

# Deep Roots: The importance of trees for a healthy watershed



Plaster Creek Stewards  
Spring Event 2012

# “useful citizen, lover of trees”

... That stream was my playground. ...We knew the individuality of a great many trees, the location particularly of the sycamore that had been eaten out by decay and provided a safe retreat for us on every occasion when it rained. We knew the deep hole which was afterward turned into a swimming place in summer and a skating rink in winter; we knew the kinds of fish that made their home in that creek. We even had a boat we paddled up the stream for miles and enjoyed each summer the beauties of that most delightful natural playground.

[Plaster Creek] has almost nothing now in the way of tree growth from its source to its confluence with the Grand River, and instead of being the beautiful evenflowing stream throughout the year, as in my childhood, it is now a most fitful affair, full to the brim and running over at times, yet most of the year it is only a trickling rill.

The playground is gone. Where there was one child then to enjoy that playground there are now eight thousand children who ought to have a playground like this, but a near sighted utilitarianism has snatched it away. We have stolen their rightful heritage from them.

-Charles W. Garfield, “The Peoples Play Grounds” Fortieth Annual Report of the Secretary of the State Horticultural Society of Michigan, 1910.

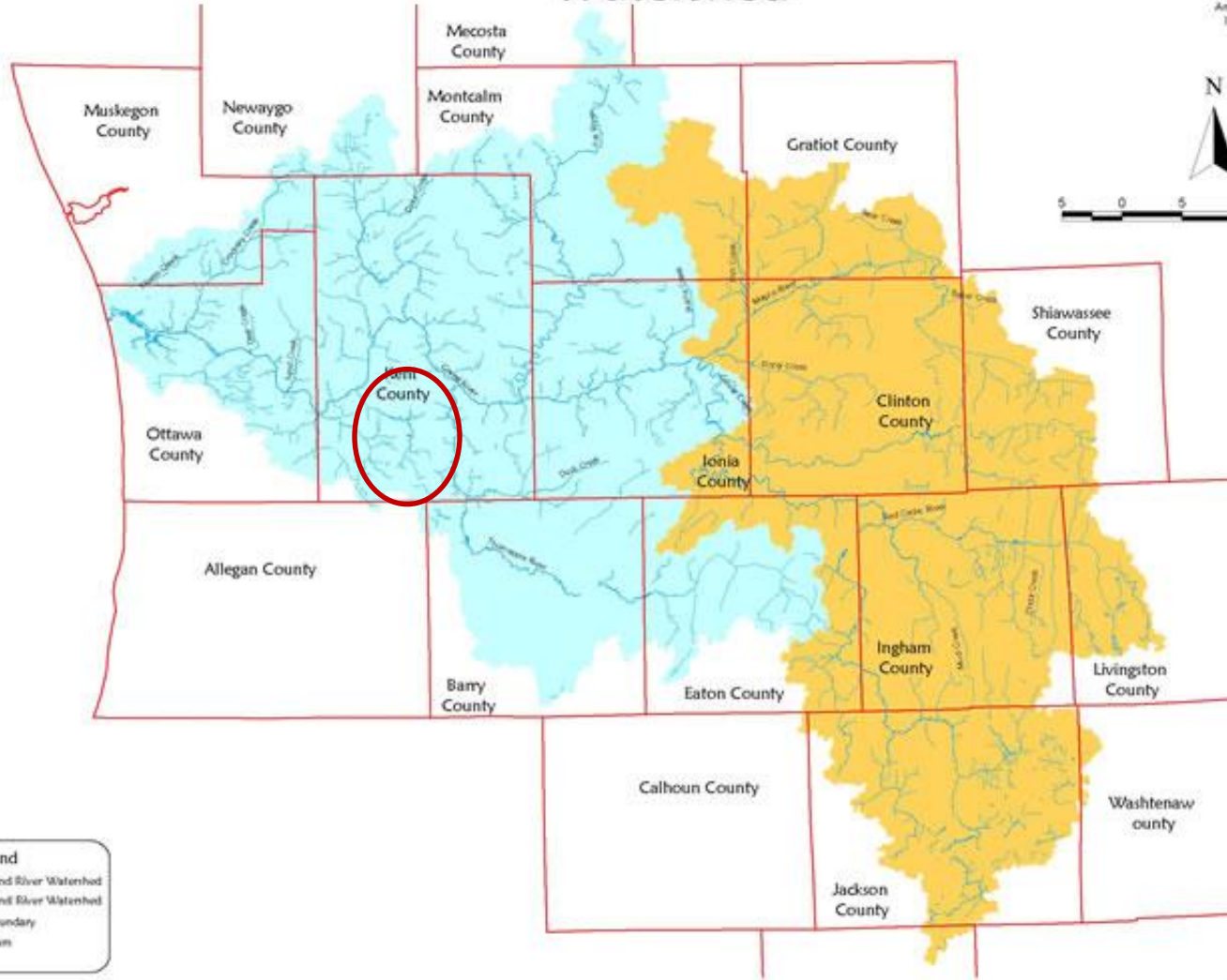


Lower Grand River Watershed Project

# 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**

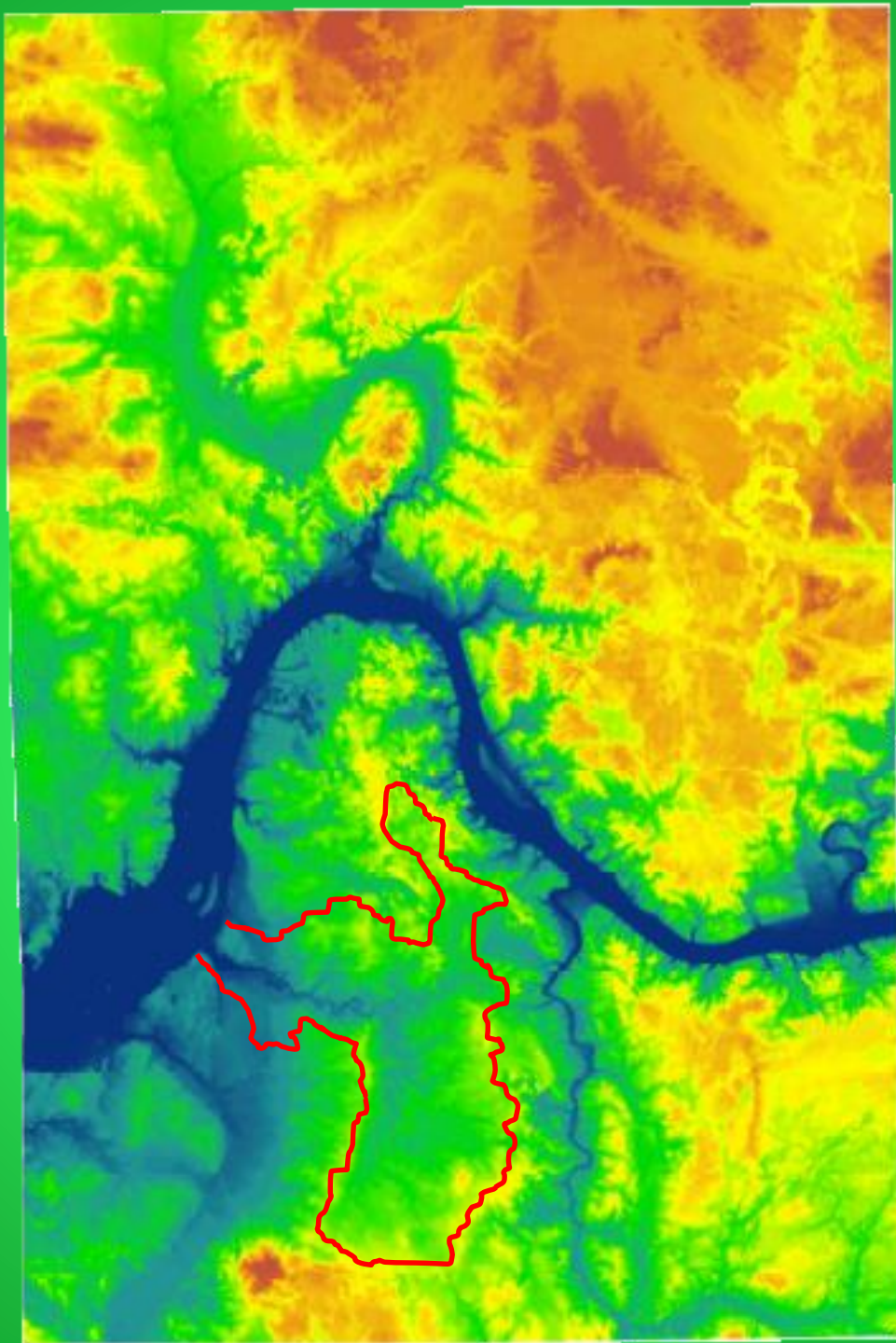
- Lower Grand River Watershed
- Upper Grand River Watershed
- County Boundary
- River/Stream

