Cobus Creek Watershed Diagnostic Study

Preliminary Findings Public Meeting

November 15, 2016 – 7:00pm

Elkhart Conservation Club – Elkhart, IN

Meeting Summary

Approximately 40 individuals were in attendance. Jeremy Reiman with the Michiana Area Council of Governments and St. Joseph River Basin Commission started the meeting with a powerpoint presentation. The presentation covered the following points:

- The purpose of the study is to assess the conditions and trends of water quality within Cobus Creek watershed and to further prioritize future projects that would benefit the watershed and its citizens within it
- The study will be available for public comment towards the end of 2016
- The final approved document will be available to the public in early 2017
- The study is funded by the Indiana Department of Natural Resources Lake and River Enhancement Program as well as through various forms of support from over a dozen local partners

Sara Peel with Arion Consultants, the lead consultant on the project, presented the preliminary findings of data collection and analysis on Cobus Creek watershed. Sara's presentation can be broken into three sections: watershed characteristics, water quality data, and analysis and findings. The main points of her presentation are outlined below.

Watershed Characteristics

- Agriculture is the primary landuse in the watershed, however, development of subdivisions has increased significantly in the past decade in the northwest corner of Elkhart County
- There are a significant amount of wetlands in the Michigan portion of the watershed surrounding the lakes
- Soils data suggests that there were once several wetlands along the banks of Cobus Creek and Gast Ditch in Indiana
- Several organizations, including the EPA, have completed different types of data sampling in the watershed
- Gast Ditch, Cobus Creek Lateral, tributaries between Pleasant, Spring, Coberts, and Garver lake have never been sampled for water quality prior to this study

Water Quality Data

- Physical, chemical, fish, macroinvertebrate, and habitat data were all collected at 11 sites across the watershed in 2016 – all data can be used as indicators of water quality (Map of sites attached to document)
- During regular stream flow
    - all sites showed elevated phosphorus levels
    - all other pollutant levels were very low and within recreational standards at all sites
- After heavy rain events
    - E. coli and sediment levels were highly elevated at all sites
    - All sites showed elevated phosphorus levels
    - Cobus Creek East Lateral A and the inlet to Spring Lake had higher ammonia and nitrates
- Twenty-five (25) species of fish collected – including several pollution intolerant species
    - Cobus Creek main stem closest to the St. Joseph River demonstrated healthier fish community
    - 1 rare species identified – Iowa darter
    - Presence of large brown trout and natural trout reproduction
- Several limitations for aquatic communities were identified
    - Channelization and modification of natural stream conditions
    - Limited pools and riffles – highly quality habitat
    - Several barriers (low-head dams and road stream crossings) for fish migration exist along Cobus Creek

Analysis & Findings

- Cobus Creek is a fairly healthy stream, but has flashy pollutant tendencies
- Highest loading of pollutants in the watershed occurs at tributaries draining into Cobus Creek (Cobus Creek East Lateral A, Gast Dtich, inlet to Spring Lake)
    - Focusing improvement projects in these regions would likely show the biggest improvement in water quality in Cobus Creek
- Implementing best management practices (BMPs) to reduce phosphorus concentrations would be an ideal priority
    - Septic system maintenance
    - Rain barrel/rain garden installs
    - Stream bank stabilization
- Implementing BMPs that focus on stormwater retention and sediment cover would help with elevated pollutants during storm flow conditions
    - Agricultural BMPs – cover crops, conservation tillage, filter strips

