



Loving Our Downstream Neighbor

Plaster Creek Stewards

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Urban watersheds

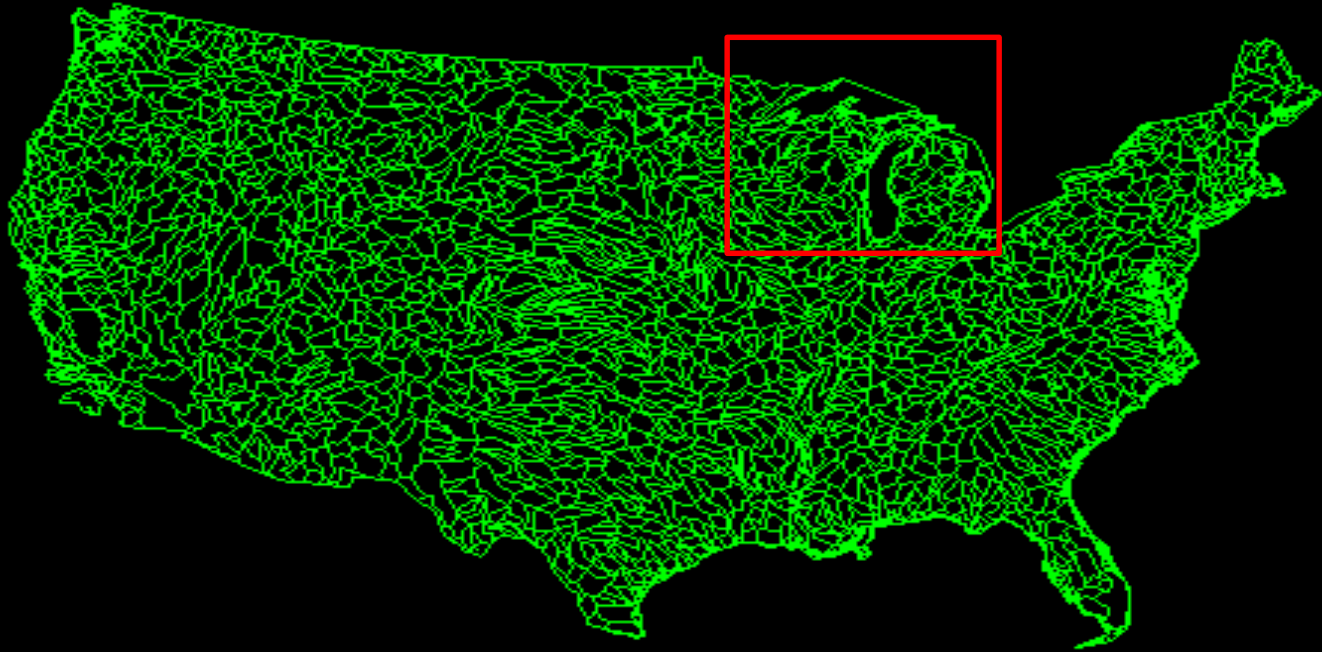
What is a watershed?

Everyone lives in a watershed

Watersheds integrate communities

Most urban watersheds are seriously degraded

Hydrologic Units map



Watersheds are topographical and hydrological units that integrate the landscape into nested sets of drainages.