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Michigan Department of Environment, Great Lakes and Energy  
This project was funded in part by the Michigan Department of Environment, Great Lakes and Energy. The Michigan Department of Environment, Great Lakes and Energy is an equal opportunity employer. All qualified applicants are encouraged to apply. For more information, please contact the Michigan Department of Environment, Great Lakes and Energy at (616) 224-2000 or michigan.gov/deq.



# Plaster Creek Watershed

## Grand Rapids, Michigan

-58 square miles

-Grand River: 5,572

-creek is 14 miles long

-Grand River: 260

Grand Rapids

East Grand Rapids

Grand Rapids Township

Wyoming

Kentwood

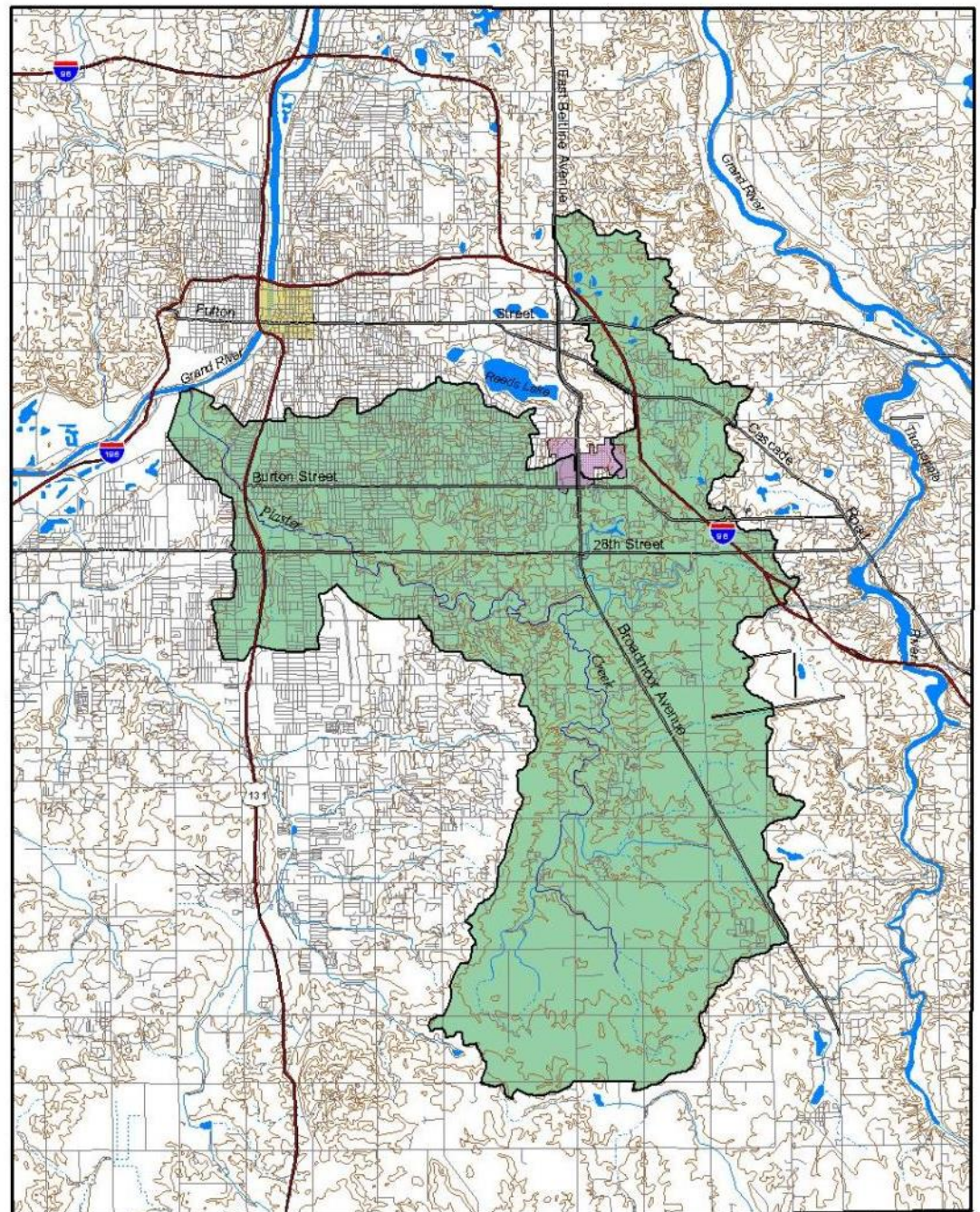
Gaines Township

Ada Township

Caledonia Township

Cascade Township

<http://www.calvin.edu/~oas2/pcs/>

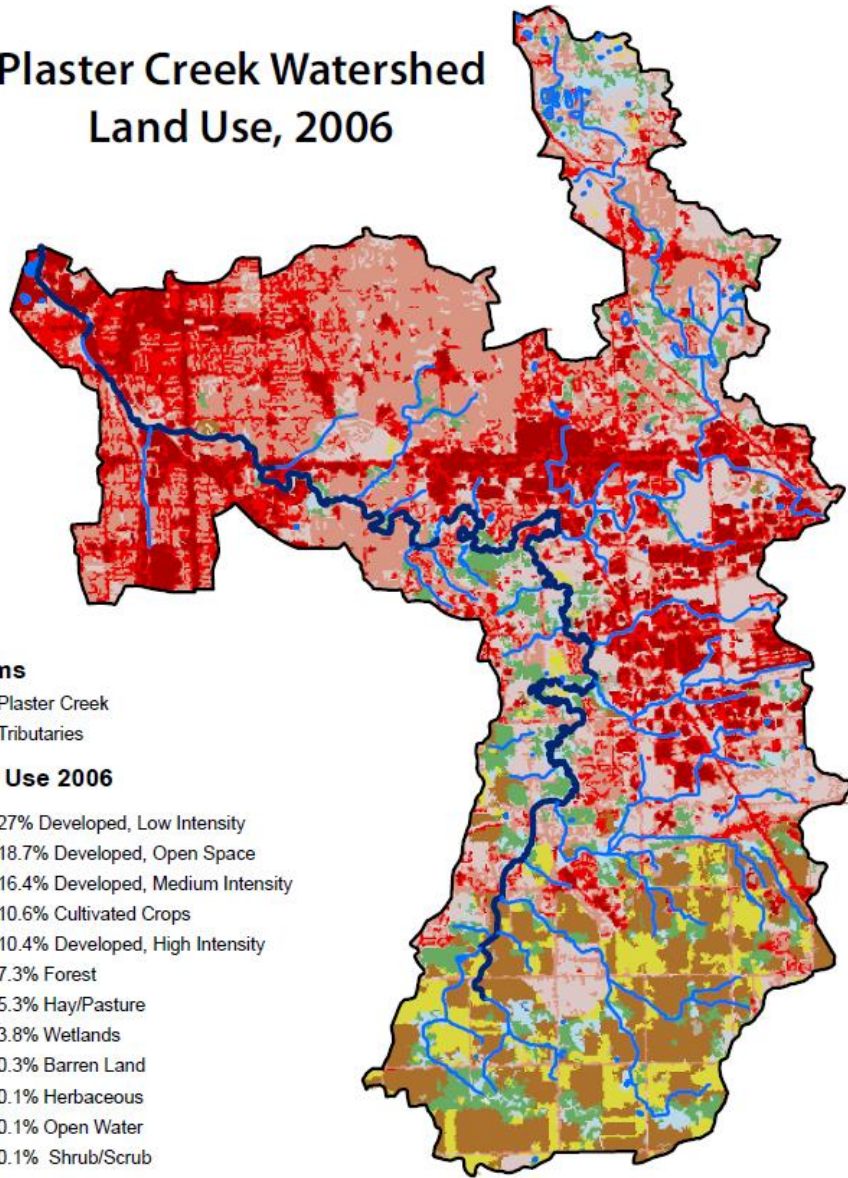


2 0 2 4 6 8 10 Miles

# Outline

- Ecological Benefits
- Community Benefits