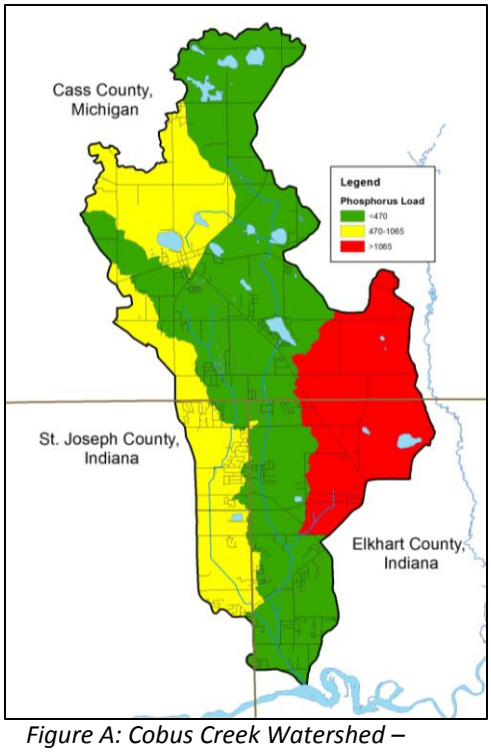


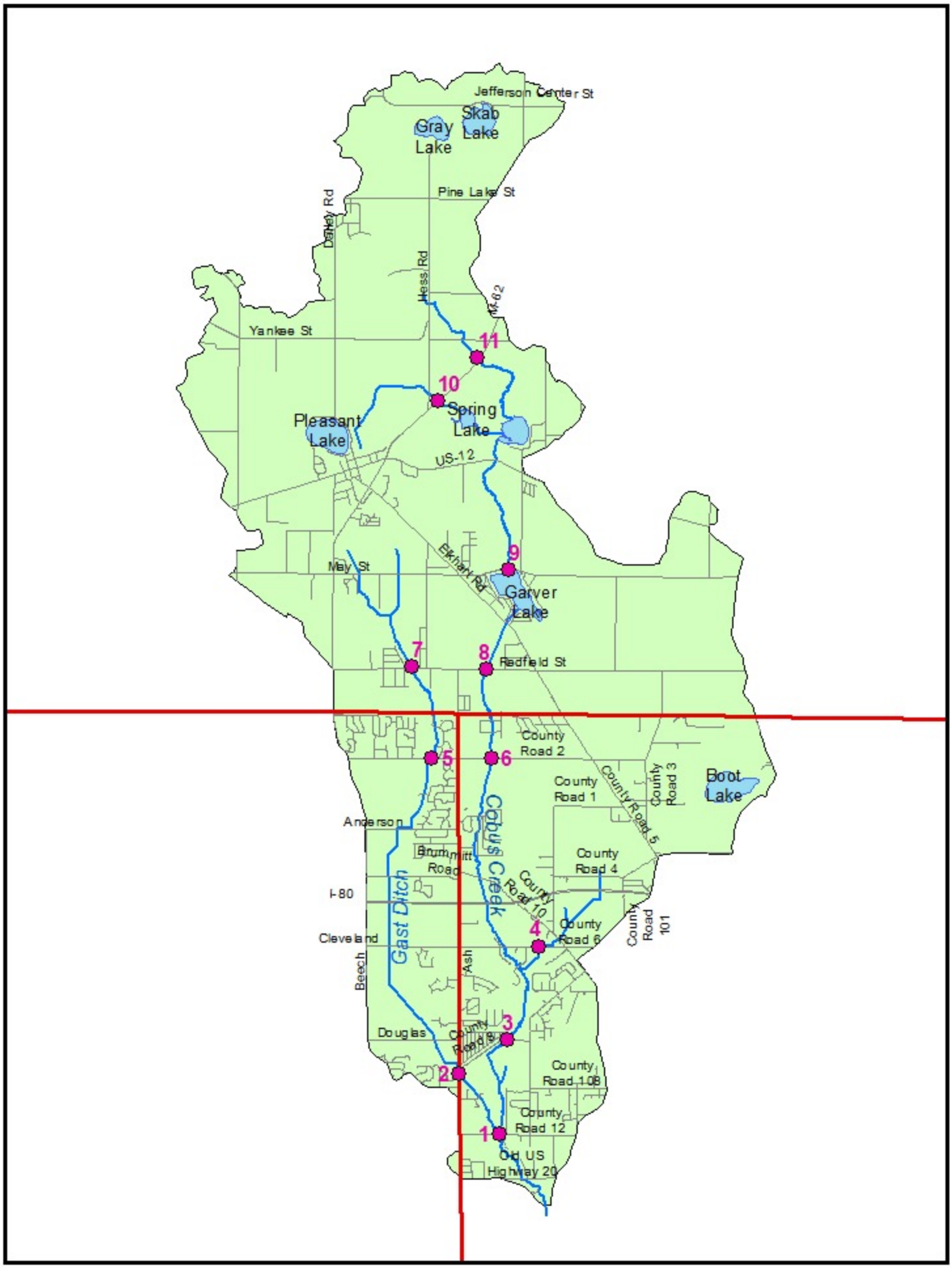
Figure A: Cobus Creek Watershed – implementing projects in the red/yellow areas would greatly improve the overall health of the watershed

