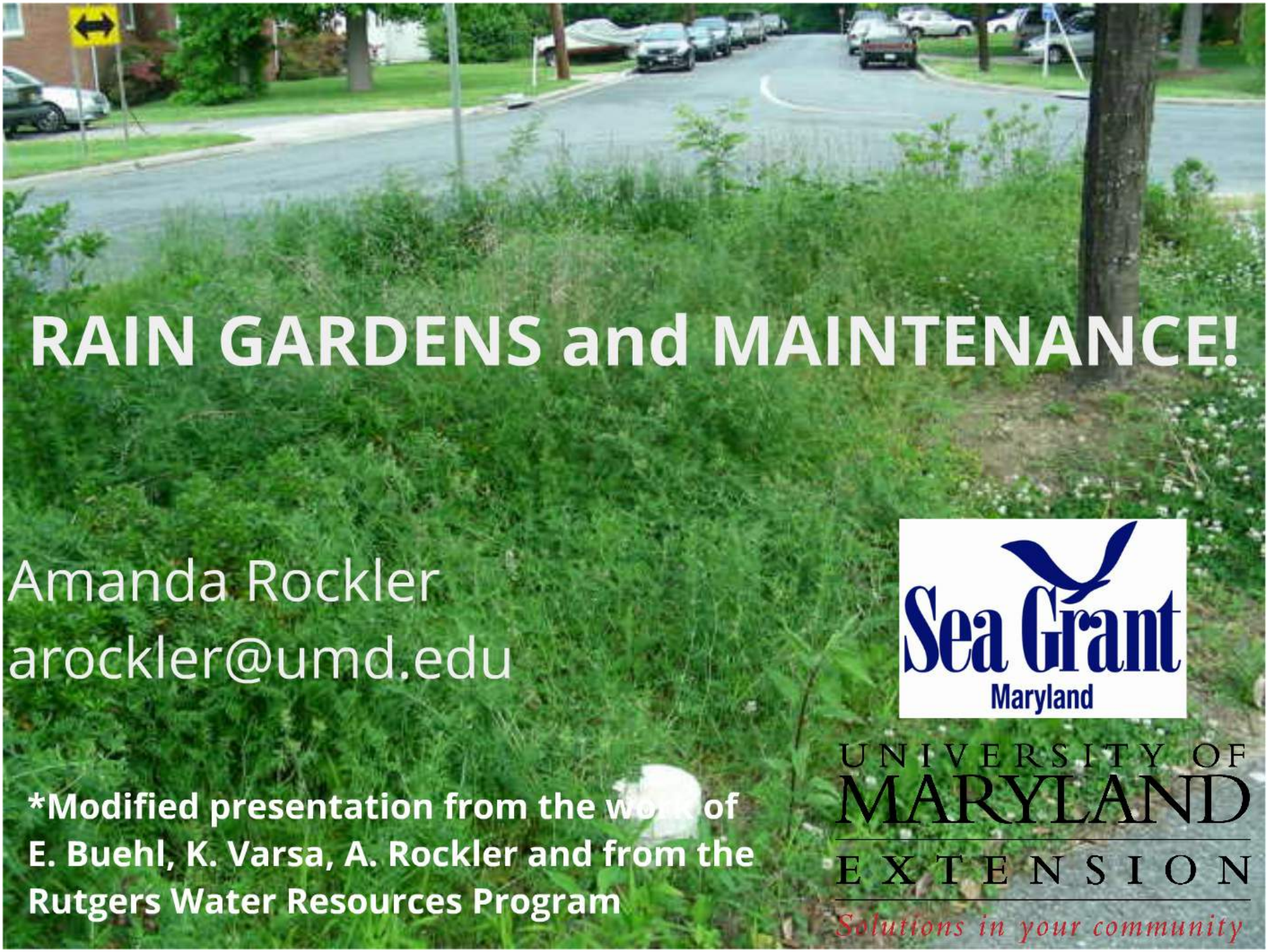

Introduction


NAME
THAT
FAILURE!
The Gameshow where YOU figure out what went wrong!


But wait a
second.....


Summary


Rain gardens are LOW maintenance gardens NOT NO maintenance gardens!



RAIN GARDENS and MAINTENANCE!

