



Enriching Education through Watershed Engagement

Plaster Creek Stewards and
Calvin College

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Outline

Setting the Context
Watershed Basics
Plaster Creek Watershed
Plaster Creek Stewards
Relevance for Teaching



Context

- Pedagogy of Place: Educational approach that encourages active, inquiry-based learning in a way that enhances the social, economic, political and ecological life of the places in which the education occurs.
- Reconciliation Ecology: The science of restoring, creating and maintaining habitats, and conserving biodiversity in the places where people live, work, or play. Re-inventing the human presence to better accommodate, affirm, and fit into the landscape of biodiversity which surrounds us.

Watersheds are Landscape-defined Places

A watershed is "that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

--J. W. Powell

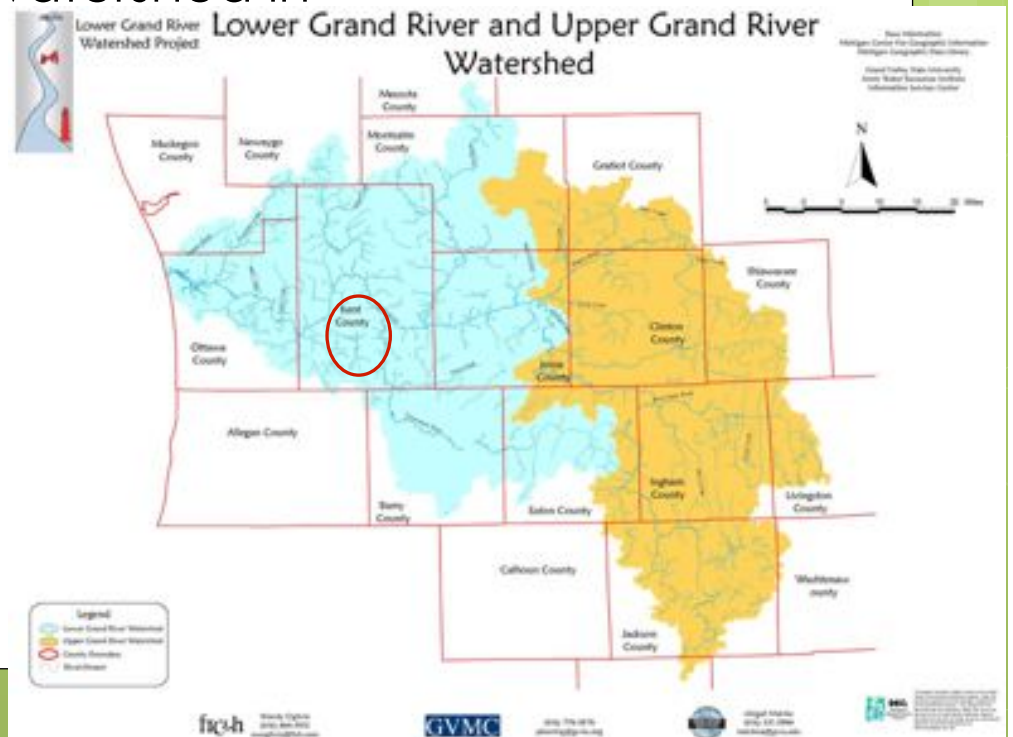


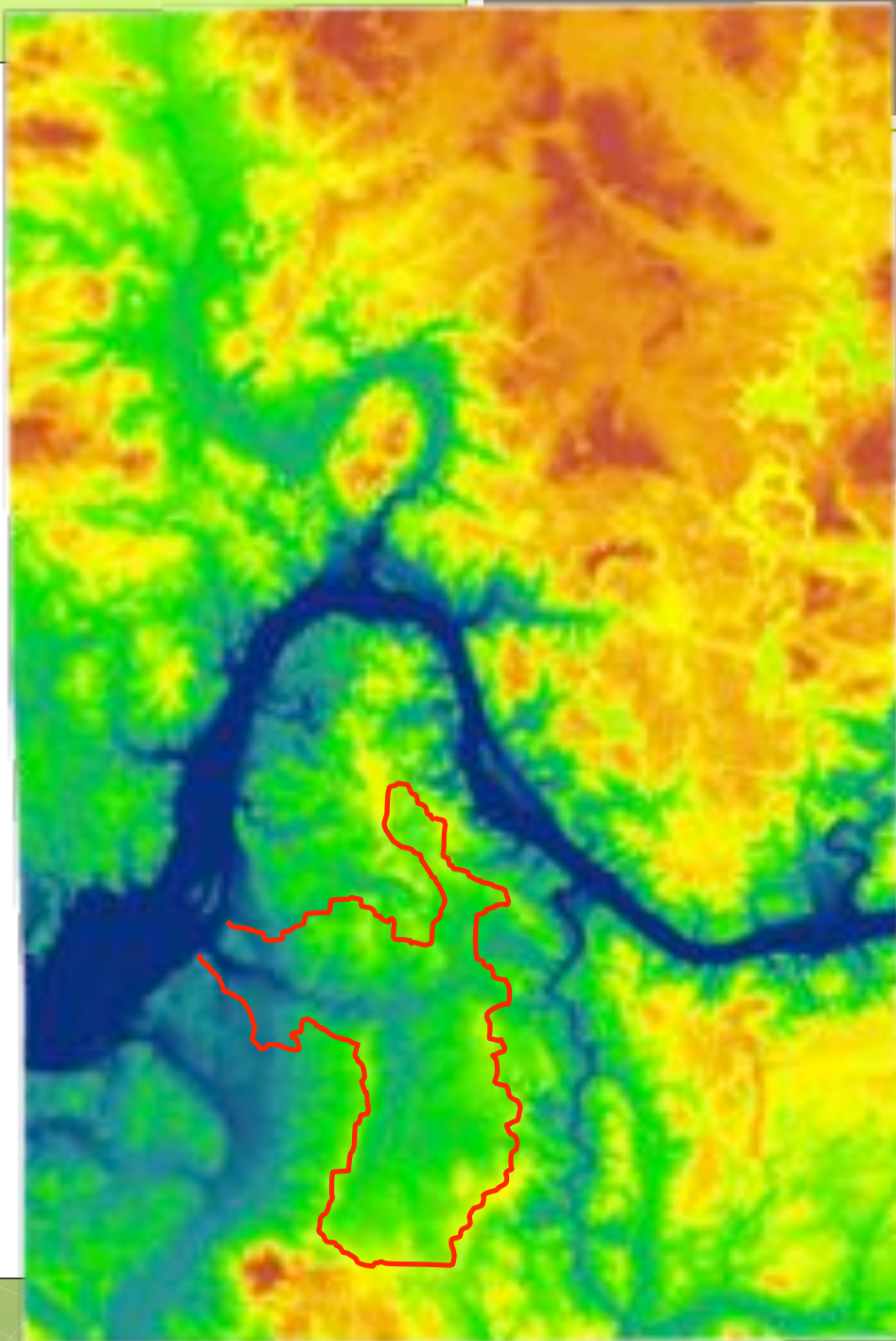
The contiguous 48 states of the US is made up of 2110 major watersheds. (US EPA)

Lake Michigan Watershed



- Watershed: Area of land that drains to a common point
- Watersheds are wonderful integrators
- Plaster Creek Watershed:
 - Most contaminated watershed in West Michigan

