

# Rain Gardens

with Anna Fialkoff, Horticulturist

NEW ENGLAND  
**WILD**  
FLOWER  
SOCIETY



Urban context

What are rain gardens and how do they work?

How do I make one?

What plants do I use?



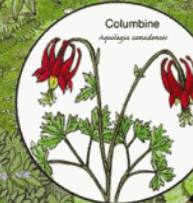
Blue F  
*Iris versicolor*



New England Aster  
*Aster novae-angliae*



Narrow Sundrop  
*Oenothera lachrymans*



Columbine  
*Aquilegia canadensis*



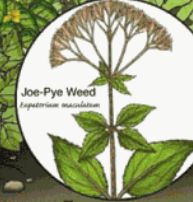
Cardinal Flower  
*Lobelia cardinalis*



Cut-leaf Coneflower  
*Rudbeckia laciniata*



White Turtlehead  
*Chelone glabra*



Joe-Pye Weed  
*Eupatorium maculatum*

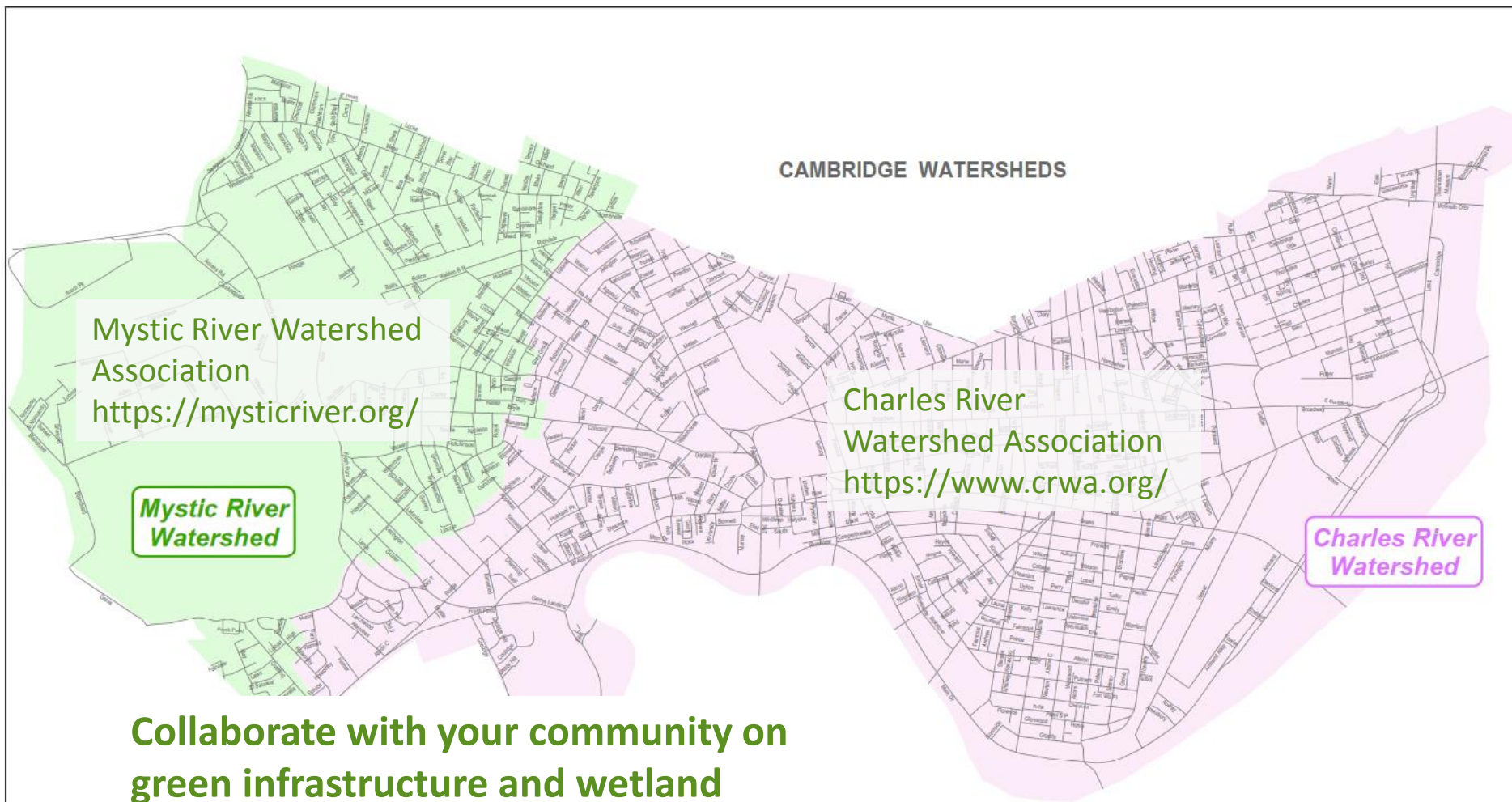


Beardtongue  
*Penstemon digitalis*

**Project Partners:**  
Lake George Association  
Lake Champlain Lake George Regional Planning Board  
Champlain Watershed Improvement Coalition of NY

Partial funding and paper provided by International Paper Foundation.  
Illustration and Design by Sheri Amsel, Adirondack Illustrator.

