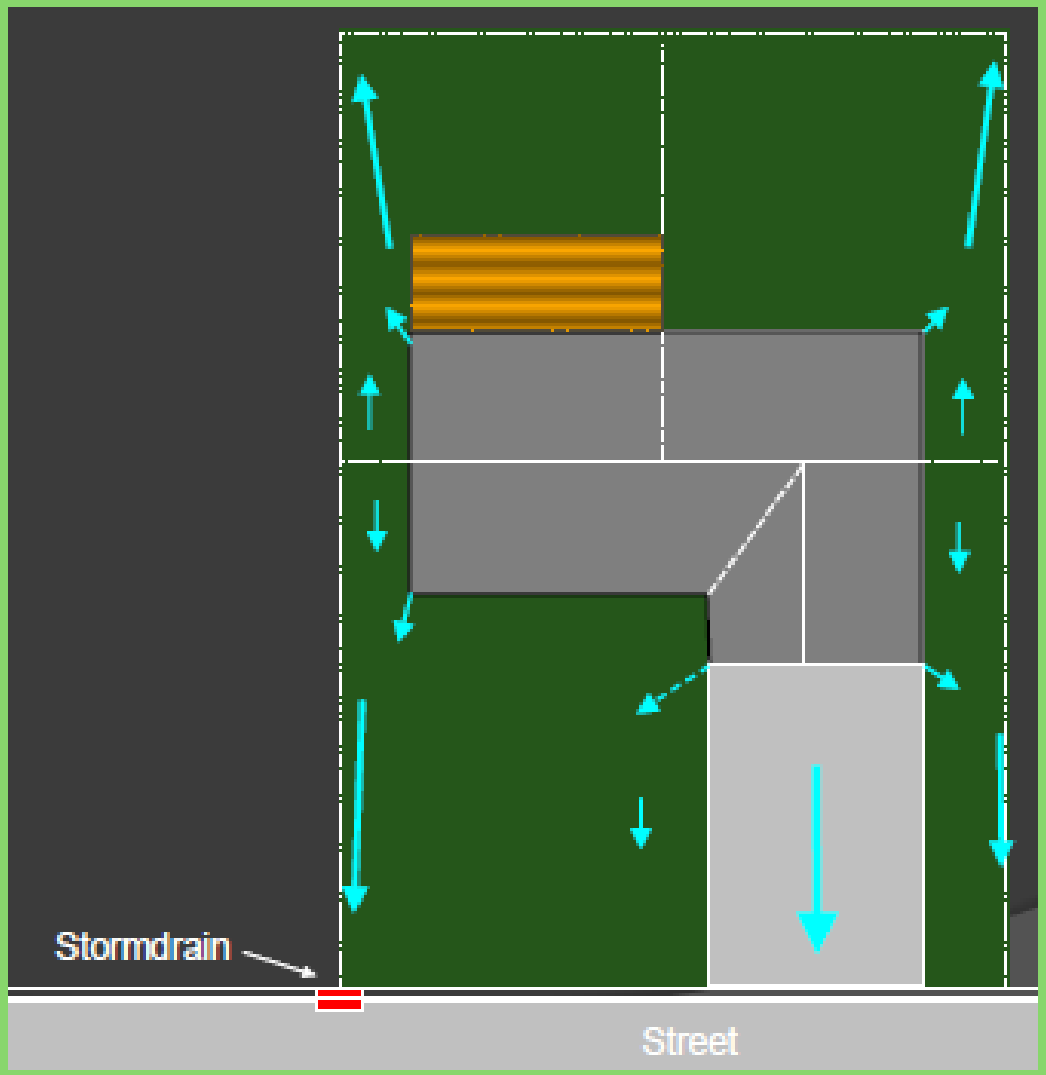
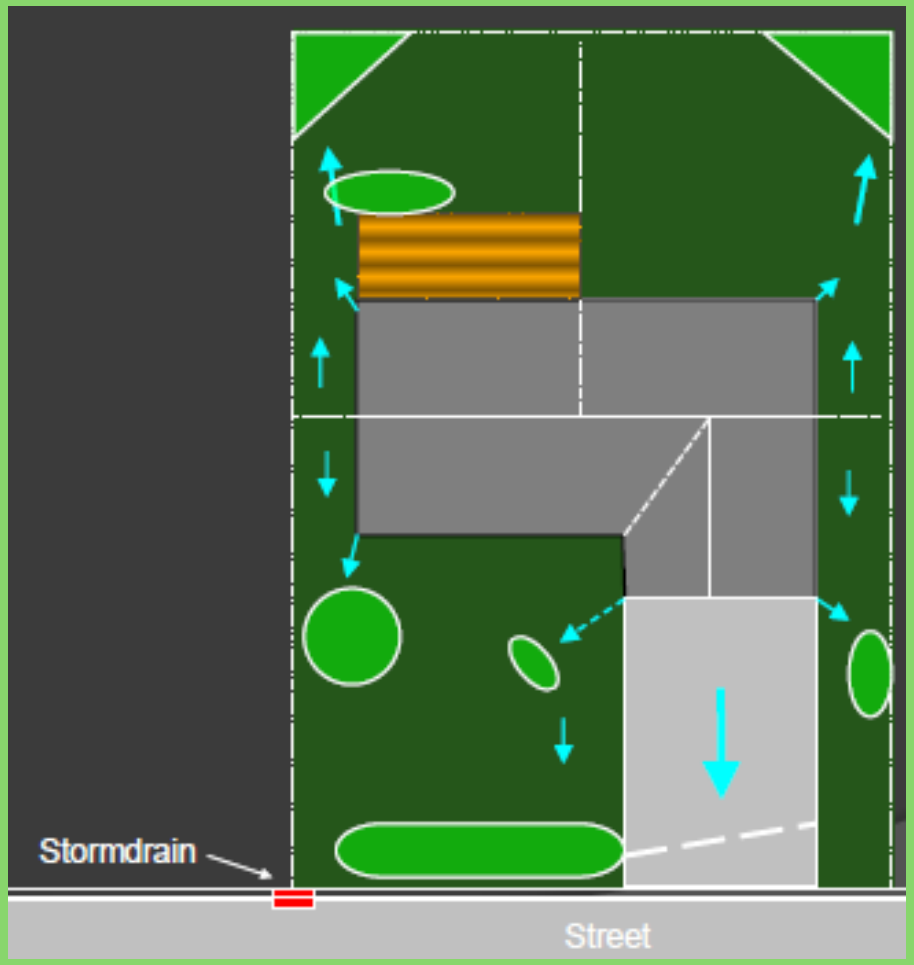
Rain Garden Design