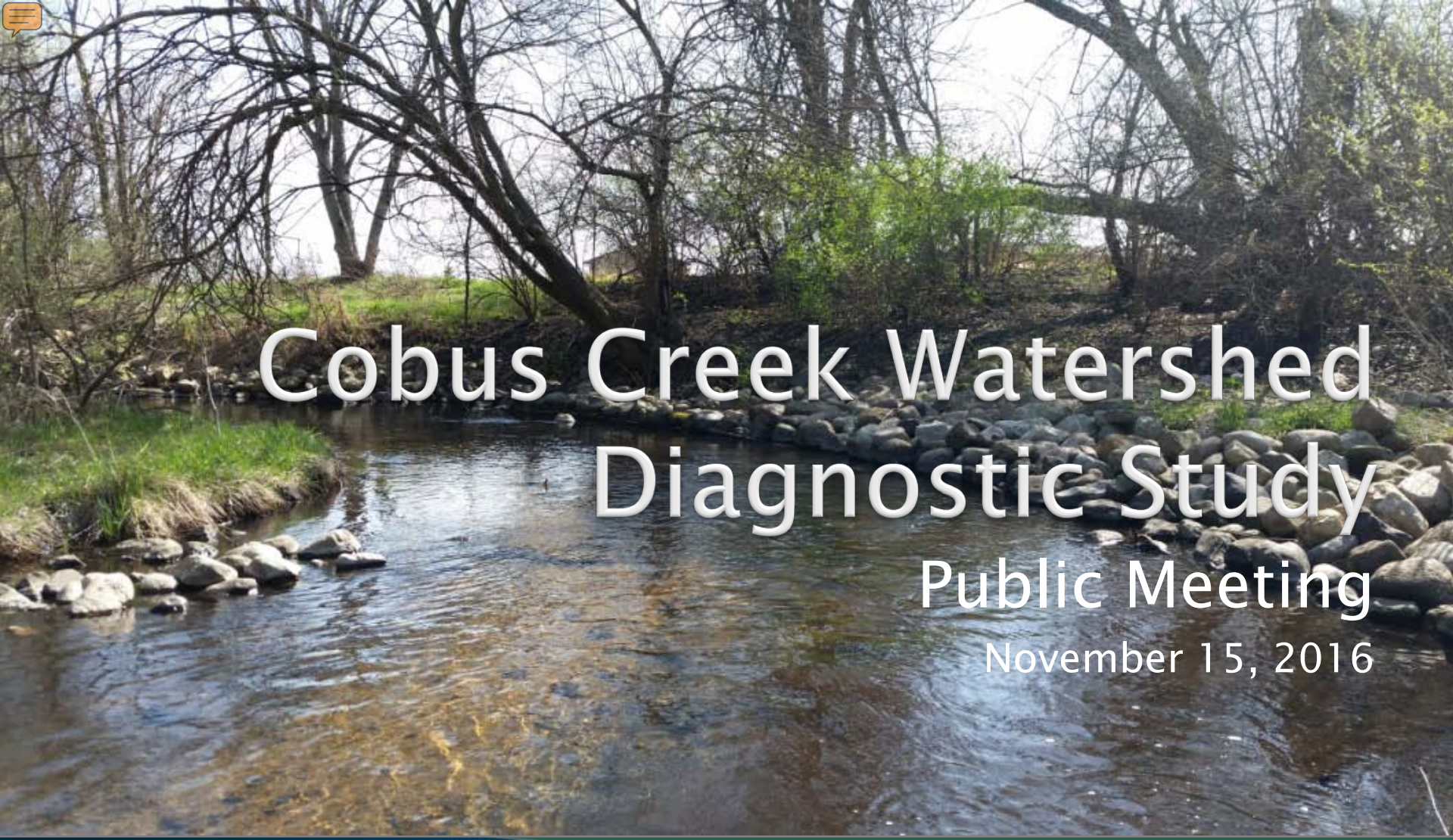
    - Urban BMPs –temporary seeding on construction sites, rain barrel/rain gardens
- Fish communities are health in particular spots on Cobus Creek, however, habitat improvement/connectivity projects are necessary to improve fish and macroinvertebrate communities

All attendees then transitioned into an activity to provide input on what types of improvement projects they value as most important to the watershed. All potential project recommendations were displayed on poster boards and participants were asked to vote on which projects they would like to see implemented. Attendees were also able suggest potential projects not on the original list. This information be used to help prioritize project recommendations listed in the final study. The results of activity are found below:

Cobus Creek Potential Projects – Voting Results	
Zoning & Ordinances – overlay zone for septic/sewer	25
Target BMPs to reduce sediment inputs	20
Target BMPs to reduce pathogen (*E. coli*) concentrations	19
Implement a landowner education program to educate individuals on their impact to Cobus Creek	17
Target BMPs to address phosphorus concentrations	12
Improve and restore instream habitat	11
Coordinate education efforts with local schools	11
Work with local health department to ensure proper septic system permitting , citing, maintenance	4
Reduce fish passage limitations	3
Implement high profile urban BMP demonstration projects to showcase potential solutions	1
Monitor and manage invasive species	1

For more information on the study, visit www.sjrbc.com/cobuscreek, or contact the St. Joseph River Basin Commission, at sjrbcdir@macog.com or 574-287-1829.


