



The BRDC Restoration Project

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Bass River & Deer Creek Watersheds



Legend

- Grand River
- Main Roads
- Bass River Watershed
- Deer Creek Watershed

By The Numbers:
Bass River - Over 20,000 acres of farmland
Deer Creek - Over 17,000 acres of farmland.
Combined - Over 165 miles of streams

Problems they face

- 2016 Integrated Report(MDEQ) lists the following uses as unsupported:
 - Warm water fisheries
 - Total and partial body contact
 - Fish consumption
- Causes listed in IR include
 - Low dissolved oxygen content
 - Phosphorus
 - E.coli bacteria (2005/2012 TMDLs)
 - Sediment loading



Where does it come from?

Failing septic systems

- A lot of older septic systems in the county – many over 20+ years old
- About a 1 in 5 failure rate in these watersheds
- Structural damage, size & location, drainfield issues, etc



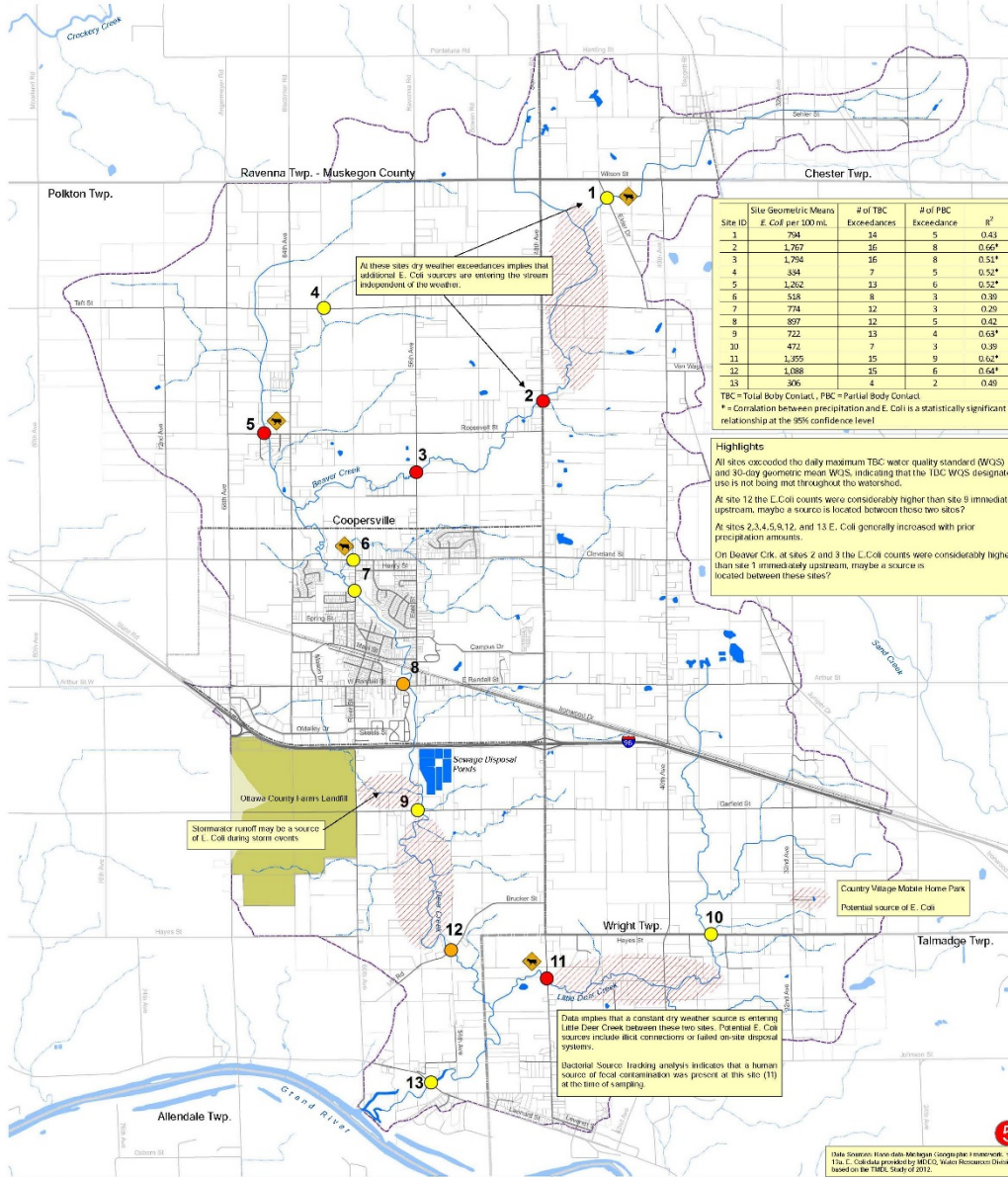
Agricultural Runoff

- 80% of DC land use, 65% of BR is Agricultural
- Several large and medium sized AFOs & CAFOs
- Runoff containing sediment, fertilizer, raw manure
- Animals in or near the waterbody.