Location: Understanding drainage



- Impervious surfaces: roofs, sidewalks, patios, driveway, clay lawn turf
- Where are the downspouts?
- Existing waterways

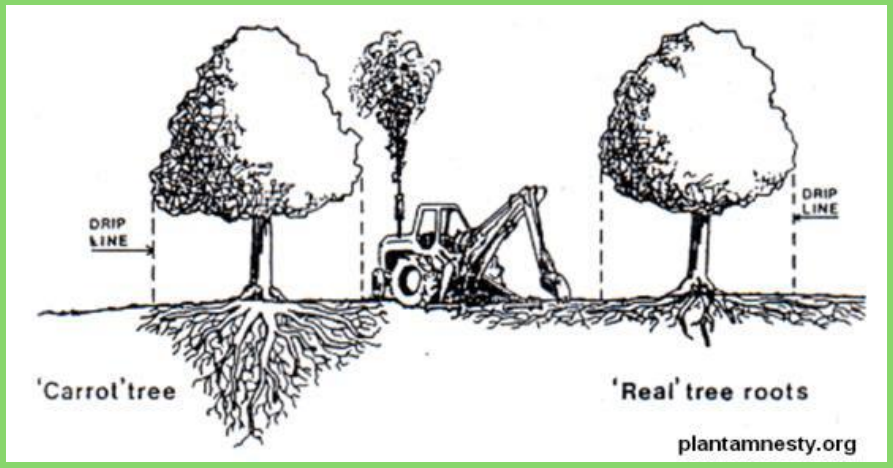
Where to put a rain garden?



- Identify natural water path through yard
- Close to water source (downspouts)
- Natural depressions and flat land

Where NOT to put a rain garden?

- Over utilities
- Within 10ft of foundation
- Over septic tank or leach field
- Steep slopes
- Easements
- Under ‘drip’ line of trees



Where are impervious areas?

Where are the downspouts?

Natural drainage paths?

Sizing a Rain Garden: **Drainage Area**

Drainage area of downspout:

Top roof area: 150 sq. ft.
Bottom roof area: 350 sq. ft.