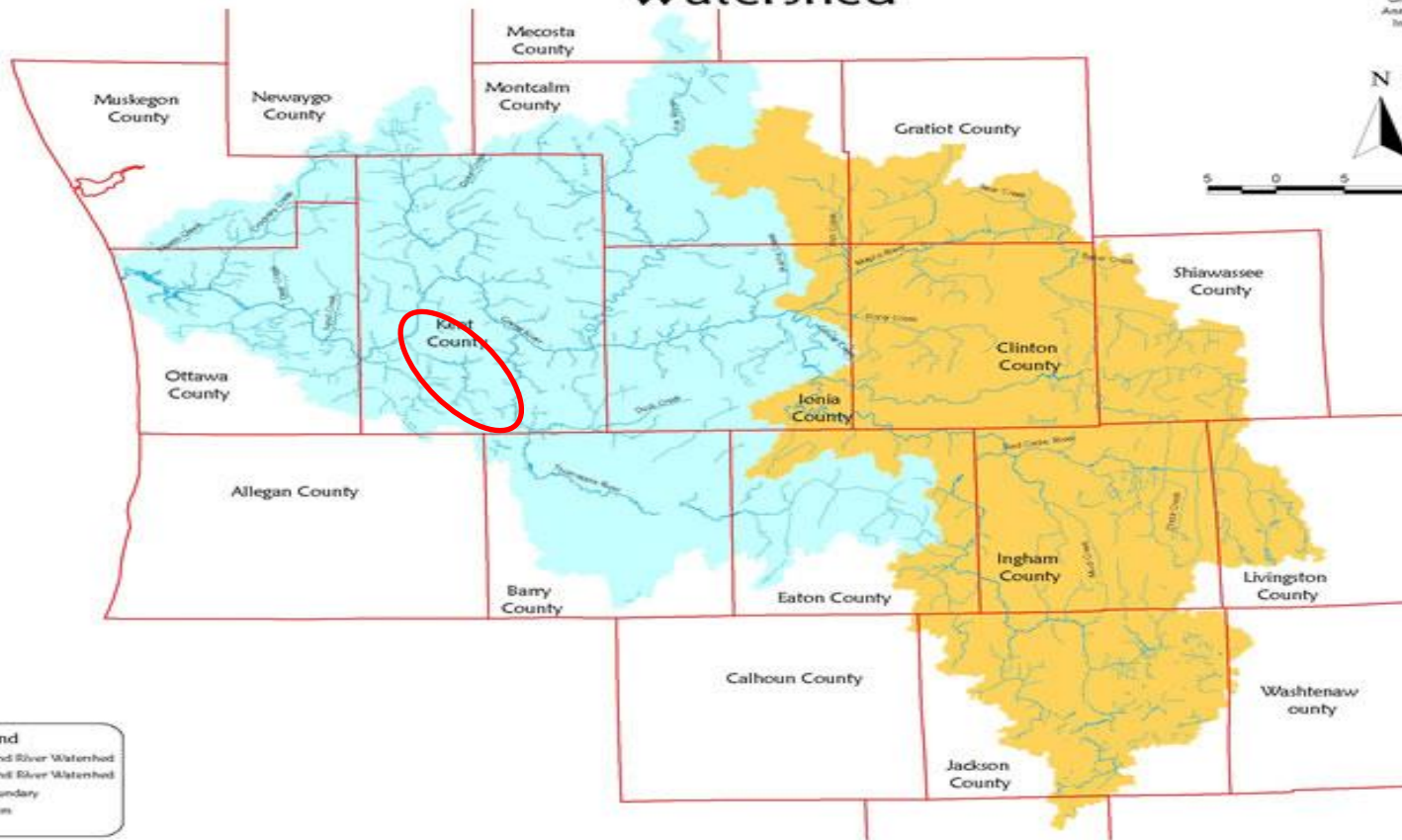


Lower Grand River Watershed Project

Lower Grand River and Upper Grand River Watershed

Base Information
Michigan Center For Geographic Information
Michigan Geographic Data Library

Grand Valley State University
Annis Water Resources Institute
Information Services Center



Legend

- Lower Grand River Watershed
- Upper Grand River Watershed
- County Boundary
- River/Stream