# Watershed



Mystic River Watershed  
Association  
<https://mysticriver.org/>

**Mystic River  
Watershed**

Charles River  
Watershed Association  
<https://www.crwa.org/>

**Charles River  
Watershed**

**Collaborate with your community on  
green infrastructure and wetland  
conservation for your watershed.**

<https://www.cambridgema.gov/theworks/ourservices/stormwatermanagement/faq>

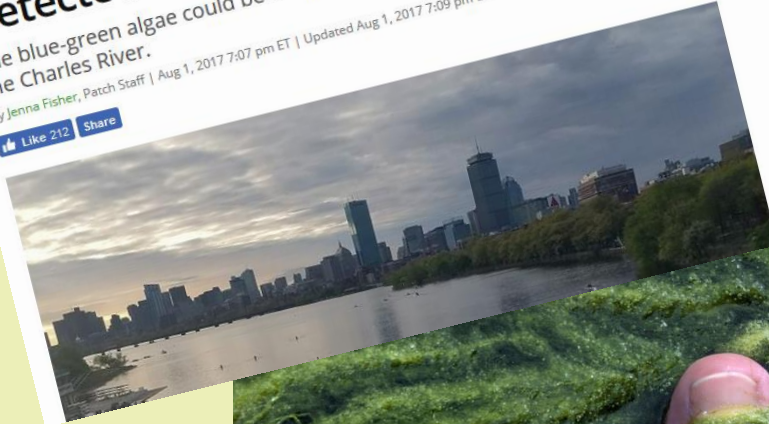
# Urban Storm Water Runoff

## Stay Out Of The Charles River: Toxic Algae Blooms Detected

The blue-green algae could be toxic to your skin and dangerous if your dog accidentally drinks it while swimming in the Charles River.

By Jenna Fisher, Patch Staff | Aug 1, 2017 7:07 pm ET | Updated Aug 1, 2017 7:09 pm ET

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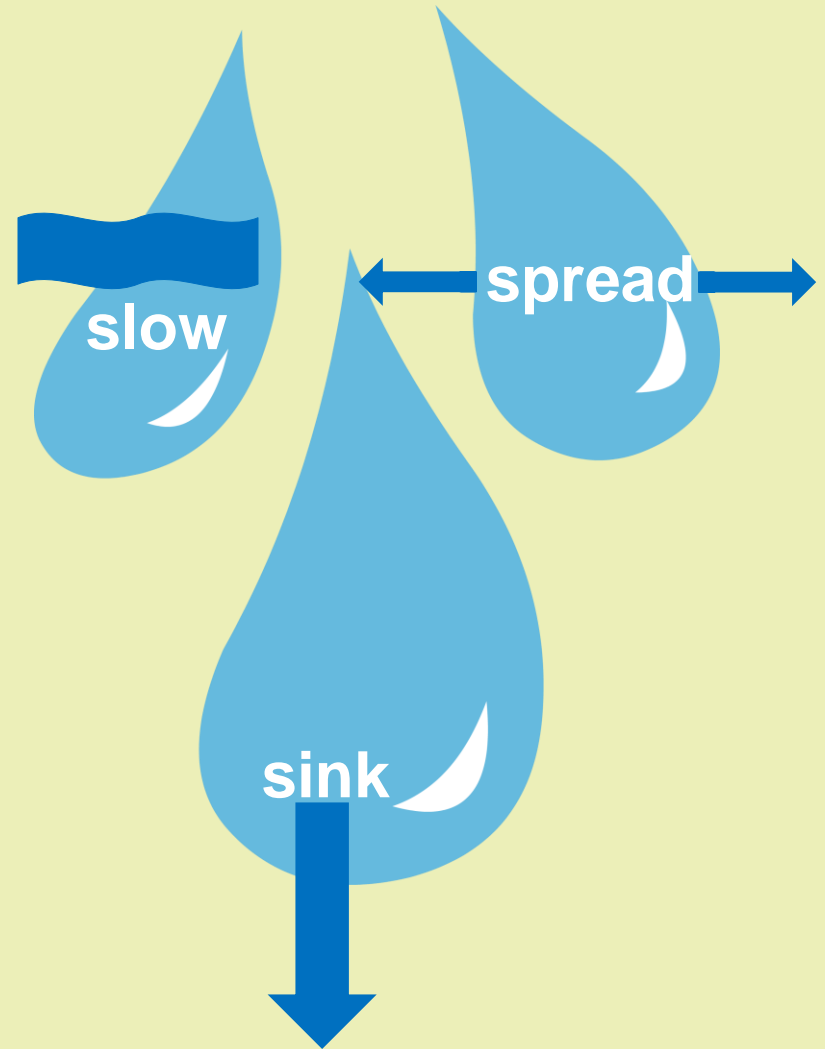


Runoff from impervious surfaces in urban areas is the leading cause of water pollution in the US!

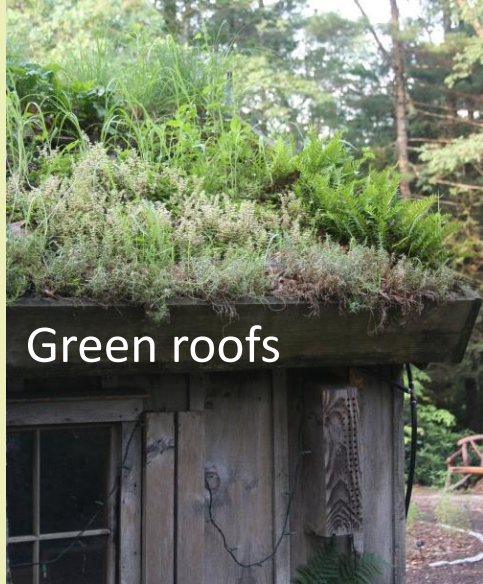


# How Can I Be A Watershed Steward?

Don't let raindrops that fall on your property leave your property.