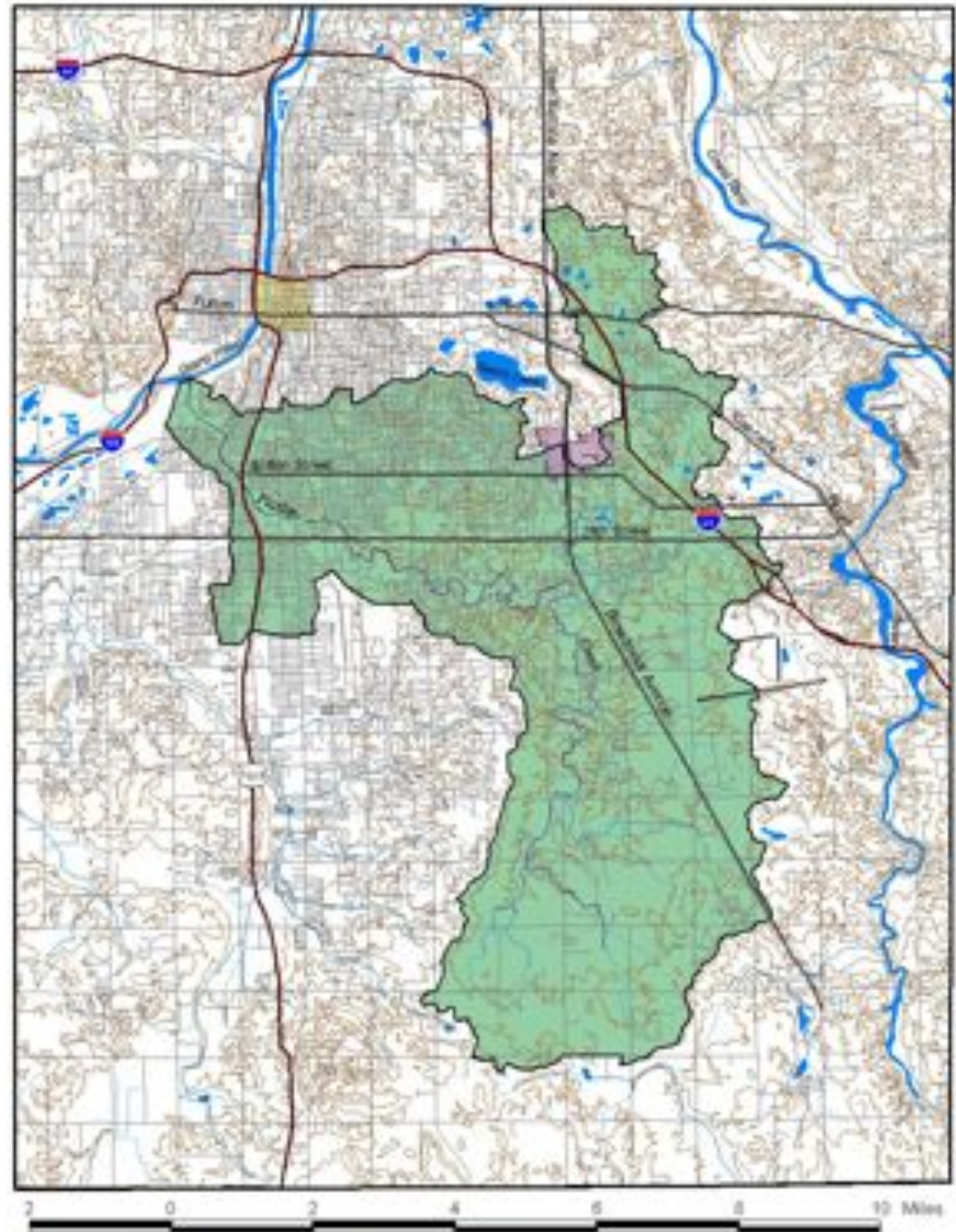




Plaster Creek & Its Watershed

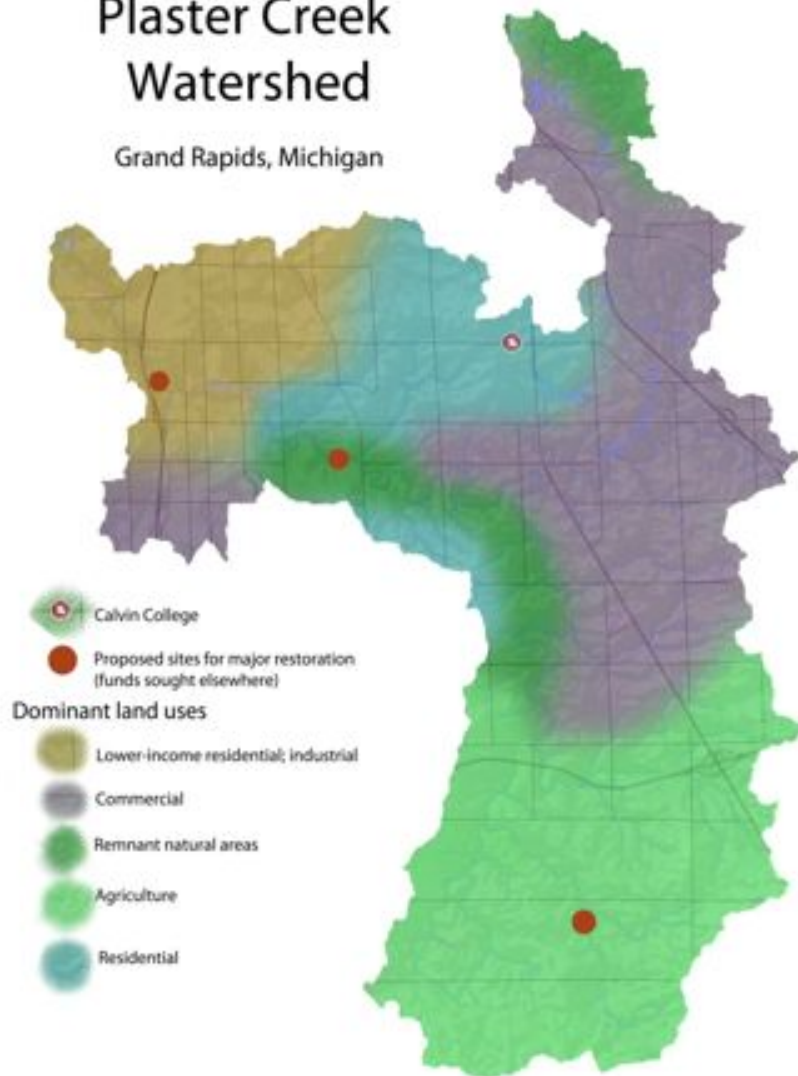
Landscape elements:

- Substrate: deep glacial till, mix of sand, clay, gravel
- Historic land cover: forest ecosystems – oak, maple
- Present land cover: agricultural, suburban, commercial, lower-income urban, industrial