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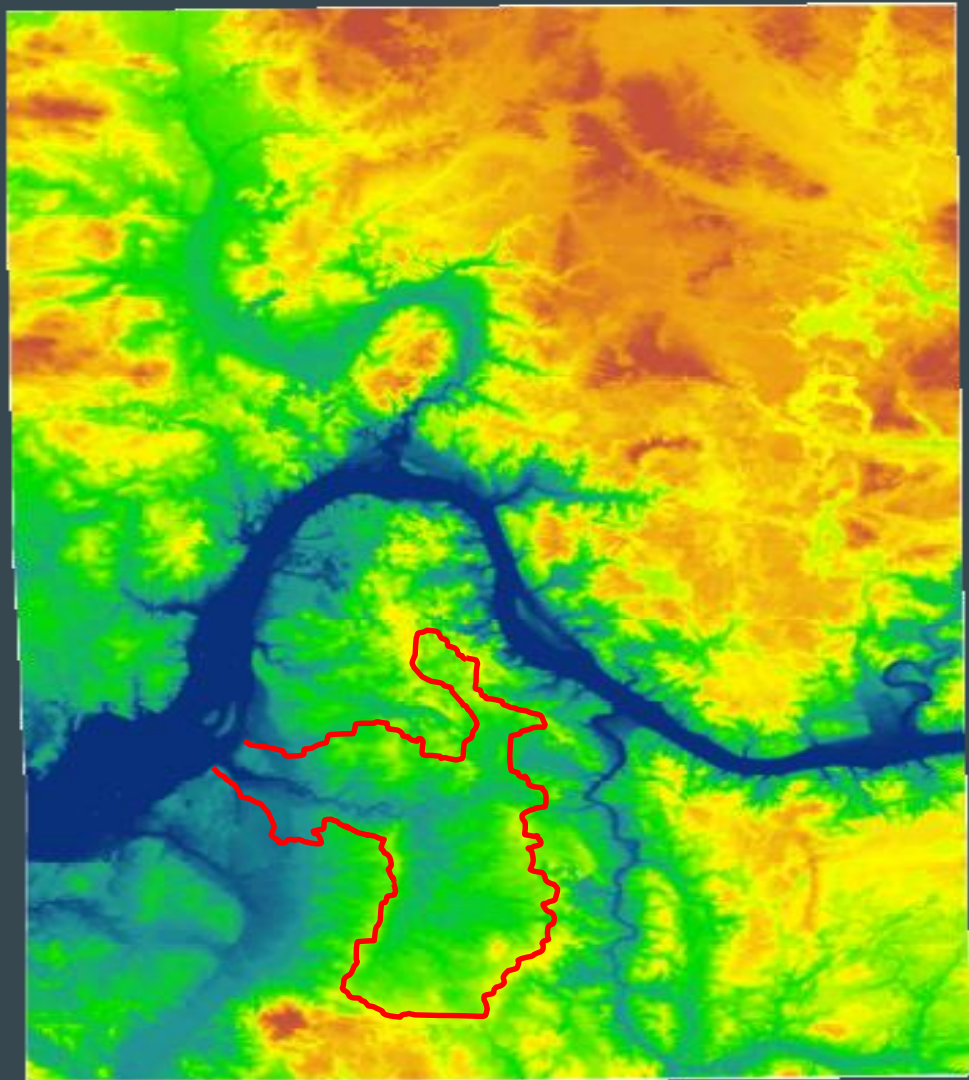
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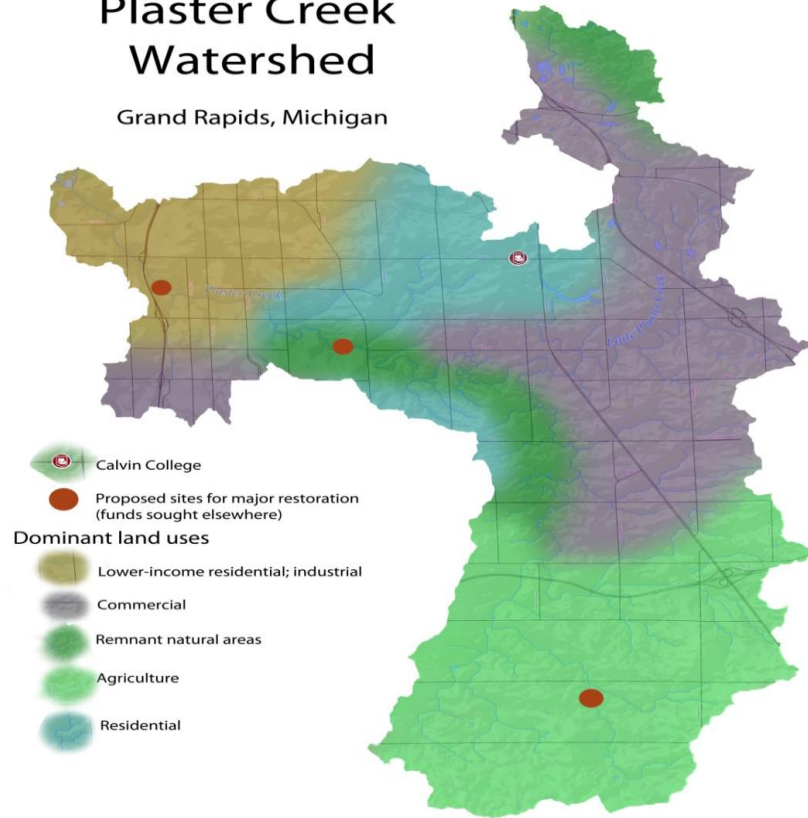