Jefferson Center St
Gray Lake
Skab Lake
Pine Lake St
Daley Rd
Hess Rd
M-62
Yankee St
11
10
Spring Lake
Pleasant Lake
US-12
May St
Ekhart Rd
9
Garver Lake
7
8
Redfield St
County Road 2
5
6
County Road 1
County Road 3
Boot Lake
County Road 5
Anderson
Brummitt Road
County Road 4
I-80
Gast Ditch
Coburs Creek
County Road 10
4
County Road 6
County Road 101
Cleveland
Beech
Ash
Douglas
County Road 8
3
2
County Road 108
County Road 12
1
Old US Highway 20



Cobus Creek Watershed Diagnostic Study

Public Meeting

November 15, 2016

MACOG
Michiana Area Council of Governments

SJRBC
St. Joseph River Basin Commission

Timeline

- Project goals and timeline
- Watershed mapping
- Water quality data
- Overall watershed concerns
- Project alternatives
- Recommendations
- Questions & Concerns

- Stakeholder Activity

SJRBC

St Joseph River Basin Commission

An organization dedicated to improving water quality in the St. Joseph River Watershed

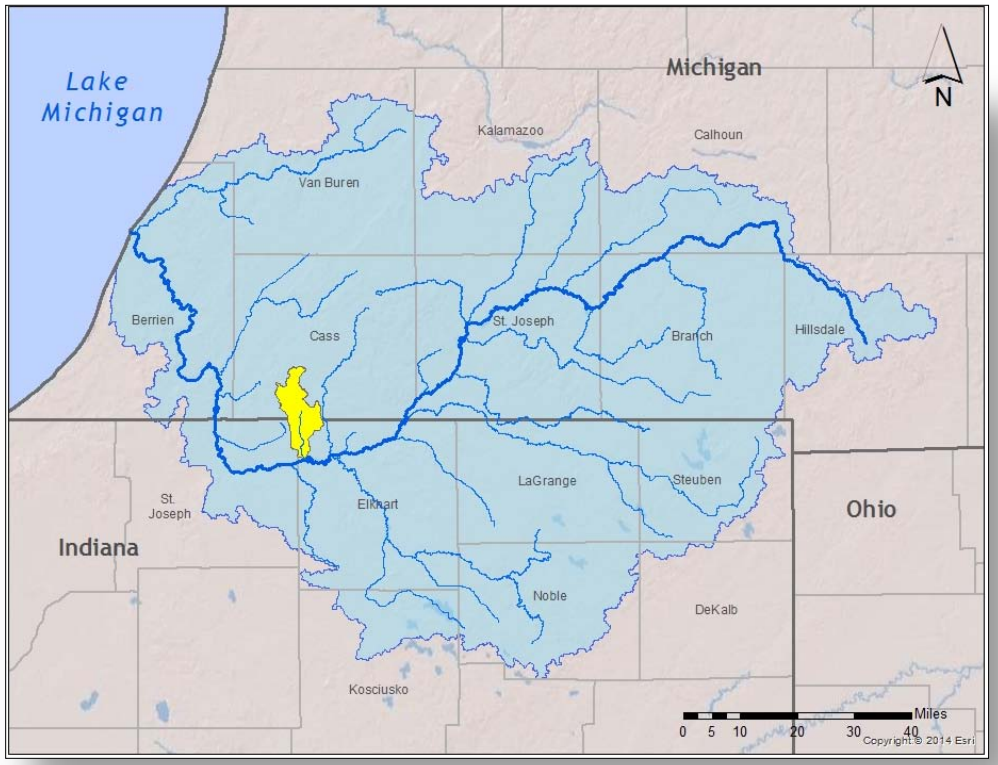
Assessment

Project Development

Education

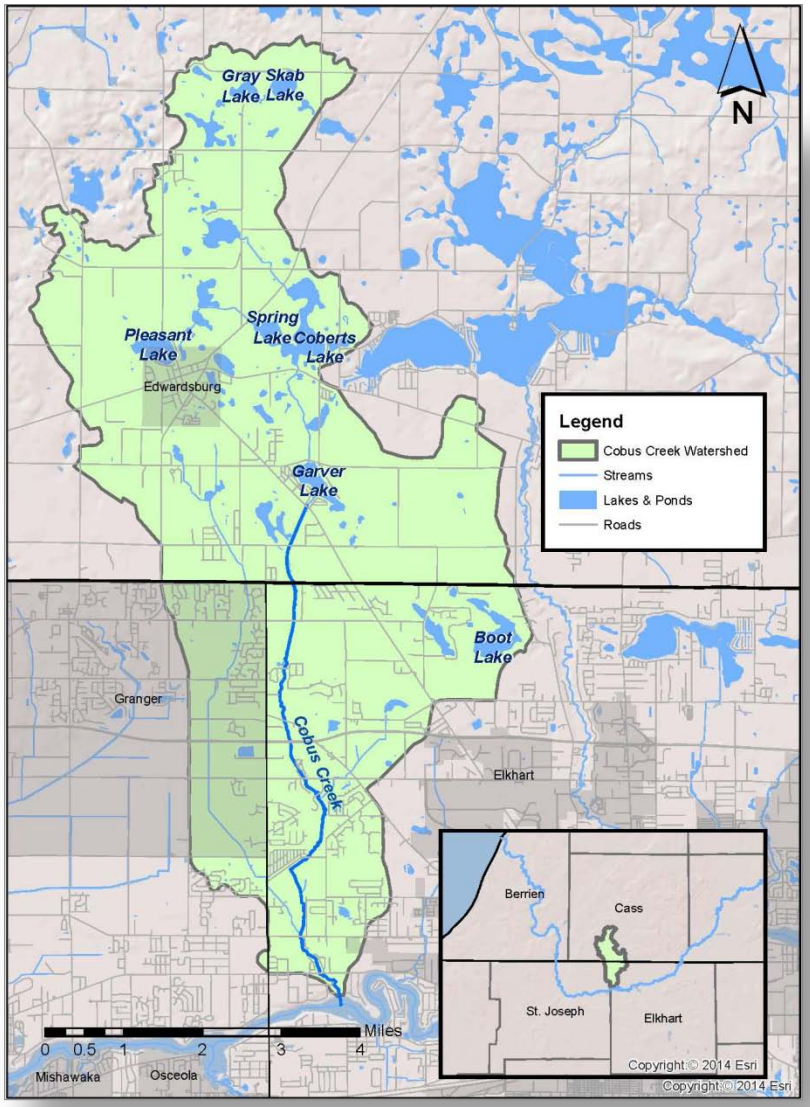
Facilitate & Coordinate

Advocate



Cobus Creek Watershed

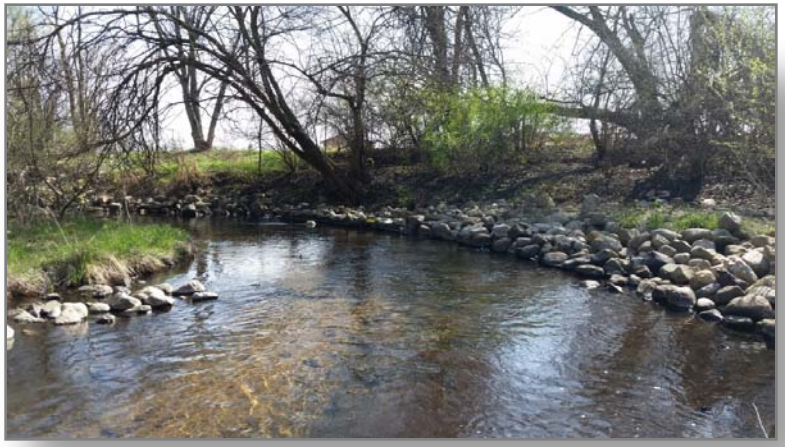
- 36.6 mi² (23,412 ac.)
- Cass Co, MI
  Elkhart & St. Joseph, IN
- ~15,600 residents
- Land Use: Agriculture
- 7 named lakes
- 25 miles of streams
- 1,603 ac. of wetlands