# Green Garden Infrastructure



Green roofs



Bioswales & Rain Gardens



Pervious pavers



Rain barrels and cisterns



Water saving plants

# What Are Rain Gardens?



**Rain gardens are vegetated depressions that can:**

- Keep water on site & reduce storm water runoff.
- Slow, infiltrate, clean, and cool runoff before it gets to waterbodies.
- Recharge the groundwater supply.
- Harvest rain water (passively).



# How Do They Work?

1. Catchment

2. Conveyance

3. Infiltration/  
Absorbtion

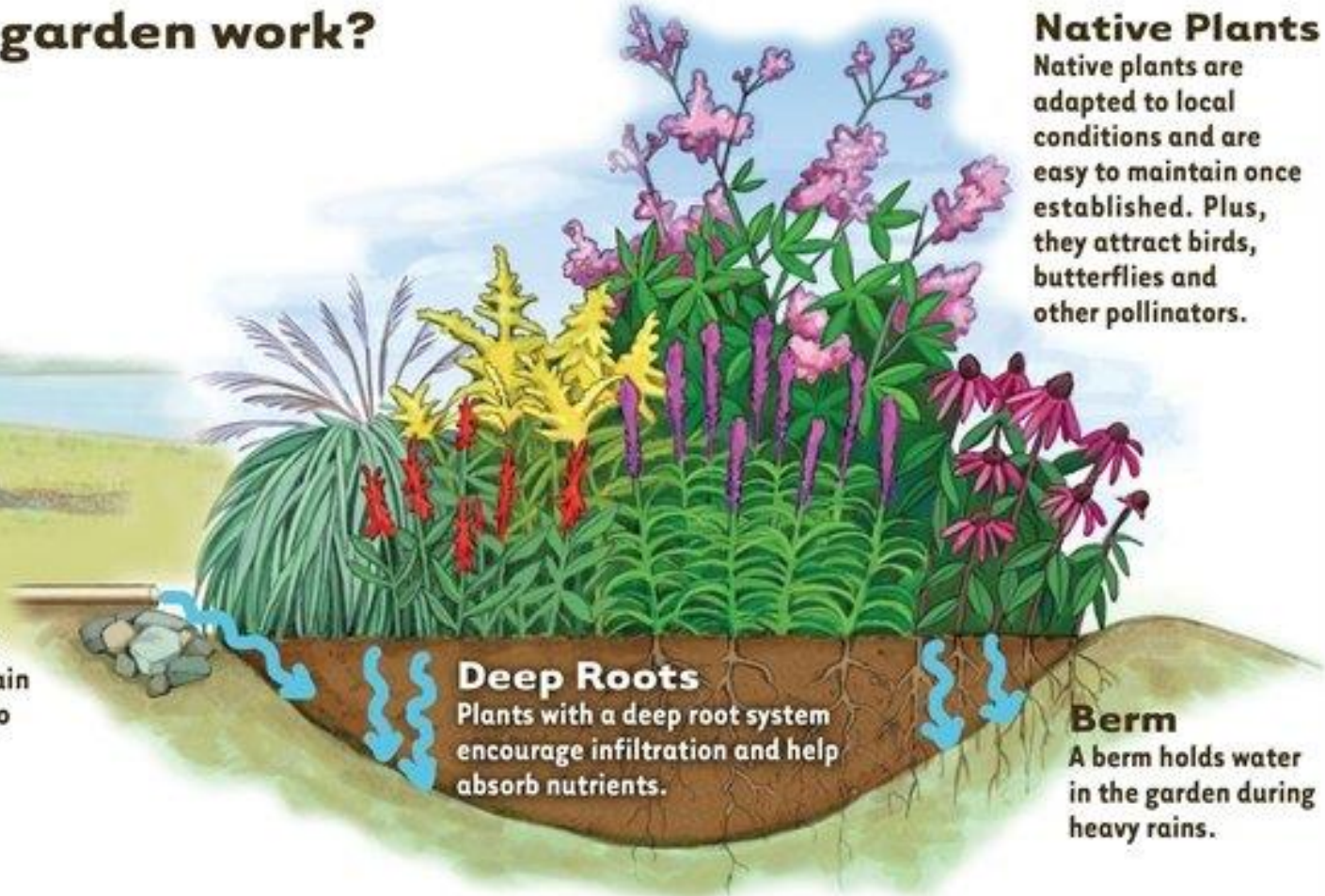
4. Overflow

## How does a rain garden work?



### Gutters & Down Spouts

Assist with directing rain water from your roof to your rain garden.



### Native Plants

Native plants are adapted to local conditions and are easy to maintain once established. Plus, they attract birds, butterflies and other pollinators.

### Deep Roots

Plants with a deep root system encourage infiltration and help absorb nutrients.

### Berm

A berm holds water in the garden during heavy rains.

# Designing a Rain Garden

- Where do I want to capture storm water from?
- Do I want to actively and/or passively harvest rain water?
- Other goals? Curb appeal, increase wildlife value, etc.