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Plaster Creek Watershed

Grand Rapids, Michigan



Cartographer: Seth Kenbeek
Image prepared by Nathan Haan

Background statistics:

- Length: approx. 14 miles
- Watershed area: 58 mi²
- Governmental units: 9 (4 municipalities & 5 townships)
- >50% of Calvin fac. and staff
- 3200 Calvin Alumni
- > 172 churches and faith communities
- > 100 schools

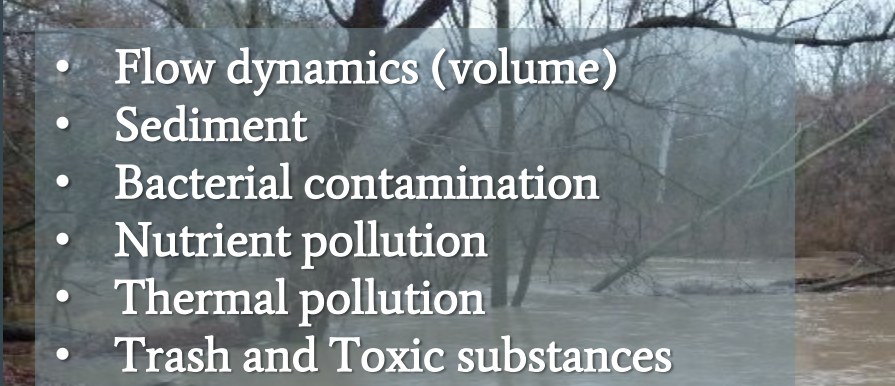
People who live at the lower ends of watersheds cannot be isolationist—or not for long. Pretty soon they will notice that water flows, and that will set them to thinking about the people upstream who either do or do not send down their silt and pollutants and garbage. Thinking about the people upstream ought to cause further thinking about the people downstream. Such pondering on the facts of gravity and the fluidity of water shows us that the golden rule speaks to a condition of absolute interdependency and obligation. People who live on rivers might rephrase the rule in this way: Do unto those downstream as you would have those upstream do unto you.

-From *Watershed and Commonwealth*

by Wendell Berry

Main Problems

- Flow dynamics (volume)
- Sediment
- Bacterial contamination
- Nutrient pollution
- Thermal pollution
- Trash and Toxic substances



>54,000 E. coli
colonies per
100ml!

Safe for full body
contact= 130 E. coli
colonies/100 ml





How do we begin restoring health to the watershed?

Plaster Creek Stewards



A collaboration of Calvin College, schools, churches, and community partners working to restore health and beauty to the Plaster Creek Watershed.