Plaster Creek Watershed

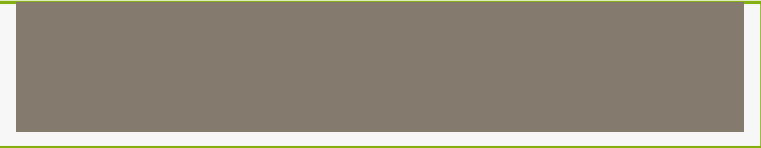
Grand Rapids, Michigan



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



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

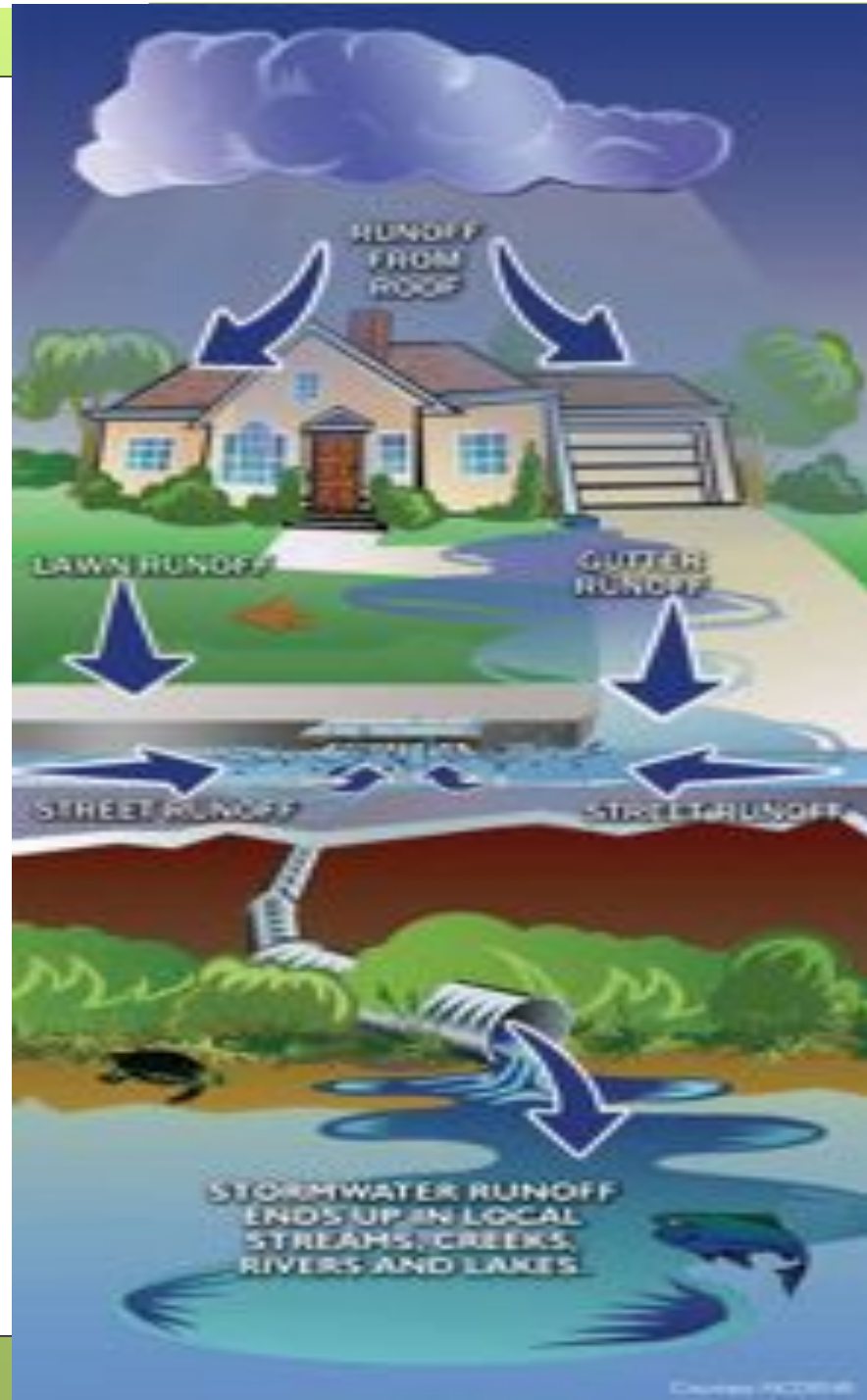
History of Plaster Creek

- 16,000 ya Glacier recedes
- 2,000 ya Native Americans - Hopewell
- 1500 Odaawaa Indians
- 1615 Samuel de Champlain
- Kee-No-Shay Creek, Burr Oak Creek
- Early 1800s – Chief Blackbird
- 1826 - Grand Rapids founded by missionaries
- 1841 – First plaster mill
- 1900 – Brook trout from Plaster Creek
- 1940s – Silver Creek culverted
- 2009 – Plaster Creek Stewards
- 2011 Green Grand Rapids Master Plan

Urban Residential Influences

In urban areas, the cumulative effect of water coming off individual homes and yards will significantly impact an urban waterway in many different ways.

The quality of water draining out of a watershed will testify to how careful people are living within that watershed.