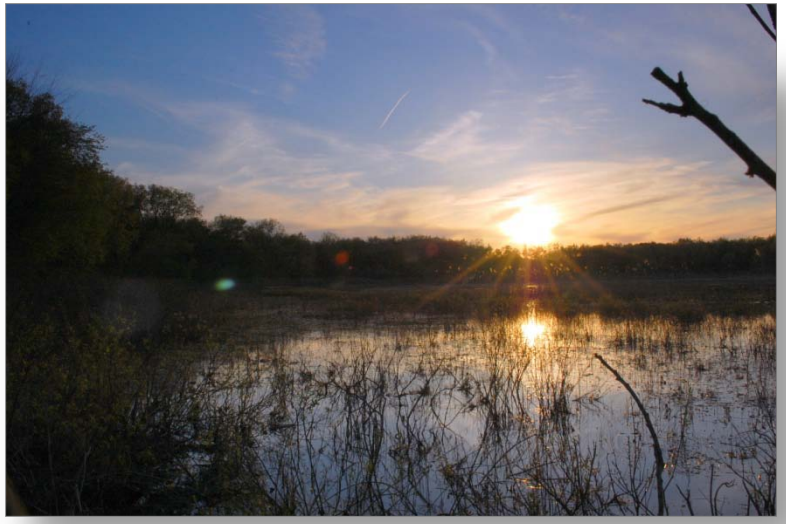


Cobus Creek Watershed

Brown Trout at the Elkhart Conservation Club

Cobus Creek County Park





Wetland complexes at Boot Lake Nature Preserve

Healthy watersheds provide many benefits that increase our quality of life

Clean Drinking Water

Increased Property Values

Wildlife Habitat

Reduced Flood Impacts

Available Water for Agriculture and Industry

Opportunity for Recreation

Cobus Creek Watershed Study

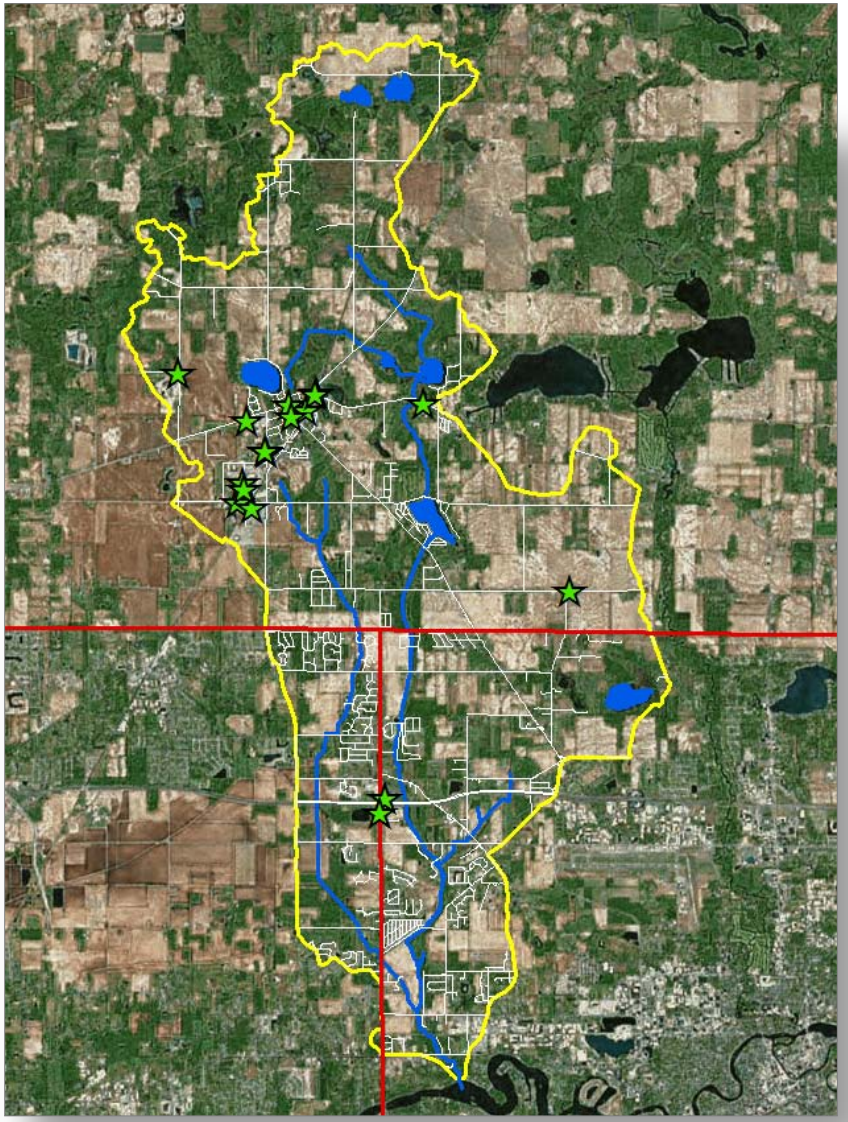
- Purpose of Cobus Creek Watershed Diagnostic Study
  - Describe water quality trends in Cobus Creek
  - Identify potential water quality problems
  - Propose potential environmental improvement projects

Winter 2015	Summarize historical watershed data
Spring 2016	In-the-field data collection
Summer 2016	
Fall 2016	Analyze/model data & develop recommendations
Winter 2016	
Spring 2017	Final document approved