Education and Outreach builds awareness and concern

Research



leads to increased
understanding of
how to do
restoration work

Restoration
implements
healthier
watershed
practices



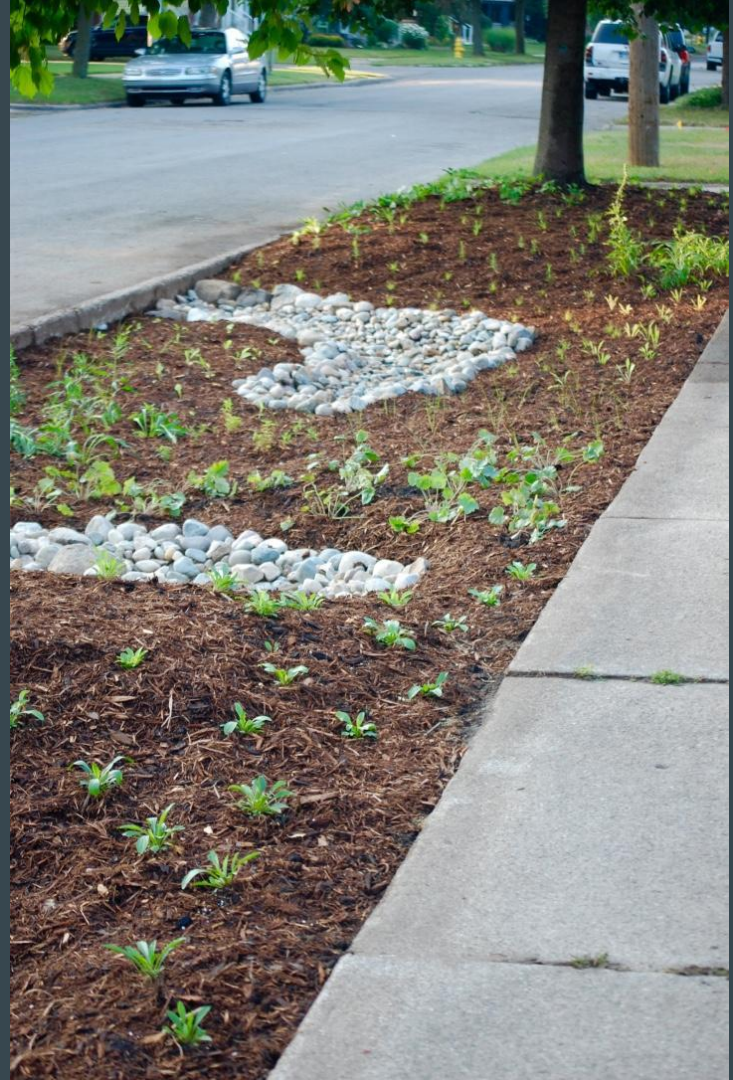




Maintenance for your rain garden



Joel Betts



Update on curb cut rain garden project

- 38 installed in Alger Park and Oakdale neighborhoods
- 40 more 2017-2019
- Shifting the paradigm
- See map



Why Maintenance?

- To help plants become better established
- Your planting can become full faster
- Keep gardens efficient at treating stormwater
- Better establishment→less future maintenance
- Improves Aesthetic



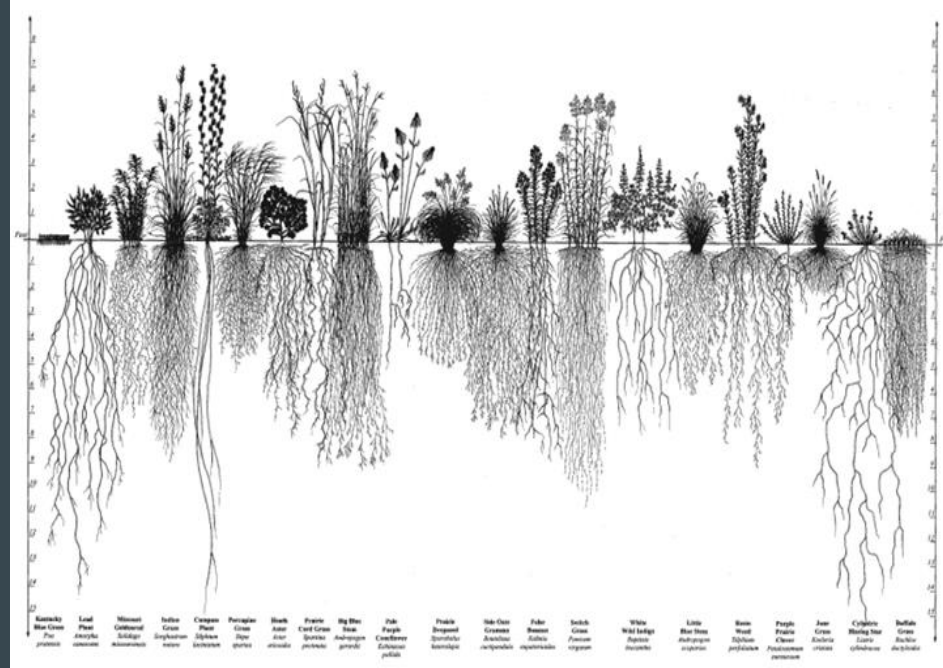
The Role of Native Plants

Native plants

- Benefits of natives for stormwater treatment
- Biodiversity

Invasive plants: weedy plants

Non-native plants



“Biological diversity is the key to the maintenance of the world as we know it.”

~ E.O. Wilson



Invasive.



Non-native. Not Invasive.