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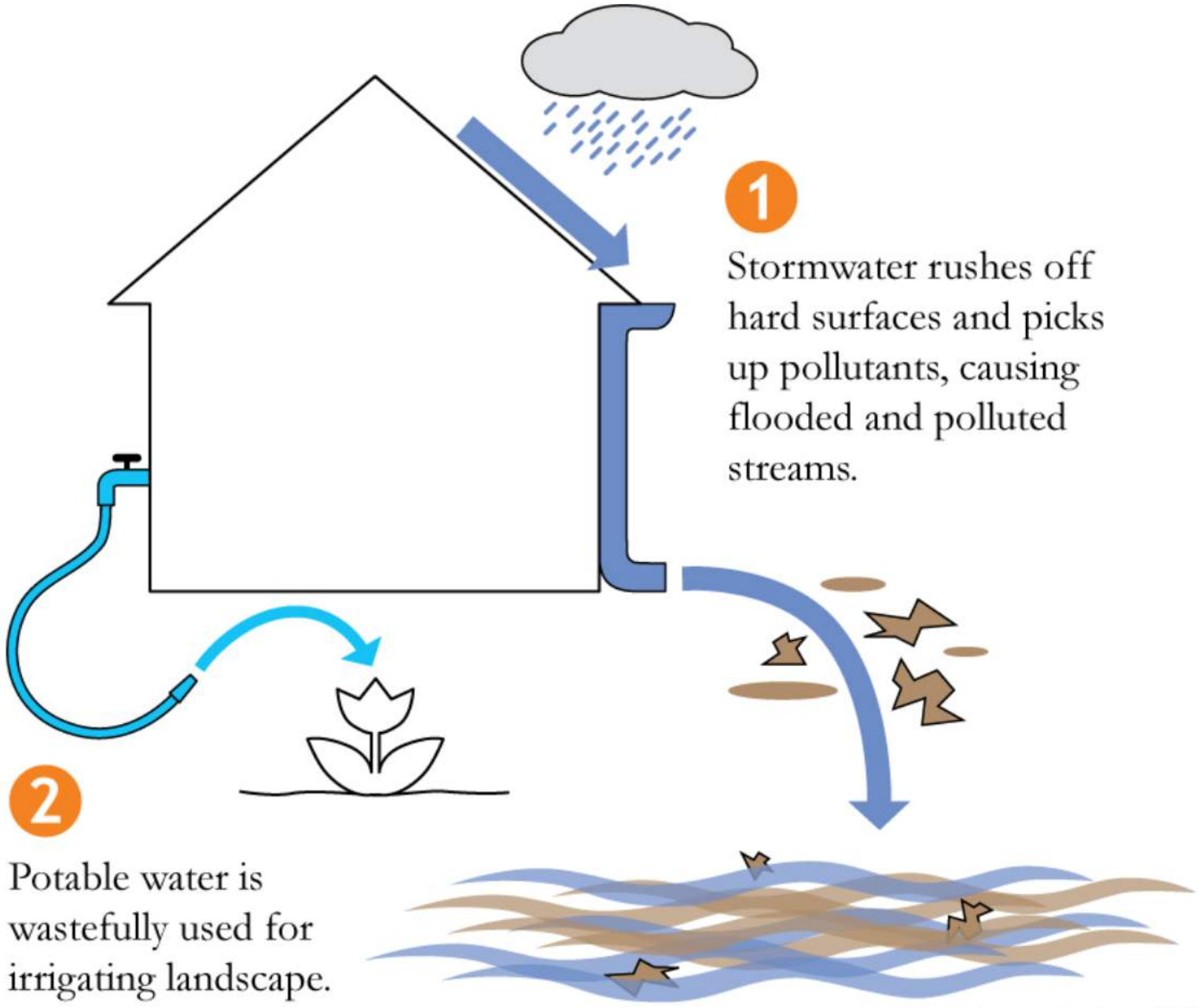
Sea Grant Maryland

UNIVERSITY OF MARYLAND EXTENSION
Solutions in your community

***Modified presentation from the work of E. Buehl, K. Varsa, A. Rockler and from the Rutgers Water Resources Program**

Typical community scenario



1

Stormwater rushes off hard surfaces and picks up pollutants, causing flooded and polluted streams.

2

Potable water is wastefully used for irrigating landscape.

Image Courtesy of City of Rockville

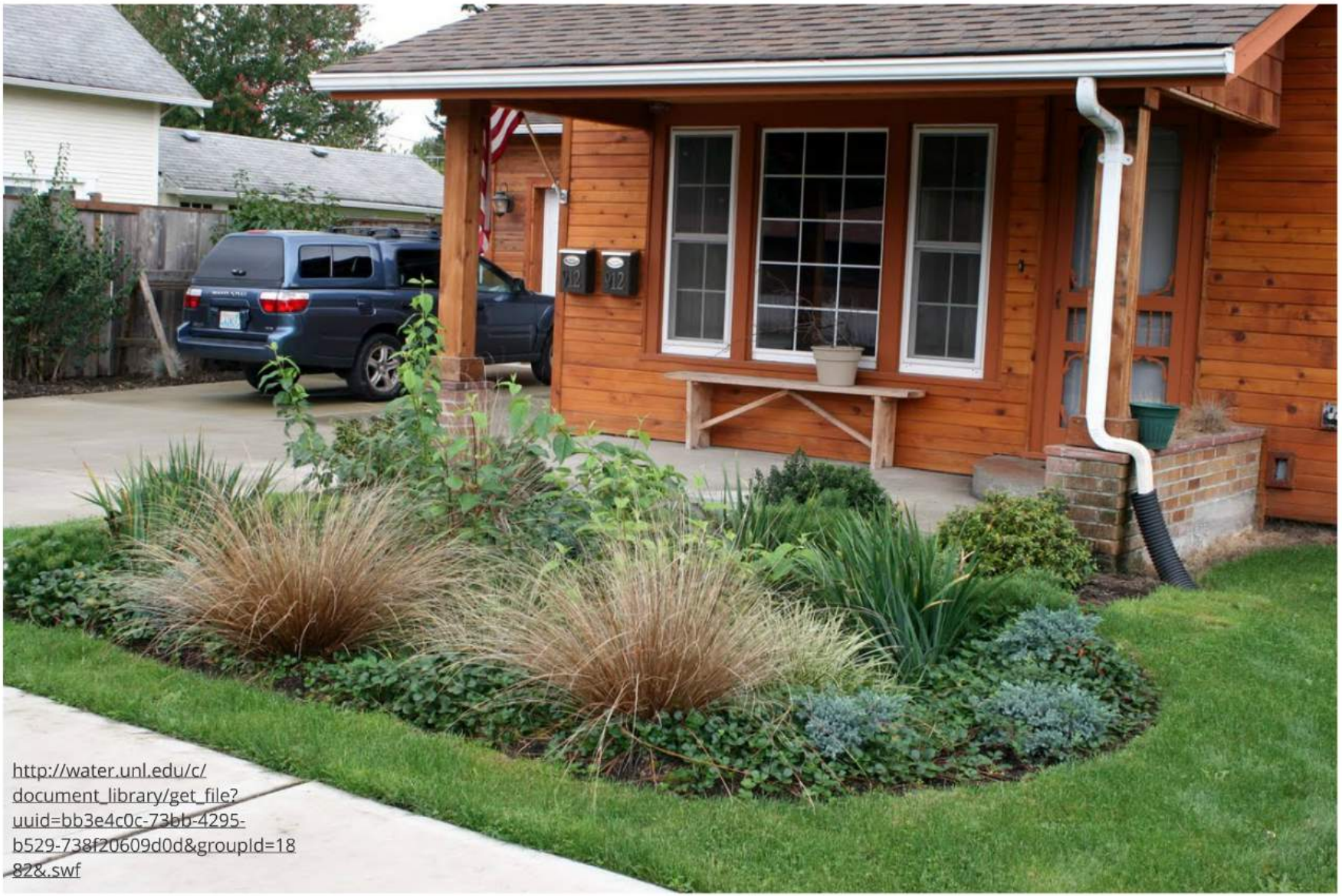
Rain Barrel

45-100 gallon capacity

Help Capture First Flush
&
Conserve Water

Rain Garden

Shallow depression that captures and filters stormwater runoff



http://water.unl.edu/c/document_library/get_file?uuid=bb3e4c0c-73bb-4295-b529-738f20609d0d&groupId=1882&.swf