Plaster Creek Problems

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

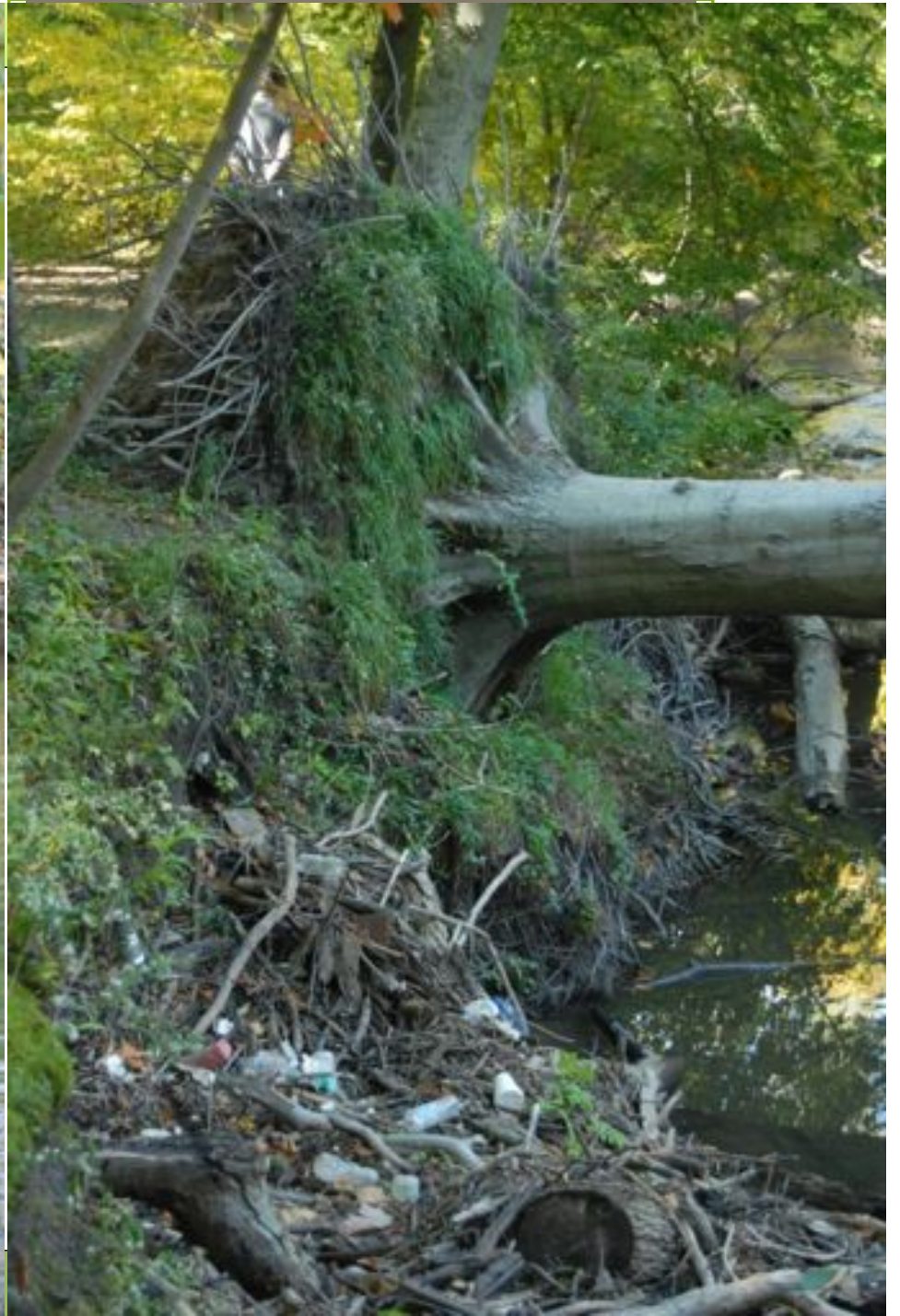


Photo by Bill Sweetman
on 1/31/13





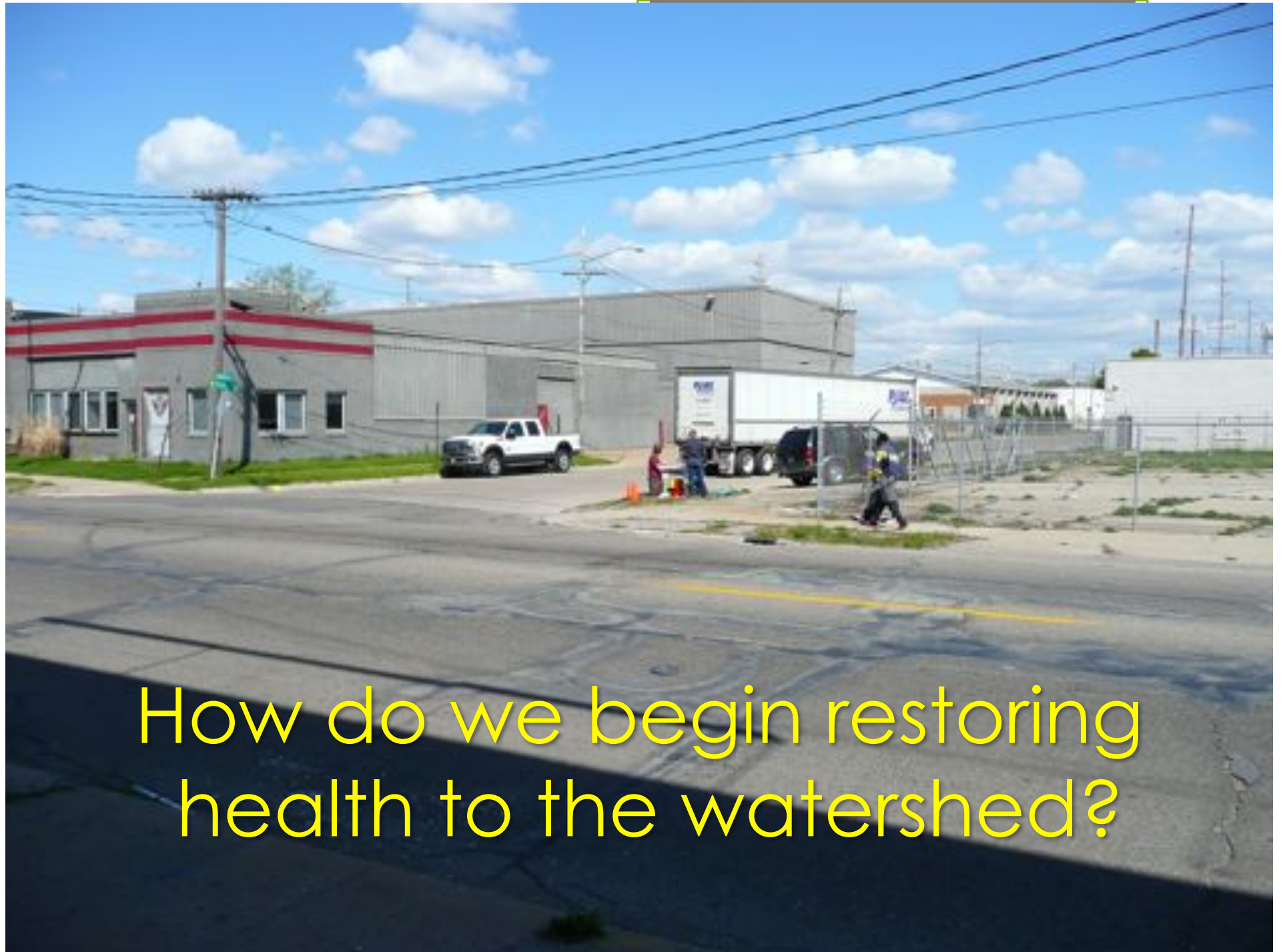












How do we begin restoring
health to the watershed?

Plaster Creek Stewards



A collaboration of Calvin College faculty, staff, and students working together with local schools, churches, and community partners to restore health and beauty to the Plaster Creek Watershed.

History of Plaster Creek Stewards

- Small man, big fish (2000)
- Early service learning projects (2002)
- Plaster Creek Working Group (2004)
- Annual Meetings with Community Partners
 - MDEQ Question (fall 2008)
- Creation Care on the Home Front (2009)
 - 'Plaster Creek Stewards' origin
 - GR Press and \$10,000 anonymous donation
 - Hired part time Program Coordinator
- Doing Justice To Plaster Creek Summer Workshops (2010- 2012)
- Small grants to build new greenhouse (2010)
- Strategic planning: focus on education, research, restoration
- EPA River Network Grant (2011)
- Clean Water Act (Section 319) Grant (2013-2015)
 - With WMEAC, Kent Conservation District, CES, City of GR
- Summer 2013 – Green Team Pilot Program
- 2014-2015 - Bacterial Sourcing Project (?)



Education and Outreach builds awareness and concern



Biological Research leads to better understanding how best to help the creek

Social Research

- Oral History Project: Remembering and recording stories about the creek
- Documenting oral histories becomes a way to engage people in watershed protection
- Stories are submitted to the Community Voices archive at the GR Public Library