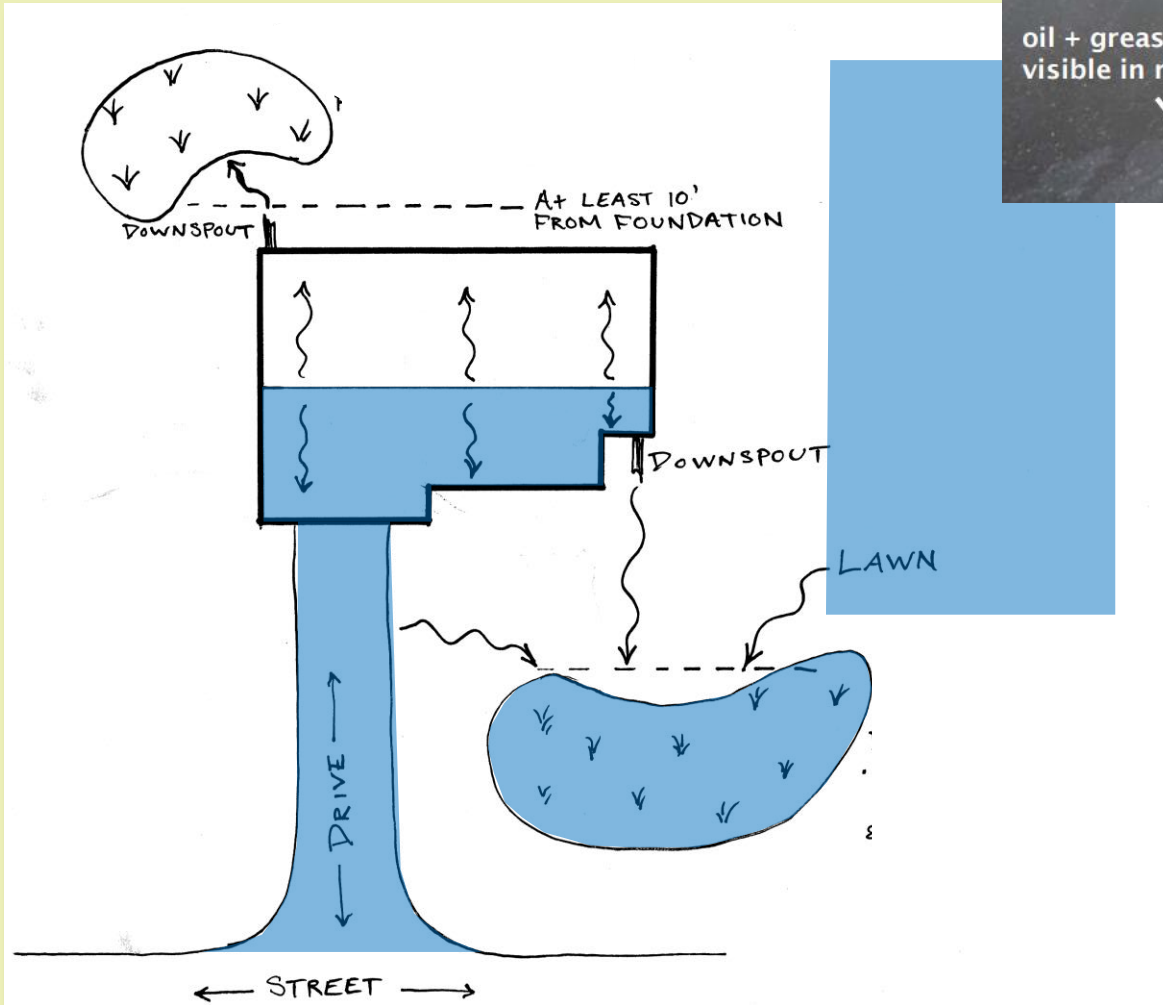




# Siting your rain garden

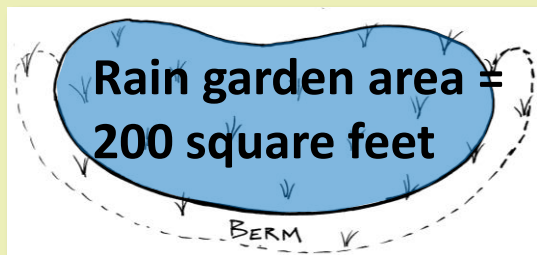
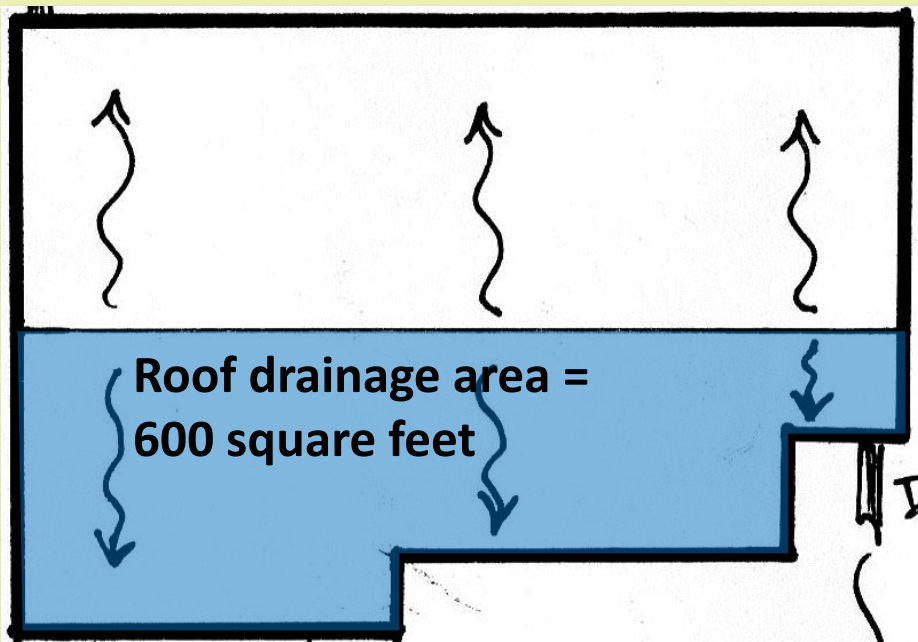