Image courtesy of RainDog Designs

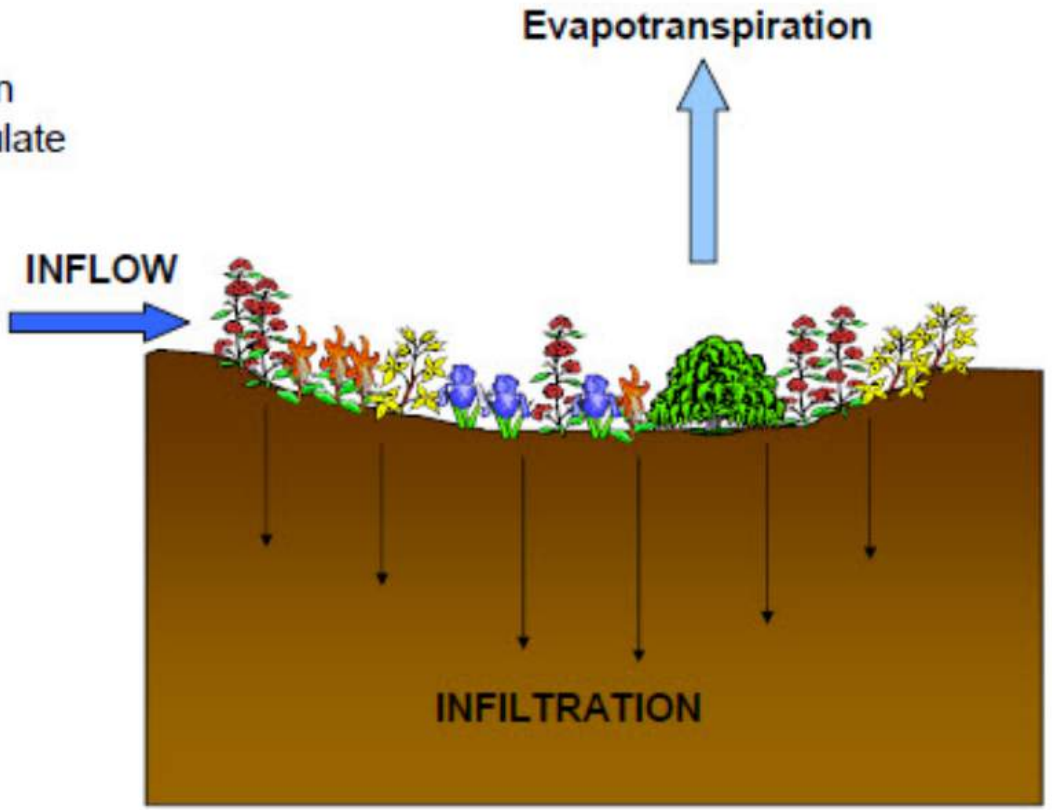
Rain garden principles and benfits

Rain gardens are placed between stormwater runoff sources (roofs, driveways, parking lots) and runoff destinations (storm drains, streets, streams)

Rain Gardens as Stormwater BMPs

Benefits

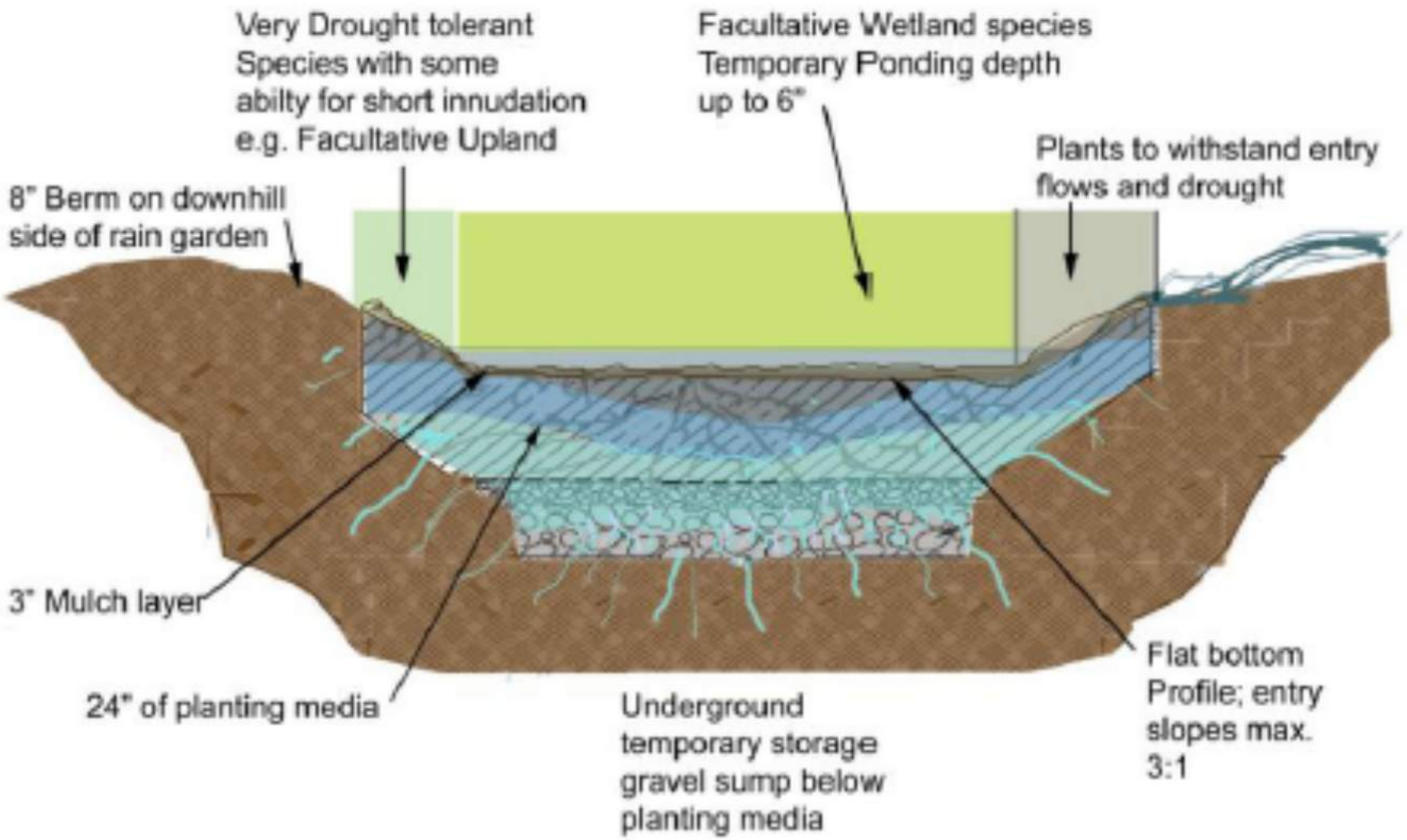
- Natural infiltration
- Sediment/particulate removal
- N & P removal
- Aesthetically pleasing