Actions you can take

Weed Control

Pruning/thinning

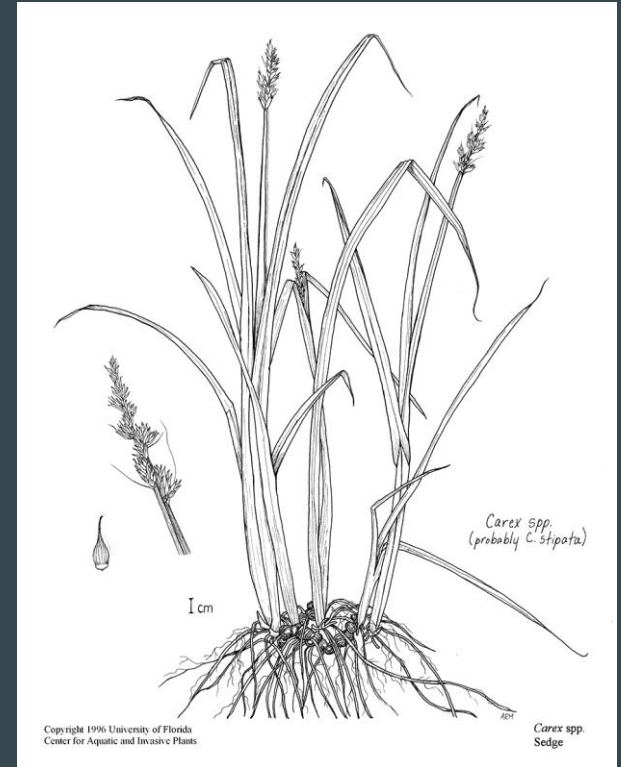
Re-planting

Watering

Removing Sediment and Debris

Weed Control: Identifying weeds

- Does it look like a native nearby? check your garden map
- learn what's what as they grow- keep a garden journal
- Is it clump or on its own?
- Can you find it in your lawn and other gardens too?
- Use the facebook group and maintenance manual



*Caveat: Natives spread and may appear weedy at times. Keeping or weeding them is up to you what aesthetic you are going for.

Weed Control: Weed ID

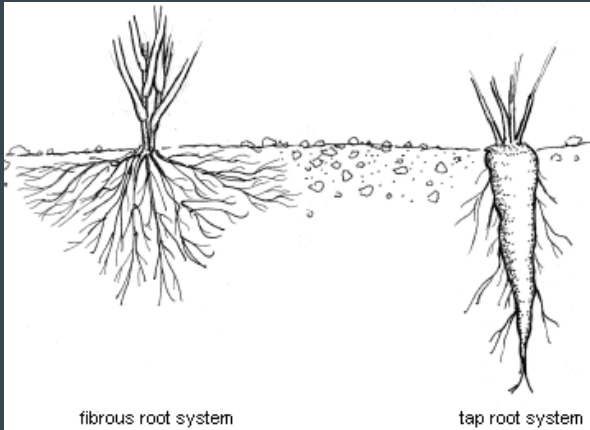


Weed Control: Pulling the whole root

Taproot (Dandelion, Wild Carrot, Bull Thistle, Burdock, Garlic Mustard)

Fibrous (Clover, Plantain)

Rhizome (Nutsedge, Most invasive grasses)



fibrous root system

tap root system



Purple Nutsedge

Yellow Nutsedge

Nutsedge
Cyperus spp.



Weed Control: Limiting weed spread

- Weed every few weeks after initial planting
- Weed thoroughly once before mid-May
- If a weed has gone to seed, be careful how you dispose of it
 - Good: Yard Waste Bag or Organicycle, Trash if these are not an option.
 - Don't leave dead weeds with seedheads sitting out or in an open compost pile
 - Check your clothes
- It's important to think about weed seed dispersal in order to prevent weed spread!



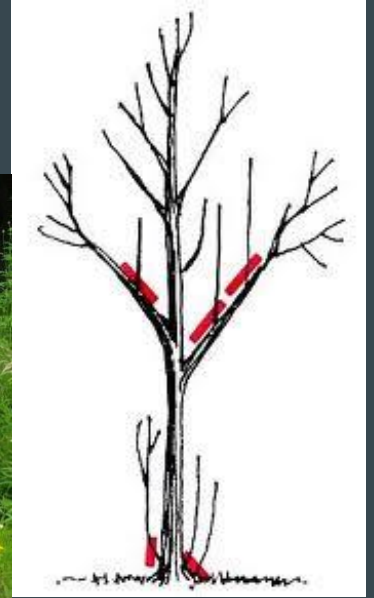
Weed Control: Other methods

- Mulching
- Hand Cultivator
- Spraying Herbicide
 - Generally avoid spraying
 - A few cautions: Run-off, surfactant, drift



Pruning/Thinning

- Thinning out
- Moving plants
- Pruning/maintaining trees
- Removing dead plant material