- Non-Utilitarian Benefits

# Plaster Creek Watershed Land Use, 2006



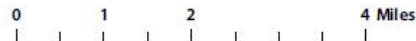
### Streams

- Plaster Creek
- Tributaries

### Land Use 2006

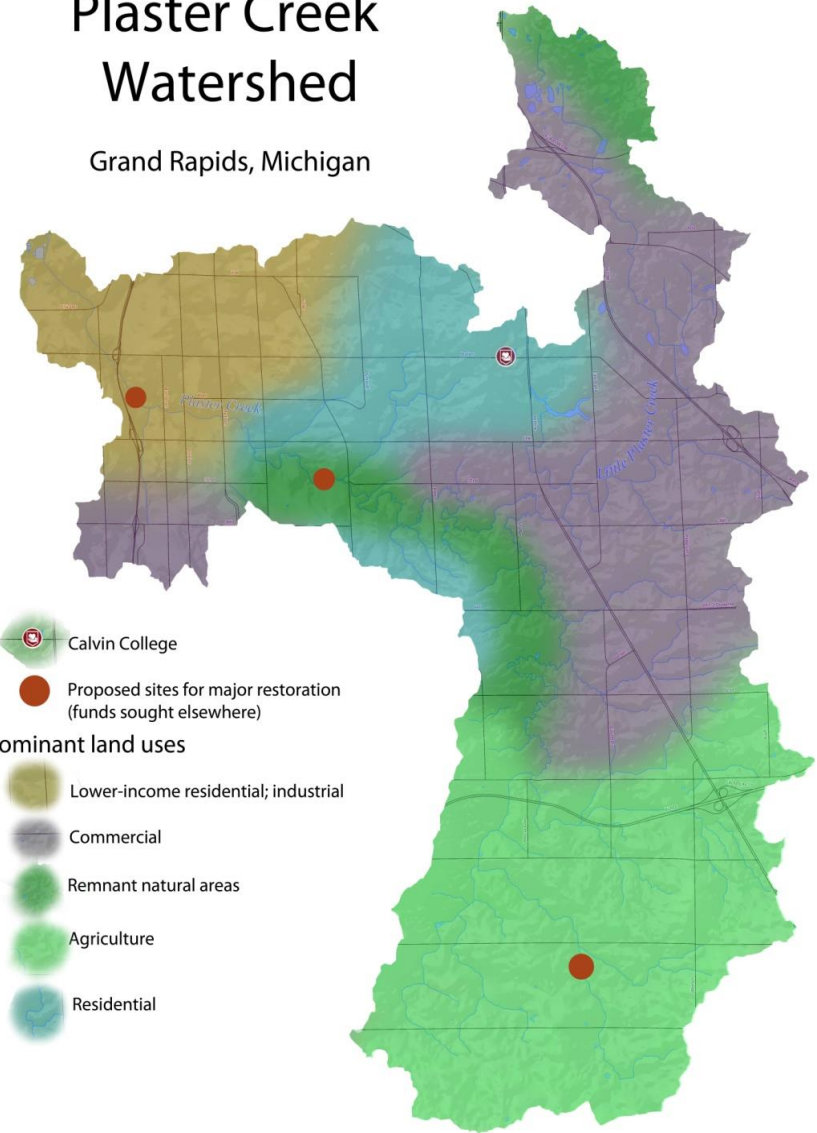
- 27% Developed, Low Intensity
- 18.7% Developed, Open Space
- 16.4% Developed, Medium Intensity
- 10.6% Cultivated Crops
- 10.4% Developed, High Intensity
- 7.3% Forest
- 5.3% Hay/Pasture
- 3.8% Wetlands
- 0.3% Barren Land
- 0.1% Herbaceous
- 0.1% Open Water
- 0.1% Shrub/Scrub