SLOW it DOWN
and
SOAK it UP

Slide Courtesy of Anne English and Montgomery County Rainscapes

Rain Garden Section



Slide courtesy of A.English and Montgomery County Rainscapes Program

Rain Gardens: Simple, Easy no problems!

But wait a second……

Many projects FAIL because they aren't *designed, installed or maintained* properly

48% of rain gardens surveyed in 2012 Severn River Watershed study FAILED to protect water quality.

65% of rain gardens surveyed in 2008 Fairfax County study lacked adequate ponding depths…3 out of 20 didn't infiltrate.

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A. Purple really goes well with the building color don't you think.
B. If one purple plant was good, then 27 will look great!
C. Invasive plants aren't recommended for rain gardens.

A. Remind me again whose idea it was to not weed?
B. High-speed internet for $40 a month? WOW!
C. Putting off maintenance has a price.

A. Hey! These rain barrels are tough to construct.
B. Failed attempt to get rid of the evidence.
C. Anyone else finding these in their rain barrels this year?

NAME THAT FAILURE!

The Gameshow where YOU figure out what went wrong!

A. At least the Coreopsis hasn't taken over.
B. I think we're going to need a chainsaw.
C. There's really a rain garden in there?

A. Can we talk about plant diversity?
B. The rain garden next to the house AND away down at the very far
C. Is that being gone with?

A. But where's the outlet?
B. Did they really plant those grasses there?
C. Is flooding water a little too close to the foundation.

A. Is that legal?
B. Guess who could use a rain garden!
C. Why is my mailbox in the middle of my lawn?

A. Great location for rain garden!
B. Not so great a location for a rain garden.
C. Call a certified arborist now!

A. They did all that by hand?
B. Nice soil! Well, kind of.
C. This is not getting off to a good start.

A. Honey, where's the broom?
B. Sweet, we're going to need more grass seed.
C. Looks like that sediment control device wasn't the right practice.

A. Awww, they're so cute.
B. MY ROSES!
C. Maybe it's time to look for deer resistant plants.

A. But who's going to mow that?
B. Think they neighbors will like it?
C. Will anything be left for a rain barrel?

A. Great location for a rain garden!
B. That's a silly place for a tree.
C. Rain garden installed before bank was stabilized.

A. Can we talk about plant diversity?

B. The rain garden next to the house AND leaky downspout worry me.

C. Is that berm gonna work?

A. Is that legal?

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Rain gardens are **LOW** maintenance gardens NOT **NO** maintenance gardens!

Top 10 Maintenance Measures

1. Inspections
2. Watering
3. Landscape Fabric and Mulch
4. Soil Testing
5. Weeding

- 6. Pruning
- 7. Mowing
- 8. Sediment removal as necessary
- 9. Cleaning Gutters
- 10. Re-planting as necessary

Modified from Rutgers Water Resources Program

1. Inspections

- What am I inspecting for?
  - Weeds and invasive plants
  - Plant health
  - Excessive sediment
  - Movement of sediment within the rain garden

Modified from Rutgers Water Resources Program

1. Inspections

- When am I inspecting?
  - Prior to growing season
  - End of growing season
  - After large storm events
  - During weather extremes