Project Tasks

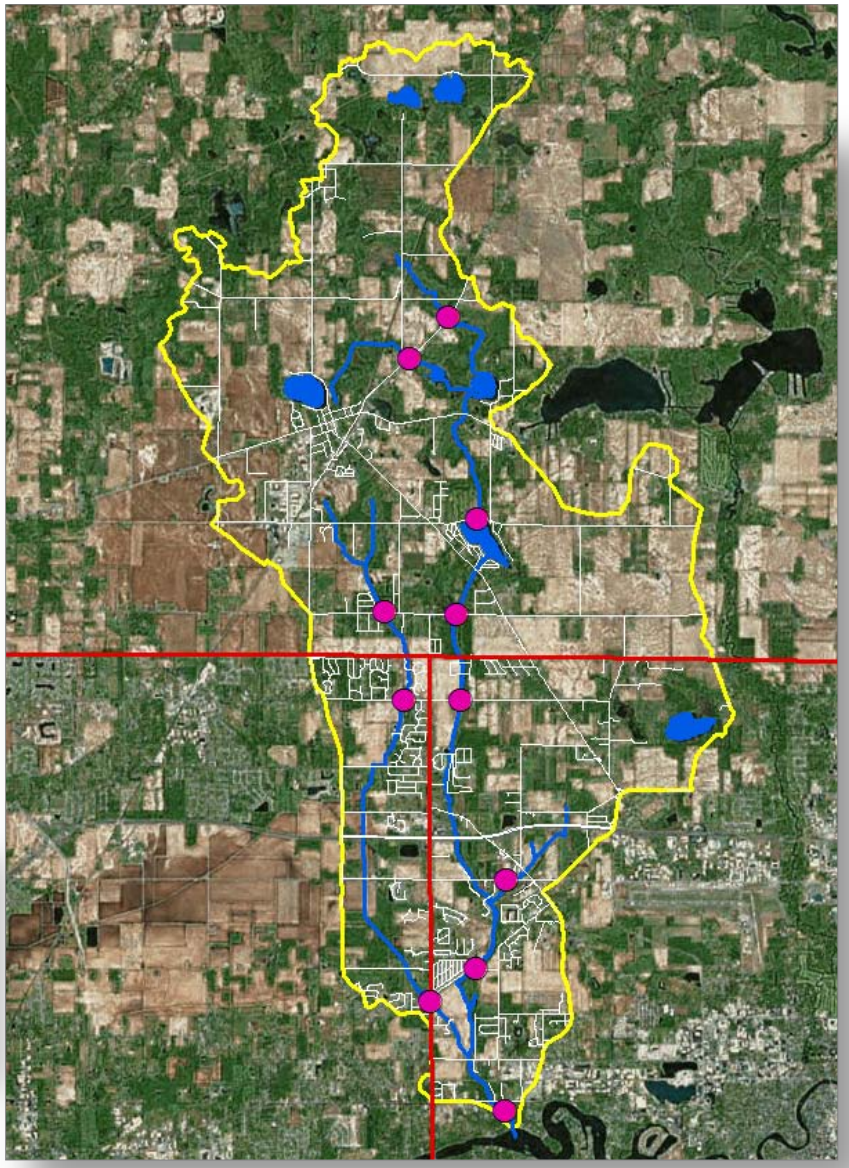
- Summarize historical watershed data
  - Maps
  - Studies
  - Inventories