Restoration

Implementing
healthier
watershed
practices and
improving
native
biodiversity









Native plant propagation

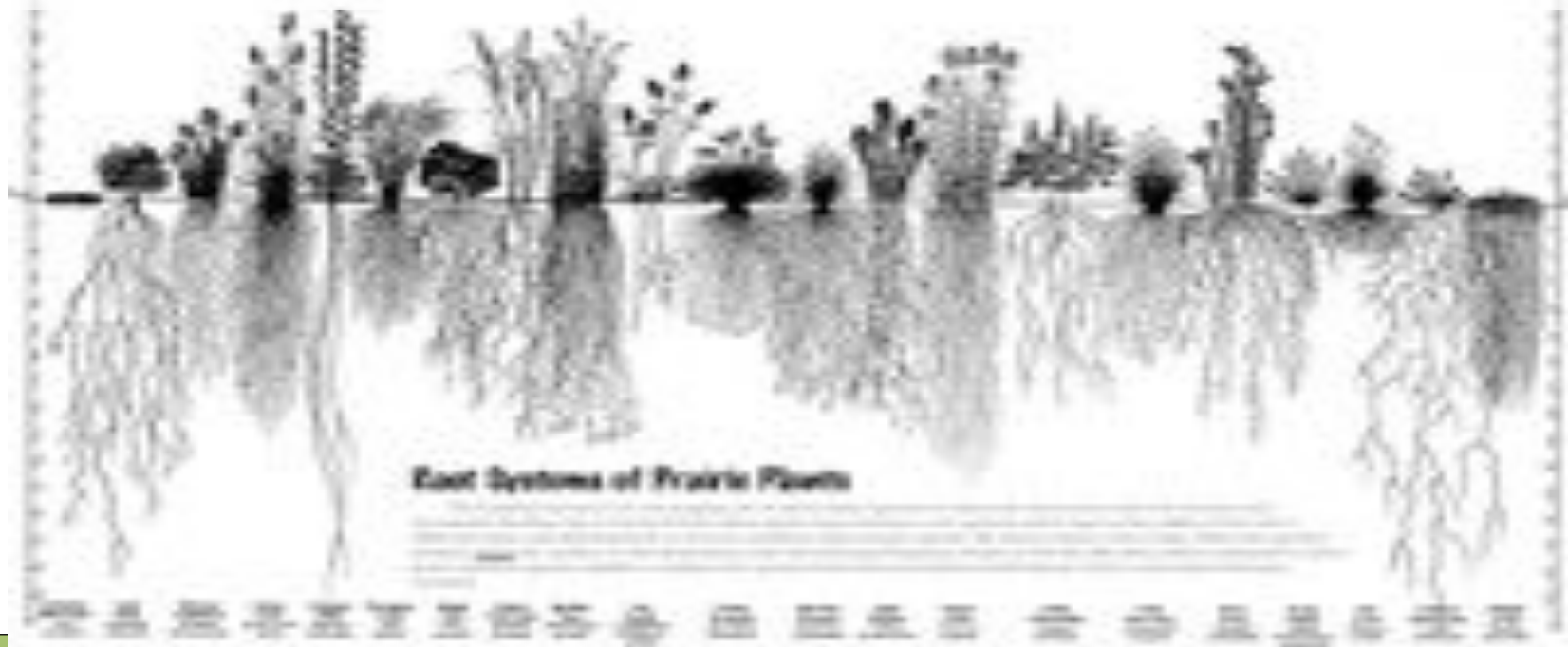






Why native plants?

- Deep roots, soak up large volumes of water
- Filter excess nutrients, trap excess sediment