Total Drainage Area:
500 sq. ft

Drainage Area: Area of impervious surfaces draining to a specific point

Sizing a Rain Garden: **Soil Type**

To figure out how deep your rain garden should be, consider the infiltration rate:

Standard Infiltration Rate of Soils:

Clays: .15 inches/hour

Silts or Loams: .5 inches/hour

Sands: 1 inch/hour

Infiltration Rate: How fast water soaks into, or infiltrates, the ground

Site Specific Infiltration Rate: **Percolation Test**

(Chapter 3 of Blue Thumb Guide)

Conduct a percolation test:

1. Dig a hole
2. Fill it with water
3. Wait a few hours
4. Fill with water, measure and record time
5. Wait an hour (or half hour, or 4 hours)
6. Measure and record time
7. Calculate infiltration rate (inches/hour or inches/24 hours)

Sizing a Rain Garden: **Rain Garden Size**

Depth: To find the depth of your rain garden, take the infiltration rate and multiply it by 24 hours:

Depth of rain garden

.15in/hr x 24hr = 3.6 inches

Clays:
3” to 5” Raingarden Depth
Silts or Loams:
6” Raingarden Depth
Sands:
9” to 12” Raingarden Depth

Area: To find the area of your rain garden, take the drainage area and divide it by the depth of your rain garden:

Area of rain garden

500 sq ft ÷ 3.6 inches = 139 sq ft

Sizing a Rain Garden: **Rain Garden Size**

Depth of rain garden

.15in/hr x 24hr = 3.6 inches

Area of rain garden

500 sq ft ÷ 3.6 inches = 139 sq ft

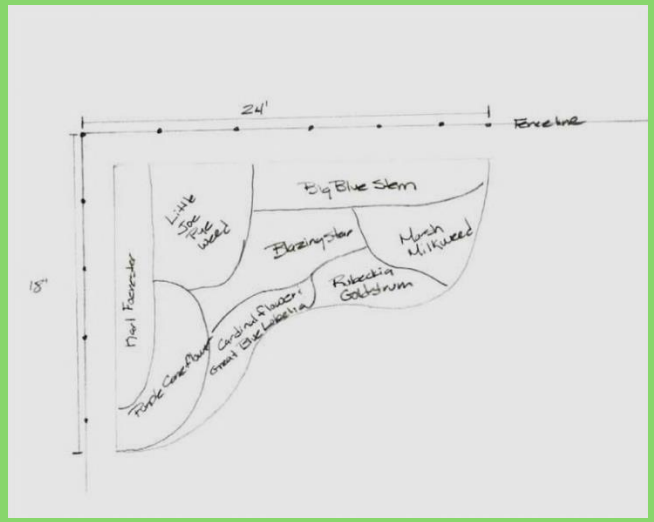
Designing a Rain Garden: **Structural Design**

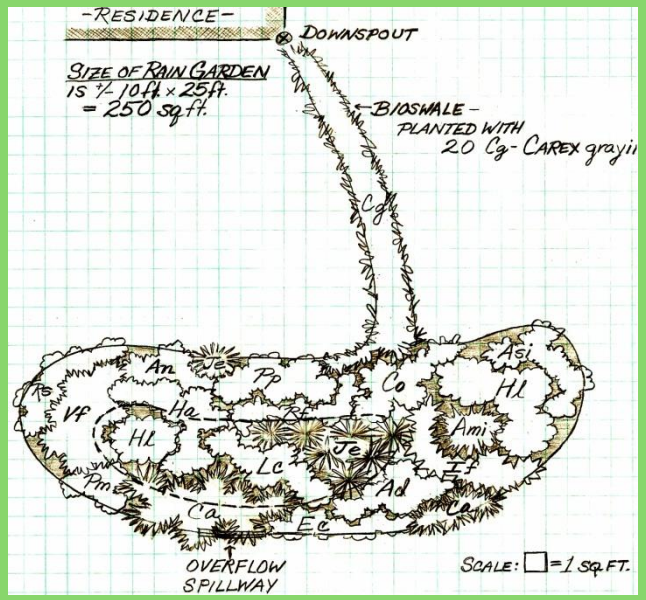
- Side slopes 4:1
- Flat bottom
- Compost – 3”
  - Till in
- Inlet and outlet

Getting water to the garden: **Inlets**

Designing a Rain Garden: **Garden Layout**

- Sketch garden shape
- Formal vs. informal
- Integrate into landscape
- Include inlet and outlet





Designing a Rain Garden: **Plant Selection**

Highest Maintenance Effort

diverse palette of perennial plants
limited palette of perennial plants
shrubs
native grasses

Lowest Maintenance Effort

Diverse palette of perennial plants

Limited palette of perennial plants

Limited palette of perennial plants

Shrubs

Native grasses

Designing a Rain Garden: **Plant Selection**

- Plant in drifts
- Soil moisture: wet – mesic – dry
  bottom – sides – top
- Soil type: sand – loam – clay
- Sun preferences: sunny or shady
- Pot Size: plugs or pots (or both?)
- Spacing:
  - plugs 12” vs. pots 18”
- Cost:

Plugs - $1

3.5” pots - $4

Gallons - $8 - $15