[http://www.npsnj.org/PDFs/2011\\_rain\\_gardens/2\\_intro\\_6-13.pdf](http://www.npsnj.org/PDFs/2011_rain_gardens/2_intro_6-13.pdf)



- High in the watershed
- In well draining soil (don't put the rain garden where water already ponds!)
- Away from large trees, septic systems, and at least 10' away from buildings

# Scaling your rain garden



CT NEMO Program:

- Rain Garden App
- Size calculations
- Plant selection

<http://nemo.uconn.edu/>

- ~ 1/3 of the collection area

# Drainage, Soils, and Depth



## Drainage Test

1.

Dig 1-2 test holes, 8" X 8", in the area you will install your rain garden.

2.

Fill the holes with water and observe how long it takes them to drain.

3.

If they do not drain within a 24-72 hour period, then it either may not be the best area for a rain garden or the amend the soil for better drainage.

A typical residential rain garden is 4"-8" inches deep, depending on slope, drainage, and soils.

- Make it 8"-12" for more sandy soils with limited space.
- If you have heavy clay soil, it should not exceed 6".

## Common concerns:

*Do raingardens form ponds?*

No. Rainwater should soak into the ground between rainfalls.

*Do they breed mosquitos?*

No. Mosquitos need 7-12 days to lay/hatch eggs, and standing water most rain gardens should only last for a few hours after most storms

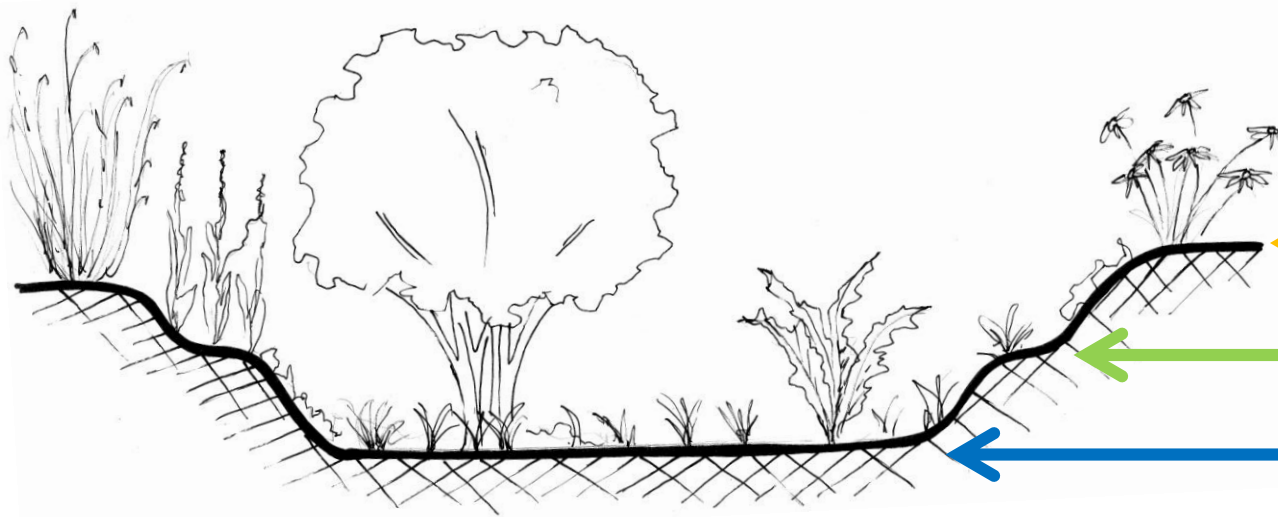
# Installing Your Rain Garden

**Safety Alert!**  
Call Dig Safe @ 811  
before doing any digging  
on your property.

- Make sure the bottom of the garden is level.
- Berm the downhill side to keep water in the rain garden.
- Direct down spouts to where water enters.
- Shape with contours (teardrop & kidney shapes).



# Moisture Zones



## Top Zone:

Plants suited to drier conditions.  
Water level after extreme rain events.