- Low maintenance - Adapted to local conditions
- Biodiversity magnets for insects, birds, other wildlife







One plant
One place
One half hour:
Solidago rigida
(Stiff goldenrod)

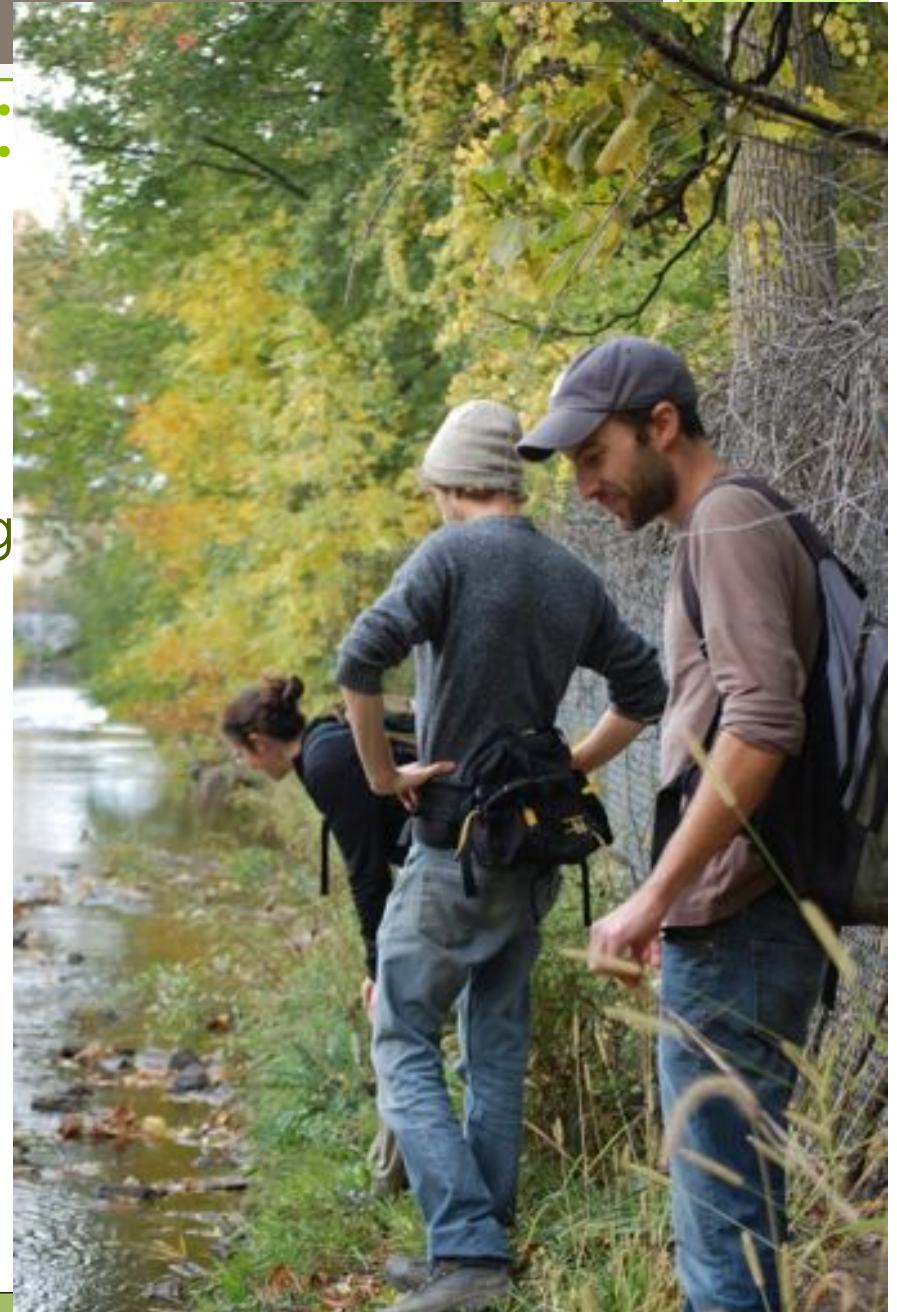






What we can all do:

- Think about the water we use and what impacts it has on those downstream
- Manage our stormwater by using rain barrels and planting rain gardens
- Learn about our own watershed
- Connect with Plaster Creek Stewards by signing up to get our newsletter or just follow us at **www.calvin.edu/go/plastercreekstewards**

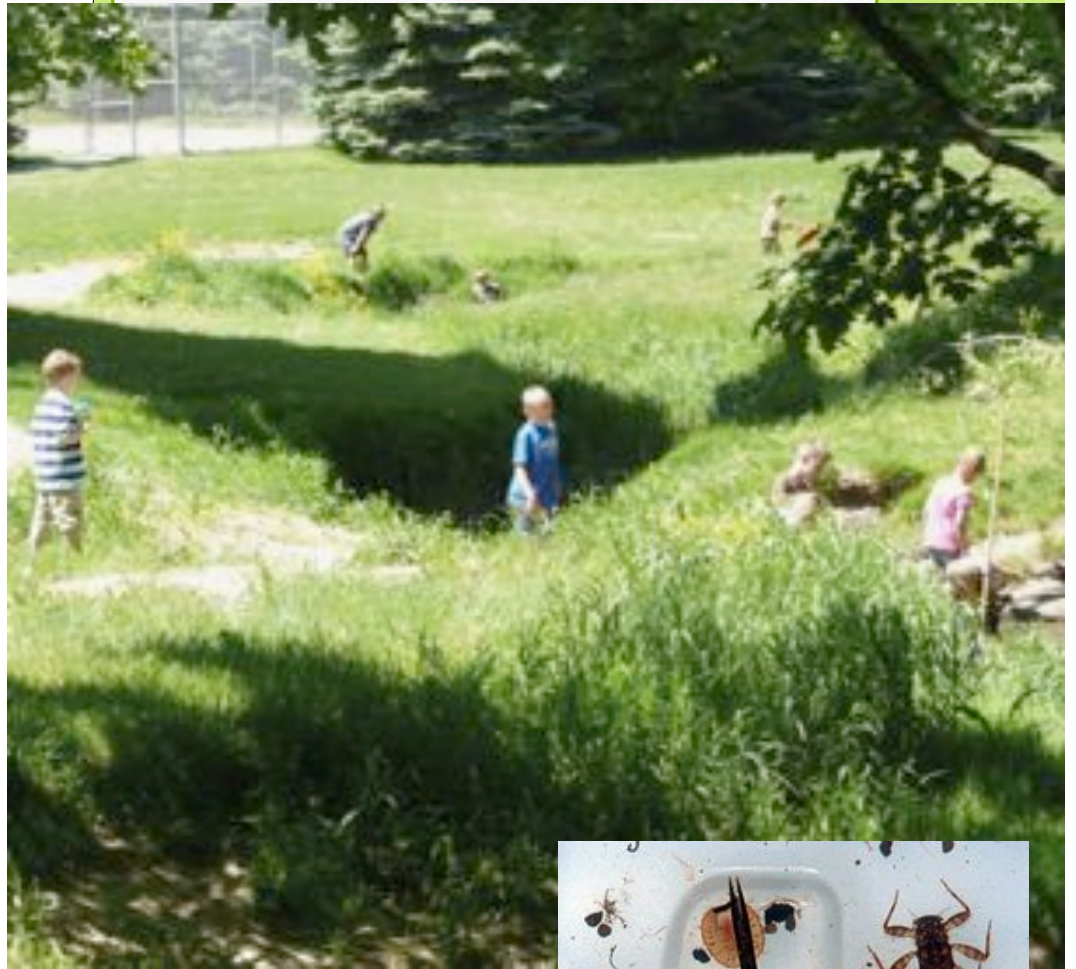


Relevance for Teaching:

- Consider ways to integrate place-based pedagogy into your teaching
- Watersheds provide place-based educational opportunities for diverse subject matter, including history, english, biology, chemistry, sociology, etc.
- Education always occurs within a particular watershed and most watersheds that include schools are in need of attention and restoration.
- Watershed-based education can help us become more engaged, thoughtful citizens and stewards of the places in which we live, learn, worship and play.

Benefits of a Healthy Plaster Creek

- Education and recreation resource.
- Provisional habitat resource for local plants & animals.
- Important aesthetic element of both rural & urban landscapes.
- Quality of Life – instead of being a danger, it becomes a blessing



Hopeful Vision



Thank you