Benefits of leaving dead plant material

- Benefits local biodiversity:
 - Bug and bird food and habitat
- Spreads native seed
- Can be beautiful through winter



Re-planting

- Contact us for plants
- Consult with us if you want to add a non-native
- Transplant for fuller spots in the garden



Watering

- Water new plants weekly, if no decent rain
- Water older plants in dry spells
- Watering never hurts
- Pay attention to water stress
- Consider a rain barrel
(<https://wmeac.org/rainbarrels/>)



Sediment and debris removal

- Remove leaves and sediment build-up from rocks



Sediment problems



When it rains, the debris that collects in the curbs, flows into the rain garden, clogging up the rock channel and making it unsightly.



Sediment Trap

Installing a sediment trap at the curb cut can collect this debris and make it easy to maintain.

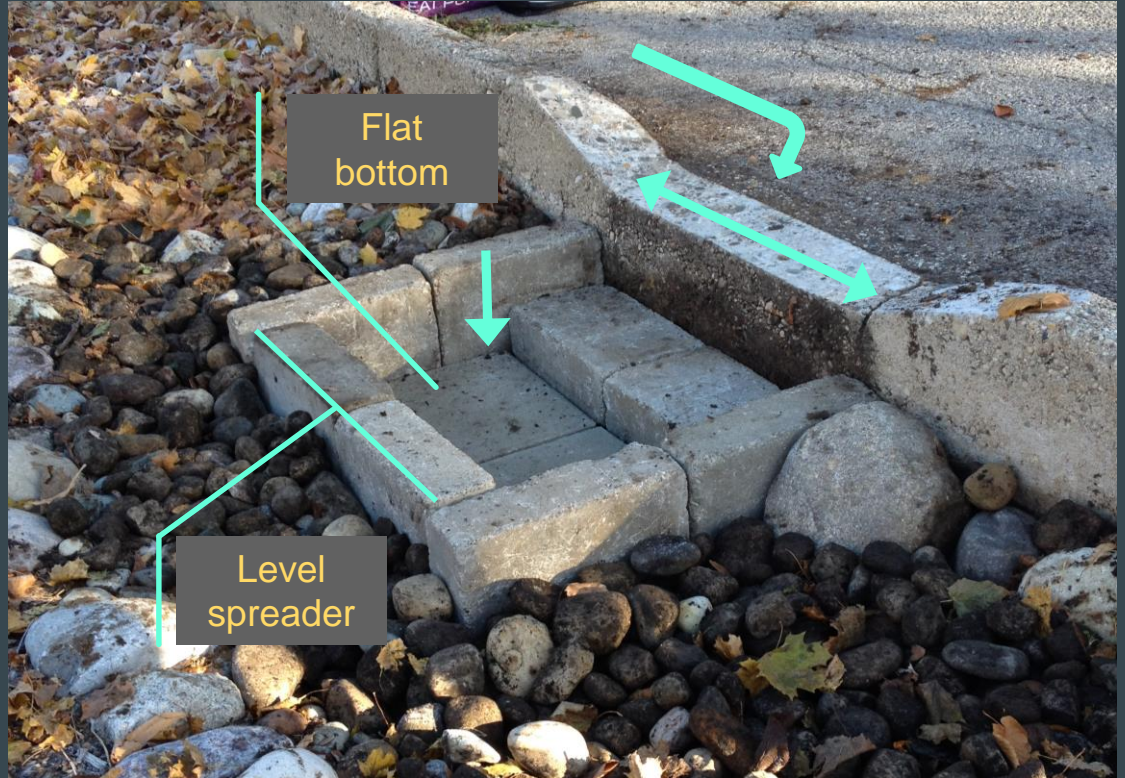


Sediment Trap Features: Size, Drain, Maintain

Size

Drain

Maintain



Resources to use

- Rain Garden Maintenance Facebook group: Ask your weed questions, post pictures of your garden!
- Maintenance manual will be available on our website
- Pics of Common Weeds: <http://www.msuturfweeds.net/id-tool/broadleaf/>
- Info about benefits of natives: <http://rivercitygrandrapids.wildones.org/>
- Roots types and bloom times for natives: <http://www.prairienursery.com/>
- Contact us (plastercreekstewards@calvin.edu)
- Sediment trap directions on website-rain garden resources