## Mid Zone:

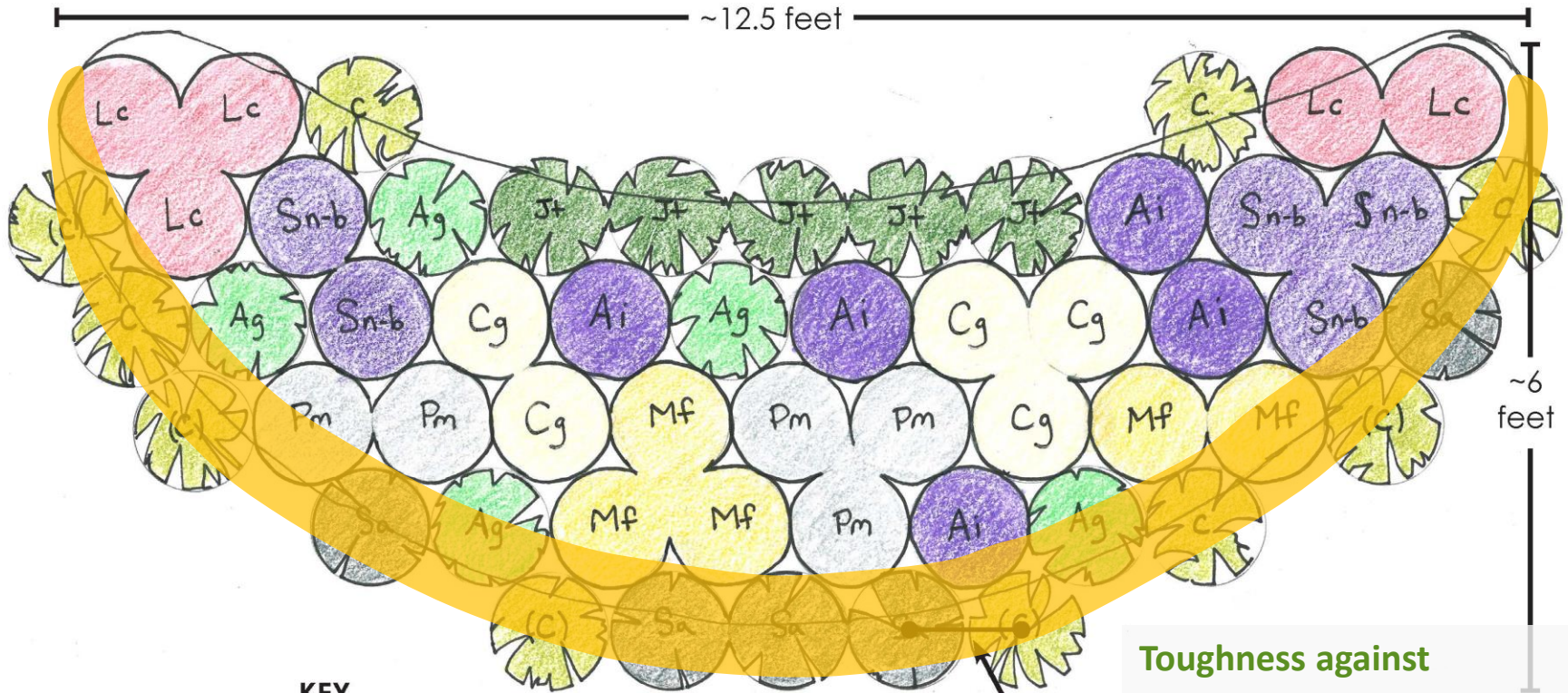
Plants suited to alternating wet or dry conditions, yet dry between storms.  
Water level after average rain events, and able to handle short periods of inundation.

## Bottom Zone:

Plants suited to wet/mesic conditions and able to handle longer periods of inundation.

\*Note: These zones may shift based on your site conditions.

# POLLINATOR KIT #3: Full Sun, Moist to Wet



## KEY

(Species subject to change based on availability)

- Ai *Asclepias incarnata*
- Cg *Chelone glabra*
- Lc *Lobelia cardinalis*
- Mf *Monarda fistulosa*
- Pm *Pycnanthemum muticum*
- Sa *Sisyrinchium angustifolium*
- Sn-b *Symphotrichum novi-belgii*
- Ag *Andropogon glomeratus*
- C *Carex crinita*
- Jt *Juncus tenuis*
- (C) *Carex* spp. (not included in kit)

## Toughness against

- Salt, heat, and other pollution
- Inundation & drought
- Erosion & sedimentation
- A range of conditions (versatility)

# Rain Garden Trees and Shrubs

- Tolerate inundation & drought



pin oak, *Quercus palustris*



UGA5141025

Serviceberry,  
*Amelanchier canadensis*

The Dow Gardens  
Archive, Dow  
Gardens,  
[www.forestryimages.org](http://www.forestryimages.org)



sweet pepperbush,  
*Clethra alnifolia*

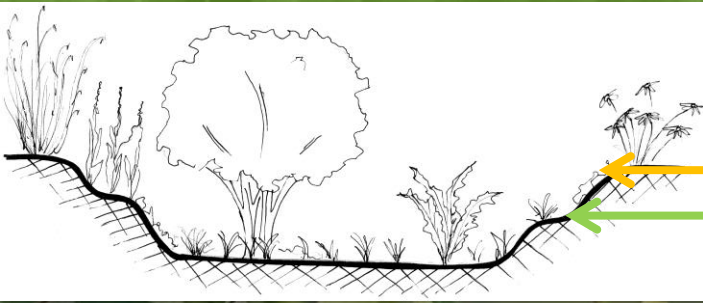


bayberry,  
*Morella caroliniensis*



Black chokeberry,  
*Aronia melanocarpa*

# Specimen Trees



*A. arborea* by Bill Cullina



UGA5141025

*A. canadensis*  
The Dow Gardens Archive, Dow  
Gardens, [www.forestryimages.org](http://www.forestryimages.org)