USDA/NRCS - National Cartography & Geospatial Center  
National Land Cover Dataset



# Plaster Creek Watershed

Grand Rapids, Michigan



- Calvin College
- Proposed sites for major restoration (funds sought elsewhere)

### Dominant land uses

- Lower-income residential; industrial
- Commercial
- Remnant natural areas
- Agriculture
- Residential

# Stormwater

Rain or snow melt that runs off surfaces like rooftops, streets, and parking lots instead of soaking into soil.

The single largest source of pollution in urban watersheds, and in the Great Lakes





Education

# Research





Restoration

# Community Benefits

- Trees Enhance our 'Places'
  - Historically
  - Visually
  - Economically
    - property value
    - stormwater benefits
    - energy savings
- Trees Enhance our Health



# Health Benefits

## Improved learning

Increased attention span (ART)

(Kaplan 1989; Miles et al. 1998; Berman et al. 2008)

Decreased aggression/frustration/impulsivity

(Taylor et al. 2002; Cackowski and Nasar 2003)

Noise reduction (Coder, 1996)

## Quality of life benefits

Psychological (stress, depression, etc.)

(Kuo and Sullivan 2001; Mind 2007; Kahn et al. 2008)

Physical (faster healing, less pain meds)

(Ulrich 1984; Mitchell et al. 2008; Sugiyama et al. 2008)

## Environmental Health/Sustainability

For humans to flourish they must live in a healthy environment

(air and water quality, biodiversity, carbon sequestration, lower energy needs)







Green street sign with illegible text.

PJAX  
48-6887

PJAX



# Non-Utilitarian Benefits

- Trees connect us to the
  - past
  - future
  - present
- Trees help to humble us
- Trees add beauty
- Trees make us better people







**Slowly, slowly, they return**  
*by Wendell Berry*

**Slowly, slowly, they return  
To the small woodland let alone:  
Great trees, outspreading and upright,  
Apostles of the living light.**

**Patient as stars, they build in air  
Tier after tier a timbered choir,  
Stout beams upholding weightless grace  
Of song, a blessing on this place.**

**They stand in waiting all around,  
Uprisings of their native ground,  
Downcomings of the distant light;  
They are the advent they await.**

**Receiving sun and giving shade,  
Their life's a benefaction made,  
And is a benediction said  
Over the living and the dead.**

**In fall their brightened leaves, released,  
Fly down the wind, and we are pleased  
To walk on radiance, amazed.  
O light come down to earth, be praised!**

# Today's Activities

- Storm Drain Stenciling
- Tree Planting at Buster's Hollow
- Tree Planting and Garlic Mustard Pulling at 28<sup>th</sup> Street Woods
- Garlic Mustard Pulling at Ken-O-Sha Woods