Potential *E. Coli* Sources

Deer Creek Watershed - Ottawa and Muskegon Counties, Michigan



Project Partners: DEQ, Muskegon County, Grand Valley State University, Muskegon County Health Department

Legend:
 - Musketawa Trail
 - Interstate
 - Local Roads
 - Railroad
 - Township Limit
 - City Limits
 - Parcel Lines
 - Lakes/Ponds
 - Perennial Stream
 - Intermittent Stream

E. Coli per 100 mL:
 - Yellow circle: 306 - 800
 - Orange circle: 801 - 1100
 - Red circle: 1101 - 1800

Other Symbols:
 - Yellow diamond: Bacterial Source Tracking analysis indicates that cattle was a source of E. Coli contamination during two rain events.
 - Red hatched area: Area of Interest

Map Info:
 Date Source: From data Michigan Geographic Information System for the E. Coli data provided by MDEQ, Water Resources Division based on the TBC Study of 2012.
 Map Created: Aug. 2014
 Scale: 1:30,000
 North Arrow and Scale Bar.

BMP Funding

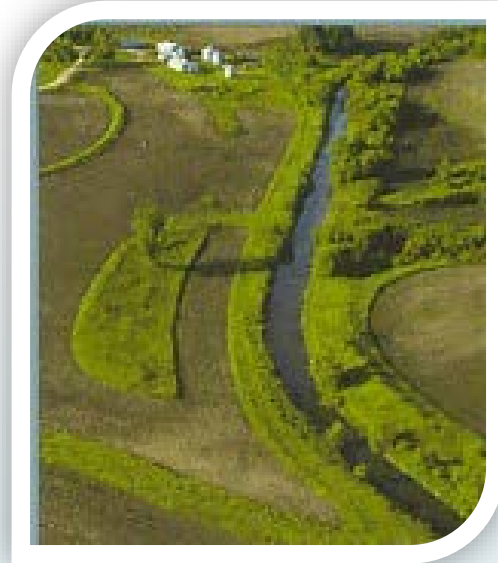
- Funded practices based off recommendations set in section 6.2 of the LGR Watershed Management Plan
- All practices cost-shared at a targeted 75%
- NRCS guidelines used for all agricultural practices – including engineering/design work

Cost Sharing

Septic Systems



Filter Strips



Grassed Waterways



Manure Storage



Accomplishments

- 17 Septic systems replaced with one more to be replaced this year
- \$99,961 in cost share directly to property owners
- All sites were chosen based on location, proximity to surface water, septic issues, etc



The existing drainfield was clogged with tree roots and sludge, and showed signs of surface discharge of untreated effluent.



3 new septic tanks were installed, as well as a new pressurized drainfield.