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1. Inspections

Observe the rain garden during rain events and note any problems or successes

Walnut Avenue Elementary School, Union County

Problem: Gullying after rain event

Solution: Add a berm and/or plants

Hanson House/Hanson Park Conservancy, Union County

Success: Withstood rain event

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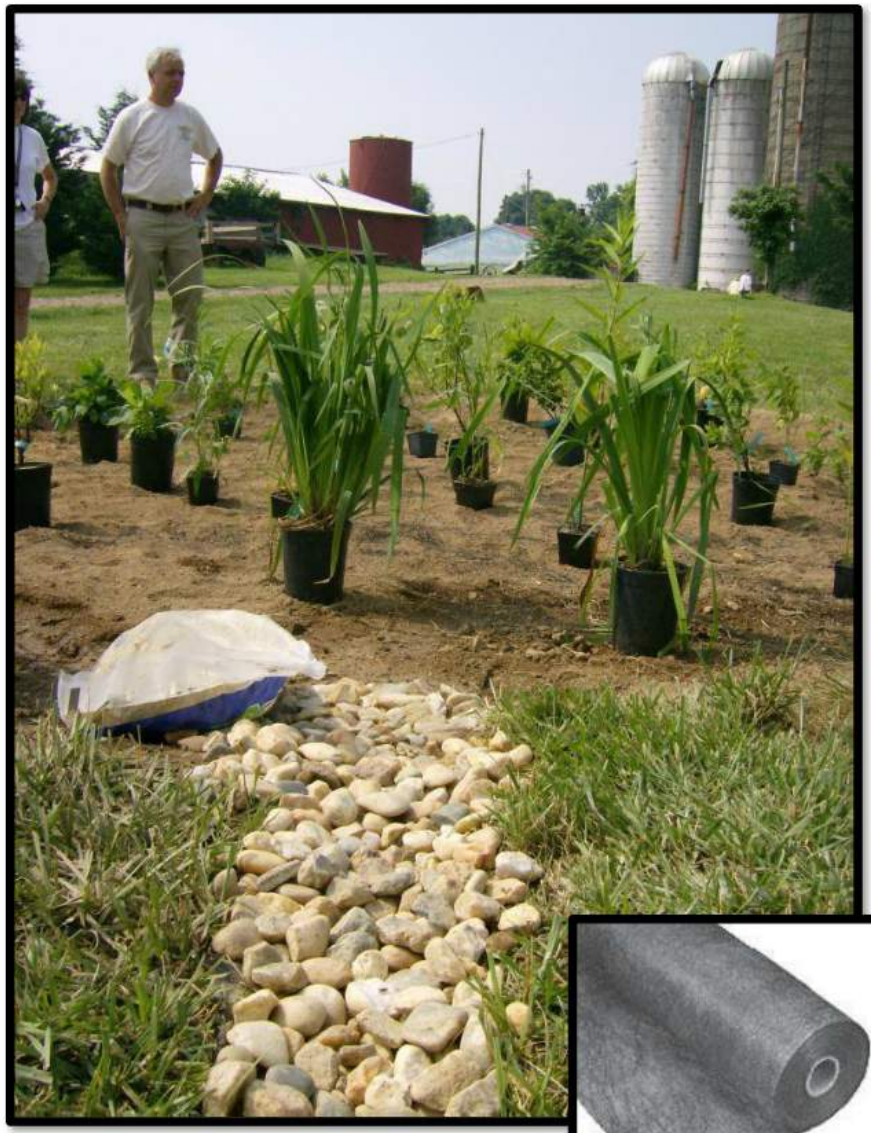
2. Watering will need to be done in first 1-2 years to get garden established & in drought!

3. Landscape Fabric and Mulch



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3. Landscape Fabric and Mulch

- Apply mulch twice per year until groundcover establishes.

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4. Soil Testing

- Soil should be tested every 3 years.
- pH should be in an acidic range
  - If pH is <5.2, apply limestone
  - If pH is >7.0 to 8.0, add aluminum sulfate or sulfur to reduce pH according to recommendations.
- Soil amendments should only be added when no storms are expected.
- Refer to RCE Fact Sheet 797, download from: http://njaes.rutgers.edu/pubs/

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RUTGERS COOPERATIVE RESEARCH & EXTENSION

Fact sheet

FS797

For a comprehensive list of our publications visit www.rce.rutgers.edu

Soil Testing for Home Lawns and Gardens

Joseph R. Heckman, Ph.D., Extension Specialist in Soil Fertility; Stephanie Murphy, Ph.D., Director of Soil, Water and Plant Analysis Conservation; and Susan Lance-Scibilia, Former Program Associate in Water Quality

Soil testing can provide information about how to enhance the beauty and productivity of a lawn, landscape planting, or vegetable garden. Whether your goal is a plush, green lawn or a large harvest of vegetables, soil fertility testing is the place to start. It helps by determining a soil's need for lime and fertilizer. Regular soil tests are also a part of a sound environmental management plan for your home and garden. Proper soil and fertility management will reduce the potential for water contamination from fertilizers. By knowing the plant nutrition needs of your lawn and gardens, you can prevent the overapplication of fertilizers, which may result in excess nutrients reaching streams or groundwater.

When to Sample

The best time to take a soil sample is after harvest in the fall or before spring fertilization. Do not sample shortly after a lime, fertilizer, or manure application or when the soil is excessively wet. For lawns, late summer sampling will prepare you for fall fertilization. Soil testing should be repeated every 2–3 years.

Where can I get a soil test kit?

Soil test sampling kits are available for a fee from most of Rutgers Cooperative Extension's county offices, which are listed in the blue pages of your telephone book under county government. Kits are also available from the Rutgers Soils Laboratory, located at the Cook College Campus in New Brunswick. Separate soil samples will need to be taken from areas used to grow different types of plants. For example, separate soil test kits should be used for lawn areas and vegetable garden areas. Samples from rhododendron, azalea, and other broadleaf evergreen areas should be kept separate from other shrub areas. Also sample separately areas that have previously received different lime or fertilizer treatments and areas that are noticeably different in plant or soil quality. For further information, visit our web site, *www.rce.rutgers.edu/soiltestinglab*.

How to take a soil sample

The Rutgers Soils Laboratory uses state-of-the-art instruments and methods of soil analysis. The soil test, however, can only be as good as the soil sample collected, so it is very important to use proper sampling techniques. The objective of sampling is to collect a random sample that will best represent the average fertility of the sample area. Depending on the size of the area to be sampled, collect about 10 to 15 cores or slices of soil while walking in a random pattern over the area to be tested.

Although a soil sampling probe is the most convenient tool to use, a garden trowel or spade also works well.