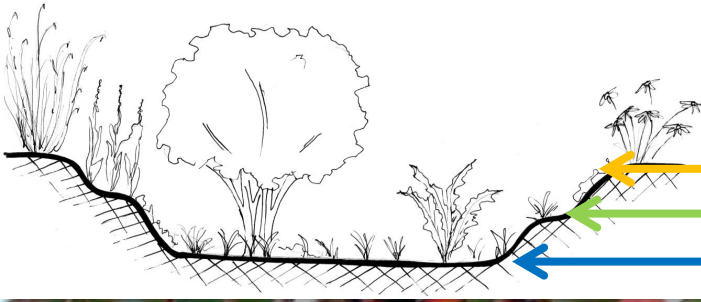
Serviceberry,  
*Amelanchier spp.*

Robin in *Amelanchier sp.*  
By Lawatha



# Edible Shrubs

red chokeberry, *A. arbutifolia*

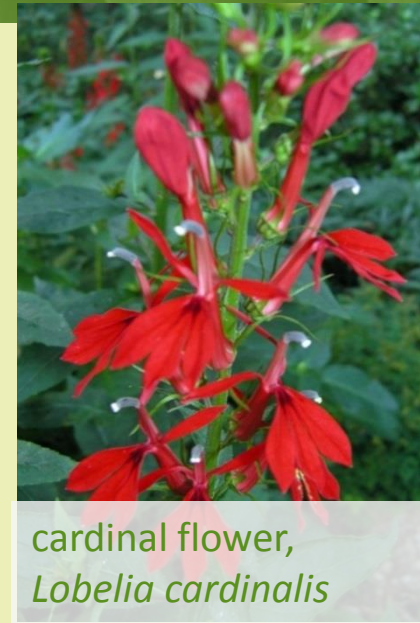
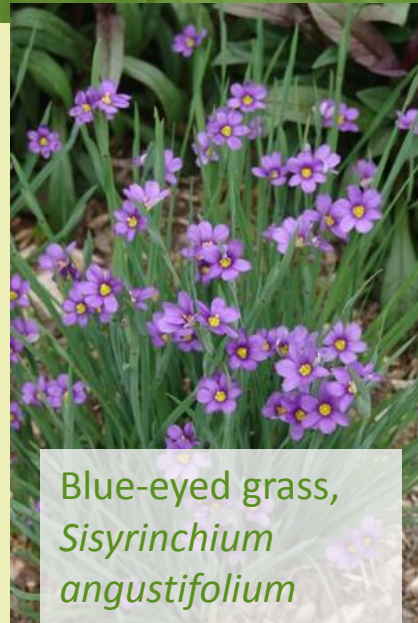


black chokeberry,  
*Aronia melanocarpa*

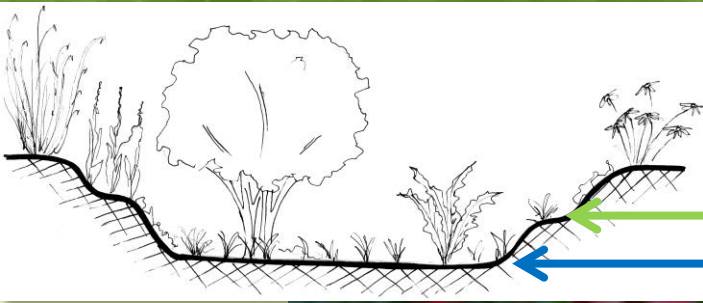


# Rain Garden Perennials

- Tolerate a range of conditions (versatile)



# Self-sowers



cardinal flower,  
*Lobelia cardinalis*

B. Patterson

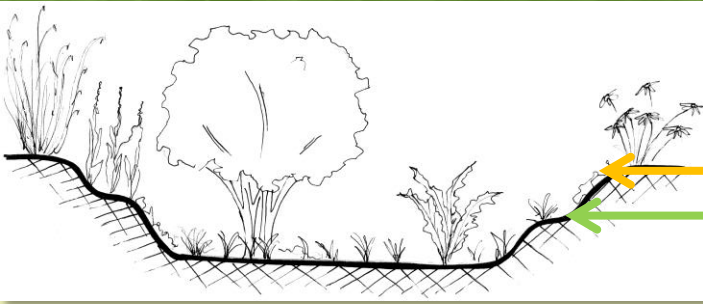


Dan Jaffe

great blue lobelia, *L. siphilitica*  
&

hyssop-leaved thoroughwort,  
*Eupatorium hyssopifolium*

# Coneflowers



black-eyed Susan,  
*Rudbeckia hirta*

Dan Jaffe



three-lobed coneflower,  
*Rudbeckia triloba*

North Creek Nurseries

From "Native Plant Selection for Biofilters  
and Rain Gardens" by Catherine Neal  
<http://www.ecolandscaping.org/>