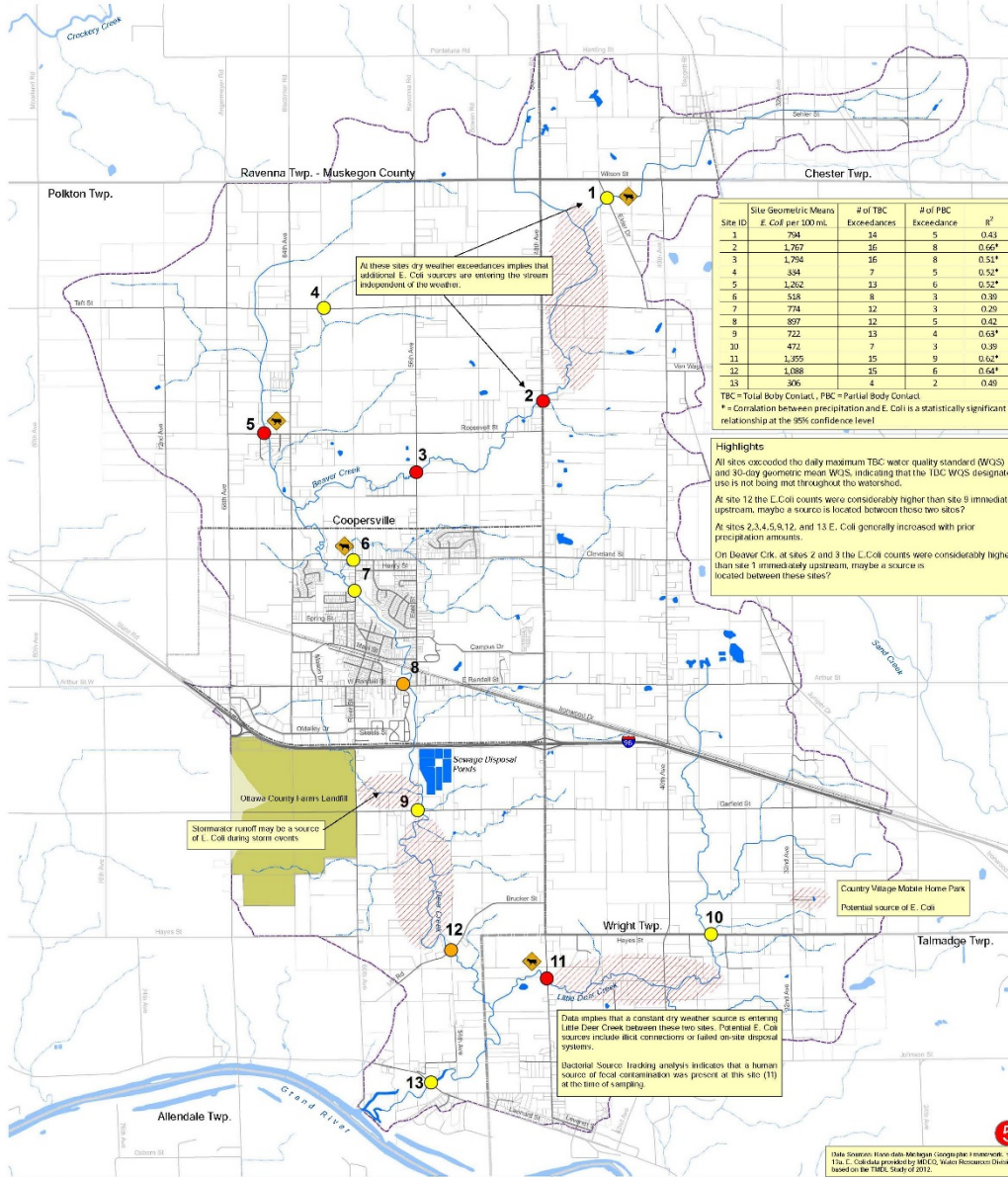
BMP Implementation

- Three producers have entered into contracts with the BRDC for a total of 1006 acres of cover crops in 2017
- Working in cooperation with the NRCS on an additional site including manure storage & livestock management
- Over \$63,000 in cost share to producers + additional funds available for 2018



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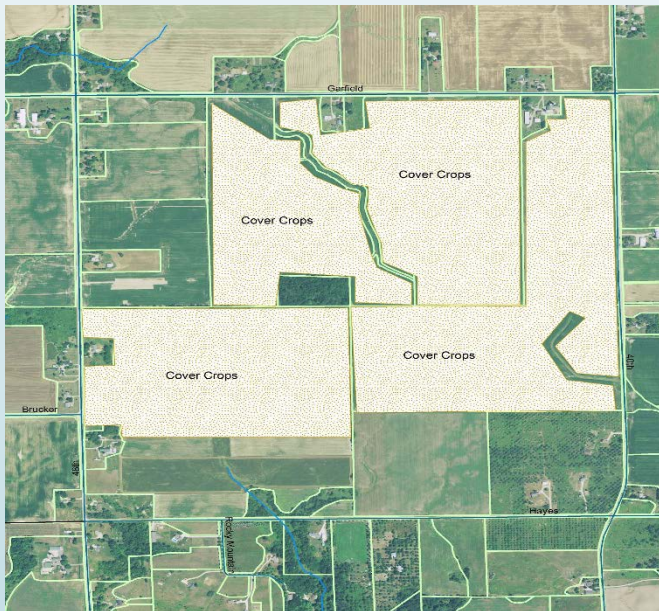
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The work continues...

- Load reduction estimates provided by LGROW using STEPL model
- Septic system calculations provided using the SSIE
- This is a “work in progress.” Education and continued use of conservation practices is more important than many of the immediate practices funded
- We are seeking continued funding – GLRI, 319, other funding sources for the future



- 2017 Grant Proposal included 8 producers "committed" to practices
- Over 2000 acres of cover crops
- Manure management practices including funding for a manure pit, three dry stack pads, and two CNMPs
- Several miles of buffer strips, livestock exclusions, grassed waterways, and animal crossings
- Funding for additional septic replacements

Questions?