THE STATE UNIVERSITY OF NEW JERSEY RUTGERS COOK COLLEGE

5. Weeding

- Weeding more often will limit the amount of time you will have to spend weeding
- Watch for overly-competitive species
- Some weeds can be aggressively spreading underground by rhizomes

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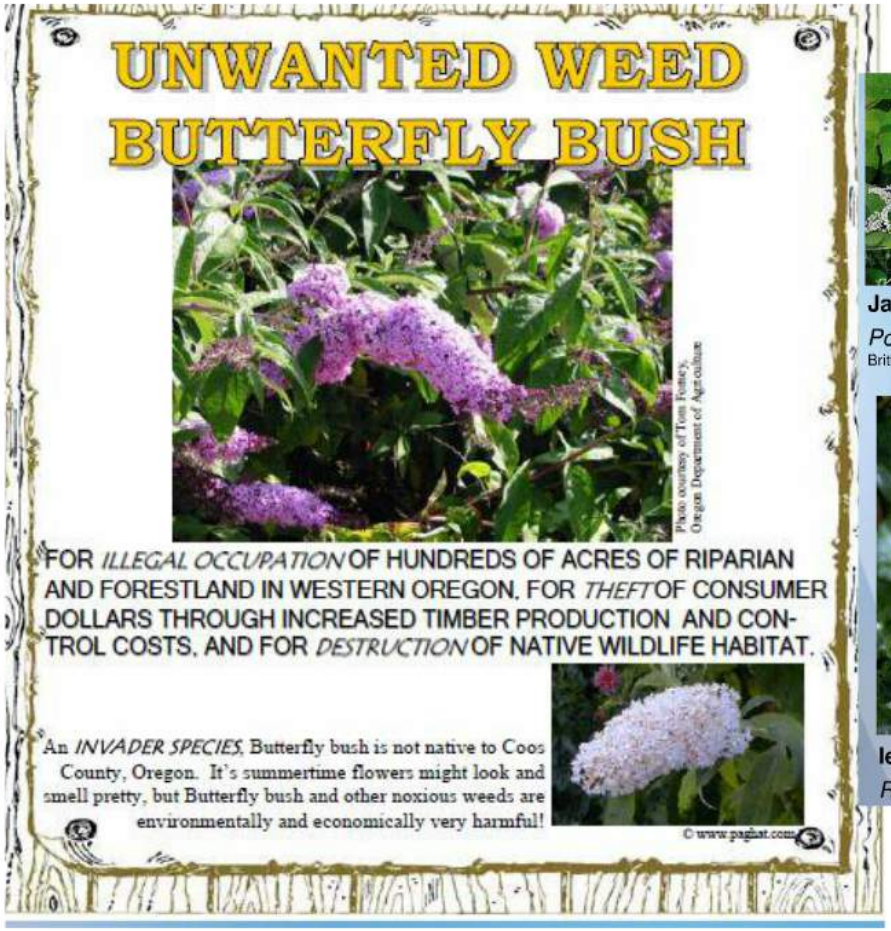
5. Weeding

Beware of Non Native Invasive plants coming to a garden near you……



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Japanese knotweed

Polygonum cuspidatum
Britt Slattery, USFWS

Japanese stilt grass

Microstegium vimineum Ted Bodner

garlic mustard

Alliaria petiolata
Britt Slattery, USFWS

lesser celendine

Ranunculus ficaria

Canada thistle

Cirsium arvense
Britt Slattery, USFWS

6. Pruning

- Pruning directs growth of plants, improves health, and increases production of flowers and fruits.

- How does pruning a rain garden differ from my other gardens?
  - In a rain garden, dense shrub growth is encouraged to provide increased filtering capacity.

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6. Pruning

- Tattered and discolored plants should be cut back after spring arrives and growth is 4-6" tall.

- "Deadheading" plants will also lead to succeeding new growths.

- THINNING: basically, thinning out. This type of pruning removes entire braches back to the main trunk or major branches to the ground.
  - Expected result: large, open shrub

- HEADING: also known as heading back. This type of pruning removes only part of a branch.
  - Expected result: growth of multiple branches in place of single branch, thus a more dense shrub.

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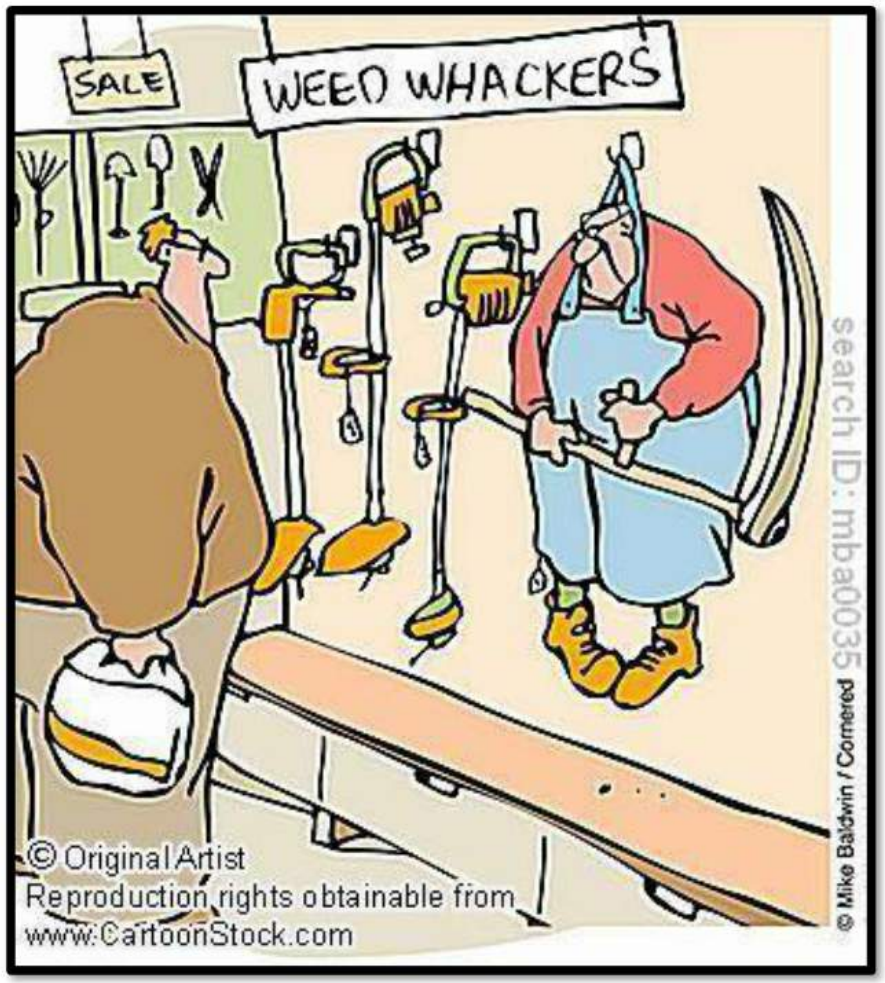
7. Mowing

- After the growing season, it will be necessary to remove stems and seedheads. These can be left for habitat and in some areas, aesthetics.