# Cover the ground sedges and rushes

- Protect against erosion



path rush, *Juncus tenuis*



creek sedge,  
*Carex amphibola*

North Creek Nurseries



*J. effusus* 'Curly Wurly'  
<https://www.flickr.com/photos/glennf/170070917/>



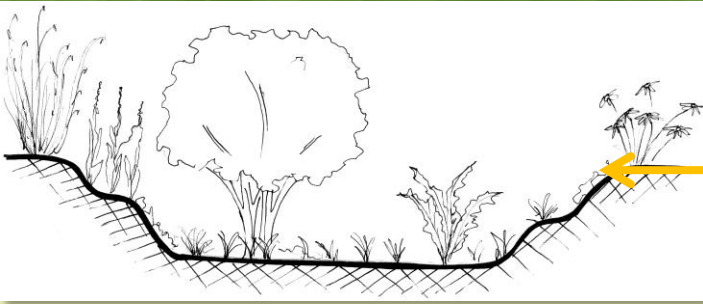
soft rush, *Juncus effusus*



eastern star sedge,  
*Carex radiata*

# Roadside Rain Gardens

- Tolerate salt, heat, and other pollution



purple lovegrass, *Eragrostis spectabilis*



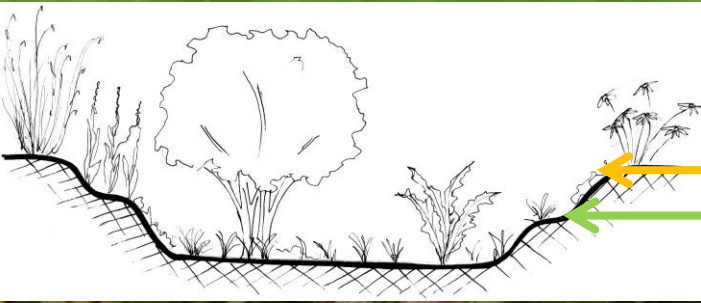
Plum and Walnut Street Rain Garden: Three months after installation.

Photo credit: Claudia West, North Creek Nurseries

See more at:

<http://www.ecolandscaping.org/event/densely-vegetated-rain-gardens-award-winning-stormwater-streetscape/#sthash.LmRKApG5.dpuf>

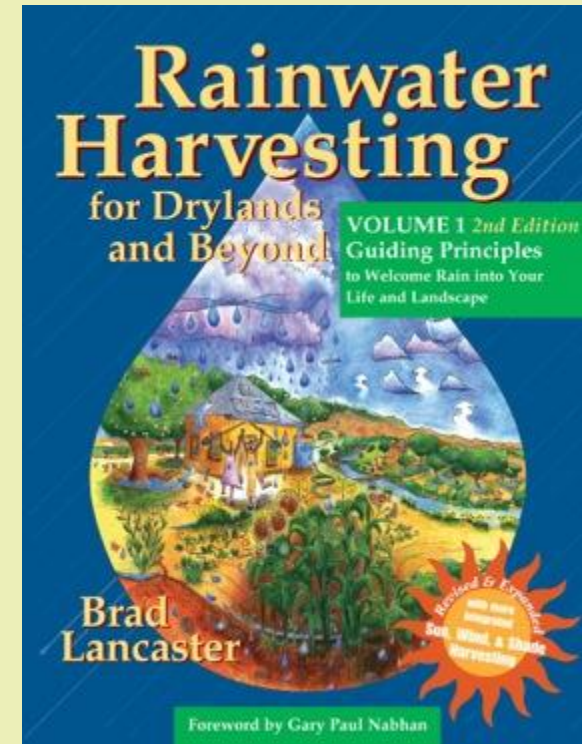
# Ornamental Grasses



northern sea oats, *Chasmanthium latifolium*

# Resources

- Brad Lancaster. *Rain Water Harvesting for the Dry Lands and Beyond*.
- Carrie Wiles. *North Creek Nurseries Rain Garden Planting Guide*. [www.northcreeknurseries.com](http://www.northcreeknurseries.com)
- Roger Bannerman, Wisconsin Dep. Of Natural Resources. *Rain Gardens: A How-to Manual for Homeowners*.
- *Landscape for Life: Base on Principles of the Sustainable Sites Initiative*. Instructor's Manual, [www.landscapeforlife.org](http://www.landscapeforlife.org)
- Meg Calkins. *The Sustainable Sites Handbook*.
- Sue Reed. *Energy-Wise Landscape Design: A New Approach for Your Home and Garden*.
- Thomas Christopher (Editor). *The New American Landscape: Leading Voices in the Future of Sustainable Gardening*.
- Catherine Neal. *Native Plant Selection for Biofilters and Rain Gardens*. <http://www.ecolandscaping.org/03/rain-gardens/native-plant-selection-for-biofilters-and-rain-gardens/>





# Where to buy plants

## *All grown without the use of systemic pesticides!*

- ❖ • Garden in the Woods, Framingham, MA (native retail trees, shrubs, perennials and ephemerals)
- ❖ • Nasami Farm, Whately, MA (native landscape plug nursery, wholesale, retail)
- ❖ • Van Berkum, Deerfield, NH (wholesale and retail perennials)
- Earth Tones, Woodbury, CT (native grasses, ferns, perennials, shrubs, trees)
- Octoraro Native Plant Nursery, Kirkwood, PA (wholesale only)
- Sylvan Nursery, Westport, MA (specializes in coastal species)
- Carolina Native Nursery, Burnsville, NC (native shrubs and perennials)
- Sudbury Nurseries West, MA (field grown trees and shrubs)
- New Moon, Bridgeton, NJ (native landscape plugs)
- Prairie Moon, MN (mail order seeds and bare root plants)