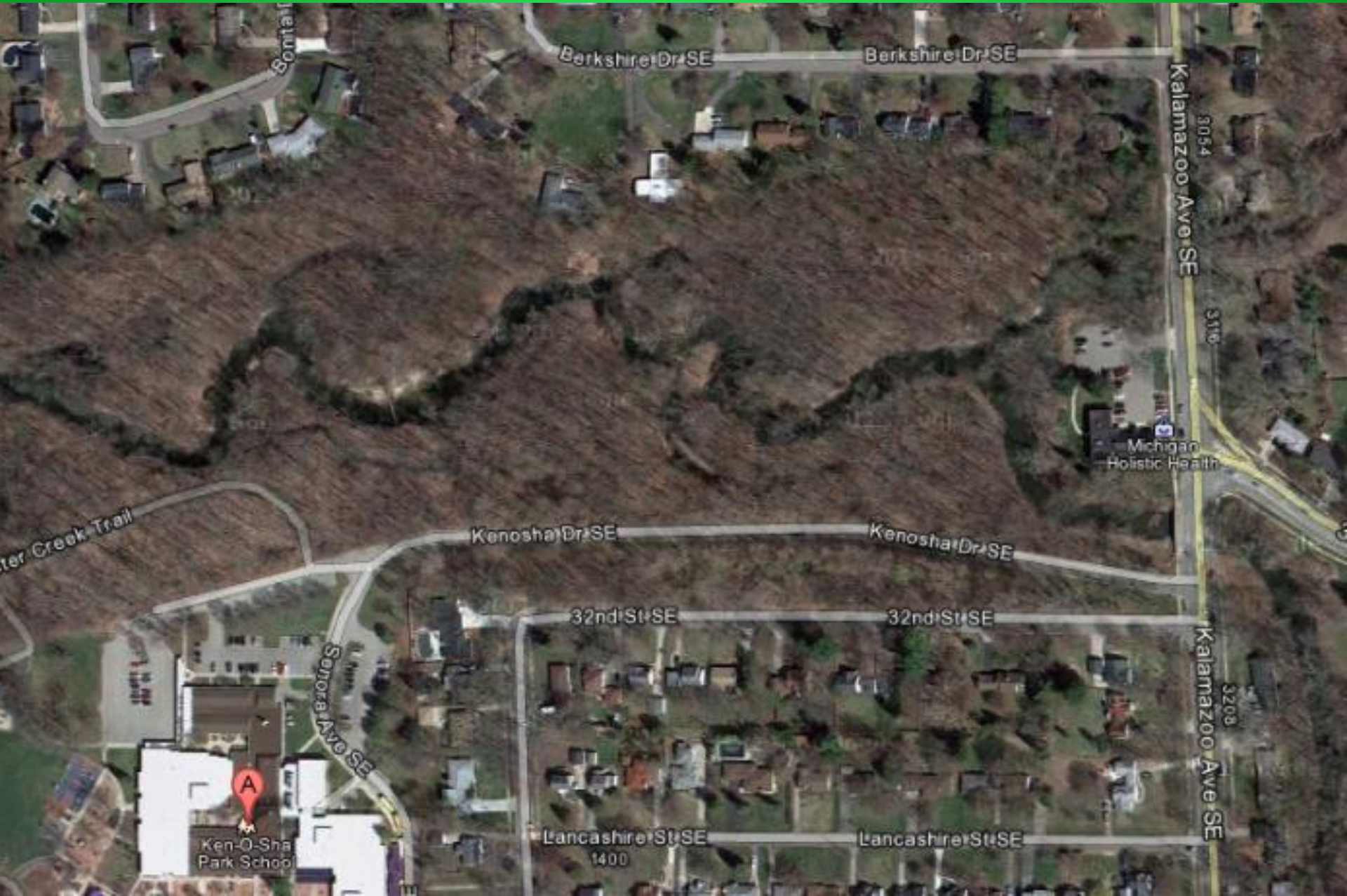




# Planting trees in Buster's Hollow



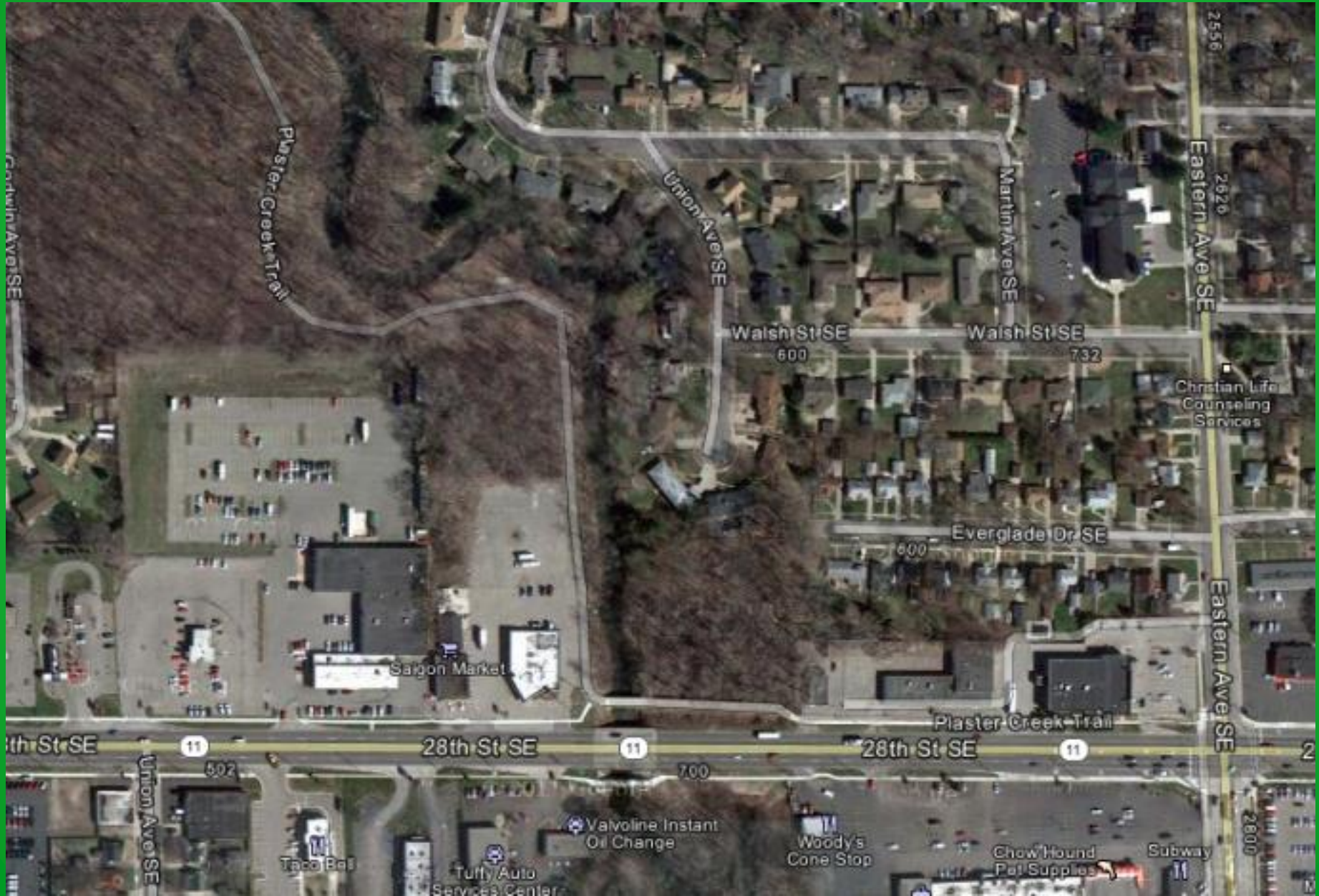
# Garlic Mustard Pull at Ken-O-Sha park



# Garlic mustard and tree planting at Plaster Creek Trail



# Storm Drain Stenciling at Alger Park Church



# Resources

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# illustrations

- Have a potted tree (Dave's pagoda dogwood). Water it and explain the different routes water can take.
    - Take a demo tree from greenhouse and show the root structure as it's potted up.
  - 'plant a sequoia'
  - Garfield's writings
- 
- Resto project—1 b&b, 20 whips, sedges and wildflowers.

- Ecological
  - OPEN WITH GARFIELD QUOTE ABOUT FORESTS AND PLASTER CREEK...LEADS INTO AN INTRODUCTION TO THE STORMWATER PROBLEM
  - Define stormwater and how it affects PCW
  - Decreased soil erosion—illustrate with seedling
  - Evapotranspiration (reduces runoff..retains moisture; 50 gal/day mature maple tree—5 gallon bucket) Include the quote from Haiti, “the trees call down the rain”.
  - Leaves dissipate the force of raindrops
  - Litter contribution
  - Shade reduces thermal pollution
  - Biodiversity
- Community Values
  - Economic
    - Property values--?
    - Stormwater value
  - Human health
    - Visual/peace effect
    - Air quality (healthy people in the watershed)
- Non-utilitarian values
  - Trees outlive people, bridge generations.. ‘Garfield Oaks’
  - Aesthetics of a landscape... how do they affect people who inhabit the landscape (e.g. silver ck photo)