- A string trimmer can be used to maintain over-competitive growths.

- Dead plant materials can also be removed by a string trimmer or mower, if the mowing deck can be raised to cut at 6-8”.



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8. Re-Planting as necessary

- After the first season, it may be obvious what plants were successful and what plants do not work for your rain garden.
  - Over the growing season, was the weather drastically different than the conditions the basin was designed to retain?
  - Was flow too fast through the basin, damaging health?
  - Is flow being incorrectly diverted from the rain garden?

Photo by Linda Brazaitis

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8. Re-Planting as necessary

- Replace dead or diseased plant material
- Re-seed the berm if there are areas of exposed soil
- Replace rocks that may be diverting flow out of the garden
- Build up areas where more protection is needed

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9. Sediment Removal as necessary

- Since the rain garden serves the purpose of catchment, sediment will tend to accumulate within the garden.
- This is a sign of success – this soil would have been directed straight to the local waterways without your efforts!

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9. Sediment Removal as necessary

- With a flat shovel, remove soil that has accumulated in the basin. Avoid the vegetation!

- There is no exact schedule for when this should be done. Try to monitor sediment accumulation, especially after all heavy storm events.

- Be sure that sediment is not churning up from exposed areas of the rain garden. Flow should be dissipated to avoid these situations, which are likely to occur in the early stages of stabilization.

- Core aerate or cultivate bare areas annually if surface becomes clogged with fine sediments.

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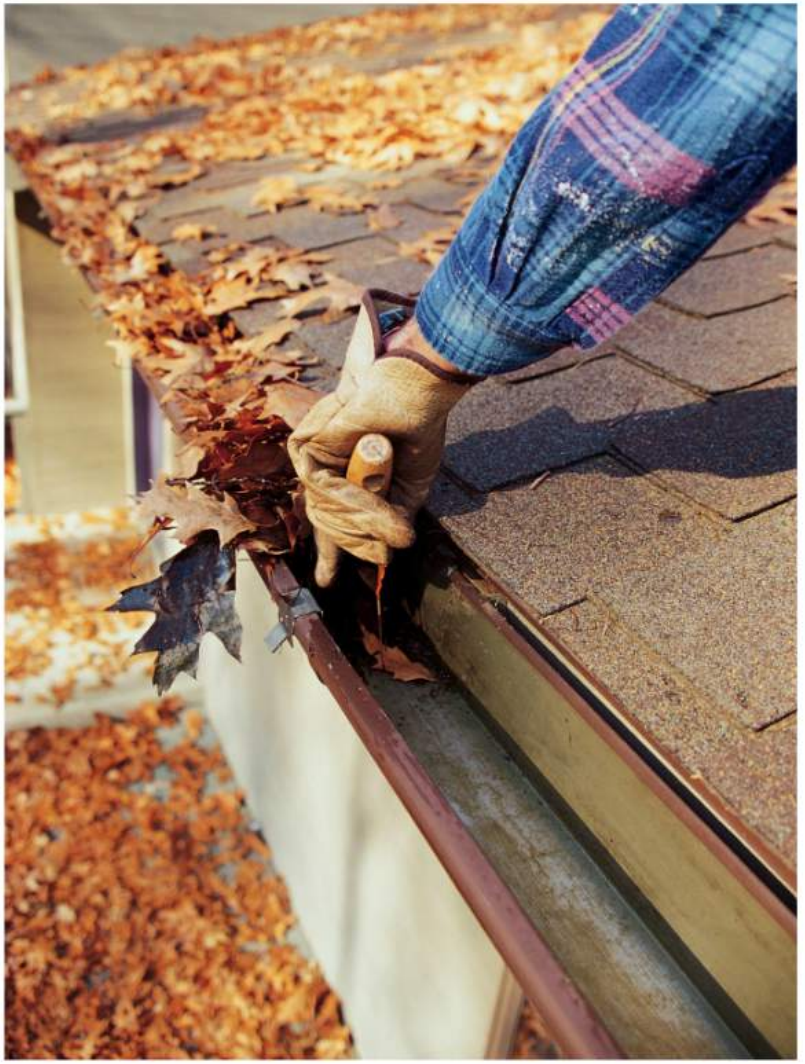
10. Cleaning of Gutters

- Make sure rain gutters are clear of debris.
- If the flow of water is blocked in the gutter, the rain water will have difficulties getting to your rain garden.



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Summary


Rain gardens generally fail for a reason.


Design?


Construction?


Regular visits and keeping up with maintenance.

