Lewis Drain Riparian Buffer Project

MWEA
June 2015
Grant Background

- 2000-MCPWO receives CMI-NPS Grant
- 2006-Grant amendment to change scope of work
- 2007-Released requests for proposal’s
- 2011-Grant amendment to change scope of work to riparian buffer project
- 2014-Grant close out
Project Location

- Macomb Township
  - Suburb of Detroit
  - Highly Urbanized
- Clinton River Watershed
  - Heavy clay soils
  - Flashy
Lewis Drain

- Established on June 3, 1907.
- Drainage Area ~ 8 mi²
- Drain Length 2.3 mi
  - 1.96 open channel
  - .34 enclosed
- The Lewis was “improved” in 1988 in the project area
Water Quality Issues

- Nutrients
- Flashiness
- *E. coli*
- Poor habitat
Project Goals

- **Aesthetic**
  - 3 season color
  - Access to water
  - Purposeful
  - View

- **Environmental**
  - Improve water quality
  - Filter out pollutants
  - Habitat creation
  - Deter nuisance species (aka geese)

- **Hydrology**
  - Stable (won’t wash away)
  - Plant survivability with inundation
  - Compatible with drain purpose

- **Financial**
  - Cost effective
  - Phased approach
Challenges

• Weather
  – “Polar Vortex”
• Animals
• Drainage
• Aesthetics
• Soil Conditions
  – Compacted,
  – Heavy clay
  – Chemical composition
Communication

- Project team meetings
- Meetings with the HOA board
- Meetings with the HOA
- HOA newsletter
- Letters to adjacent homeowners
Design

- Stakeholder involvement
- Soil condition
- Hydrologic analysis
- Permitting
- Phased approach
Plants Selection

• Plant Selection was critical
  – Must be native
  – Plant height
  – Plant hardiness
  – Blooming season

• Variety

• Plant in tight clusters
  – Keeps the weeds out
  – Showy
  – Easier maintenance
## Maintenance Agreement

<table>
<thead>
<tr>
<th>Contractor</th>
<th>HOA</th>
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</thead>
<tbody>
<tr>
<td>• Site Clean Up</td>
<td>• Watering</td>
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<tr>
<td>• Plant Establishment</td>
<td>• Maintenance</td>
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<tr>
<td>• Weeding/Invasive Control (year 1)</td>
<td>• Weeding</td>
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<td></td>
<td>• Aesthetics</td>
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The Lewis Drain
Meadows at Lakeside Condominiums
Construction Contractors:

Oceanview Excavating
Nativescape
Soil Erosion and Sediment Control
Volunteer Day
September 30, 2013
2014 Flood

- August 11-12, 2014
- Historic rain event
- 4.57” rain in 12 hours

Storm dumps 4.57 inches of rain in SE Michigan

Record-breaking rain floods Detroit metro, shuts down interstates

Record flood fills Detroit freeways as drivers abandon their cars

Historic rain event slams metro Detroit
Benefits

- More pollinators
- Increased habitat
- Stable streambanks
- Decreased water temperature
- Decreased flashiness
- Decreased pathogens from water fowl
- Decreased air and noise pollution
- Reduced fertilizer application
- Increased aquatic habitat
- Reduced irrigation with native plants
- Increased water and nutrient uptake with native plants

Shade from trees
Filtering runoff through buffer

More pollinators
Decreased water temperature
Decreased flashiness
Stable streambanks
Increased aquatic habitat
Increased habitat

Reduced irrigation with native plants

Pollutant Load Reduction

- Nitrogen: 30% reduction, 27 lbs/yr
- Phosphorous: 30% reduction, 5 lbs/yr
- BOD: 40% reduction, 165 lbs/yr
- Sediment: 60% reduction, 1.24 tons/yr
Summary

Costs
• Grant amount $158,900
• Match funds $58,900
• Total $217,800

Best Management Practices
• Riparian buffer
• Native plantings
• Low maintenance design
• Shade cover
• No mow zone
• Habitat restoration

Partners
• Macomb County Public Works Office
• Meadows at Lakeside Condominium Association
• Tetra Tech
• Nativescape
• Clinton River Watershed Council
Lessons Learned

- Options
- Communication
- Patience
- Maintenance agreements
- Plant density
- Fencing
One Year Later

August 2013

August 2014
Next Steps

• Seeking funding for implementation of the additional phases
  – Low/No Match Grants

• Implement this type of project on more county drains going forward
Thank You

Lara Sucharski
Macomb County Public Works
Lara.sucharski@macombgov.org

Dan Christian, PE
Tetra-Tech, Inc
dan.christian@tetratech.com