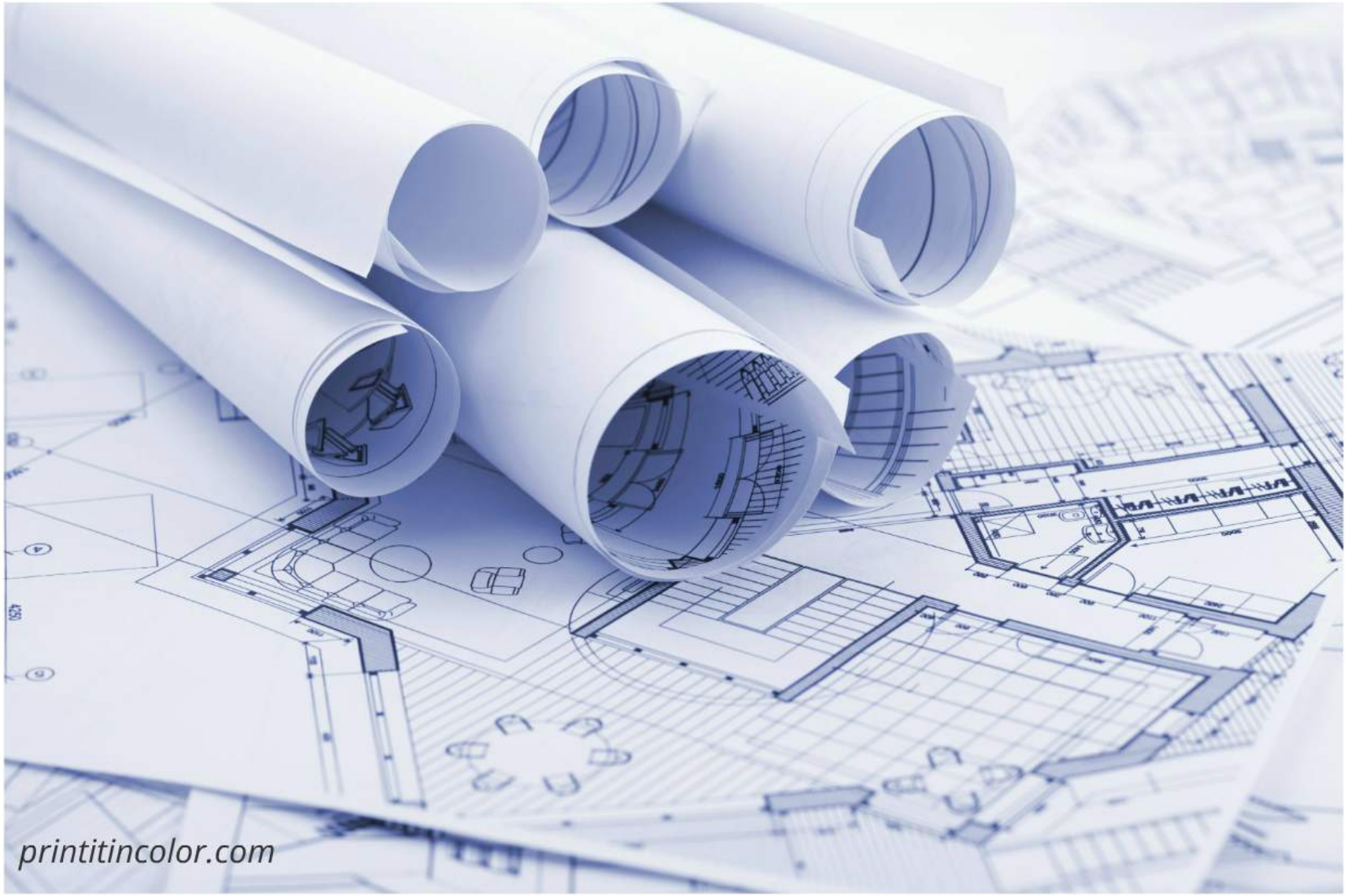

Site Conditions?


Learn about the project site.


Changes in site drainage characteristics?


Maintenance!!!!

Rain gardens generally fail for a reason.



Design?

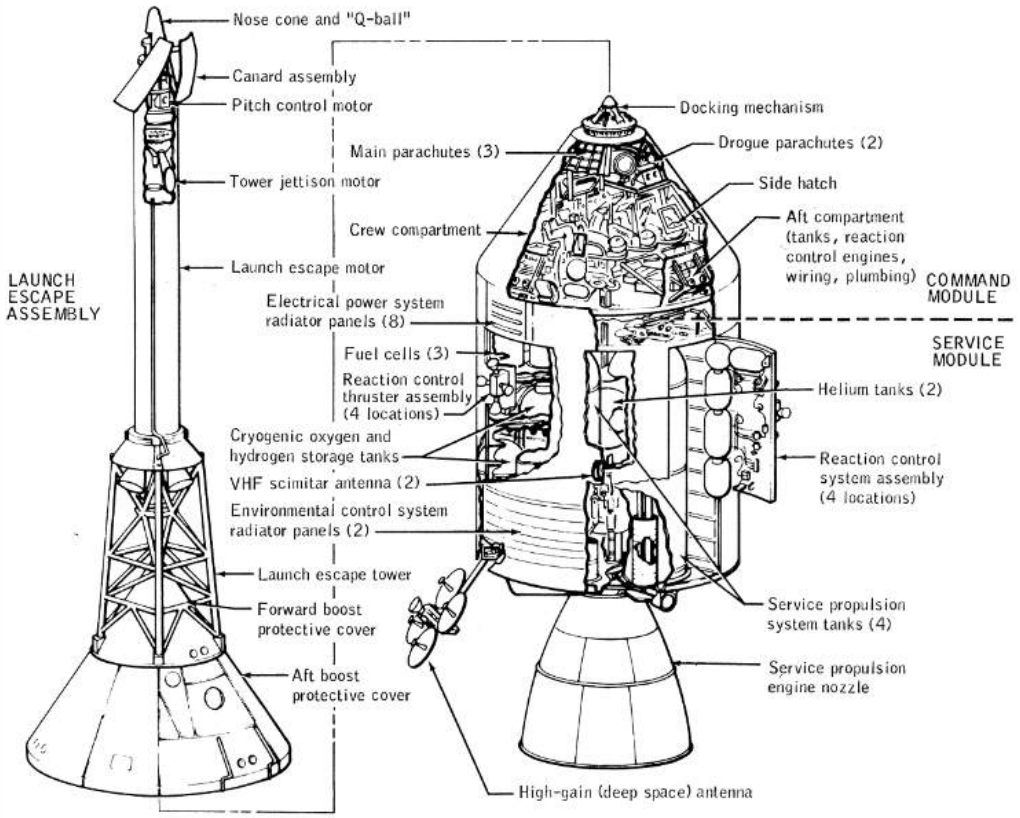
Construction?

Site Conditions?

Changes in site drainage characteristics?

Maintenance!!!!!

It's not rocket science, but there is science behind it.



- *Soils*
- *Runoff*
- *Planting media*
- *Plant choices*

So what can be done to minimize problems or failures?

Learn about the project site.

Regular visits & routine maintenance.

Any Questions?

Thank you!

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