Example: underground storage tanks



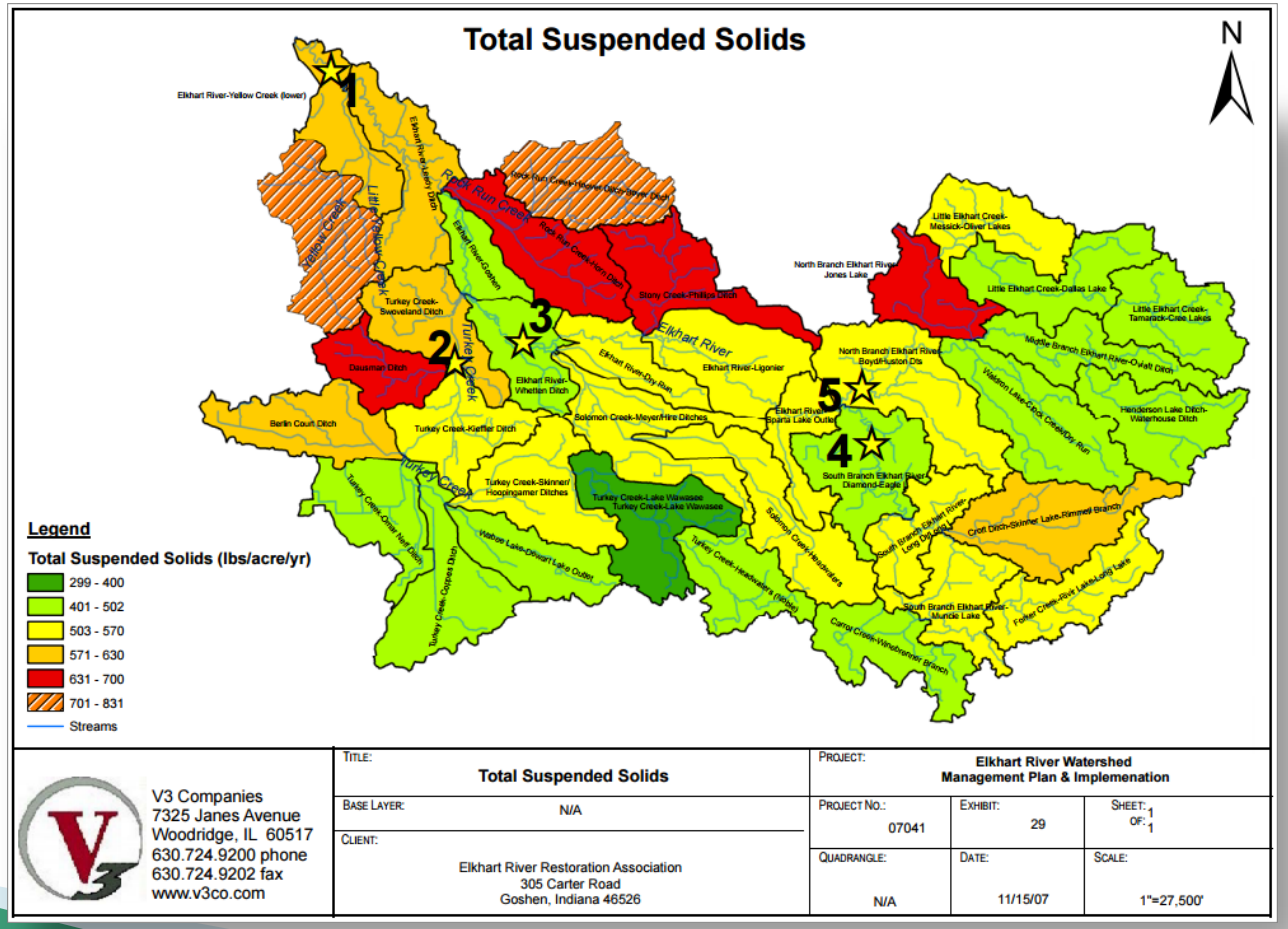
Project Tasks

- In-field data collections
  - Chemistry, fish, habitat



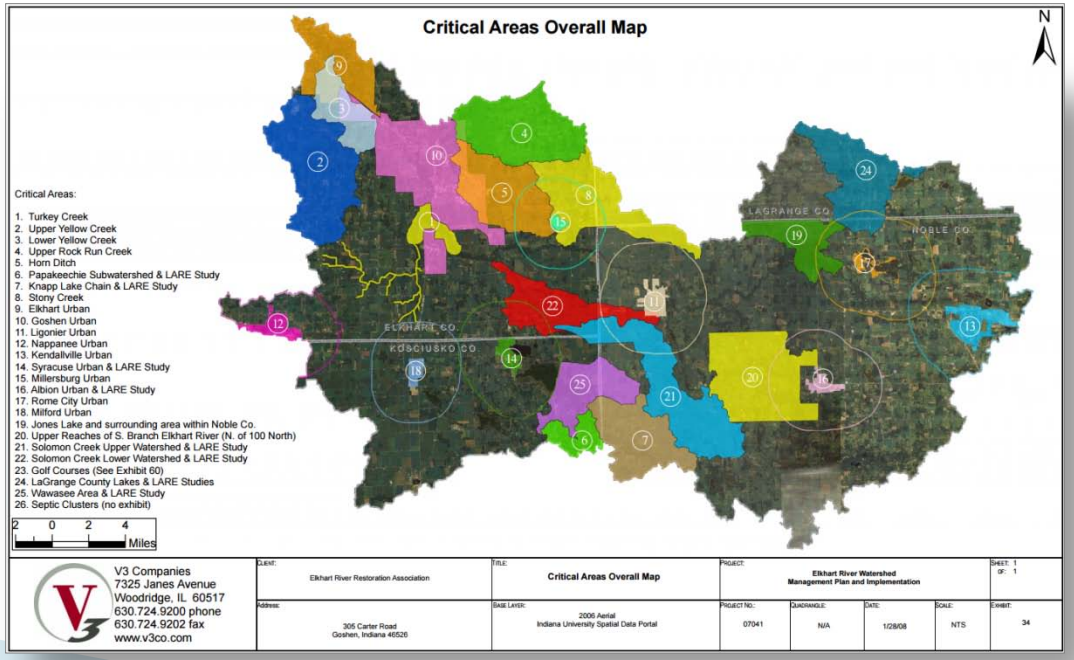
Project Tasks

- Analyze/model data



Project Tasks

- Prioritize management recommendations
  - Where are high priority protection areas?
  - What type of projects would improve water quality?
  - Should we focus on agriculture or urban projects?



Cobus Creek Watershed Study

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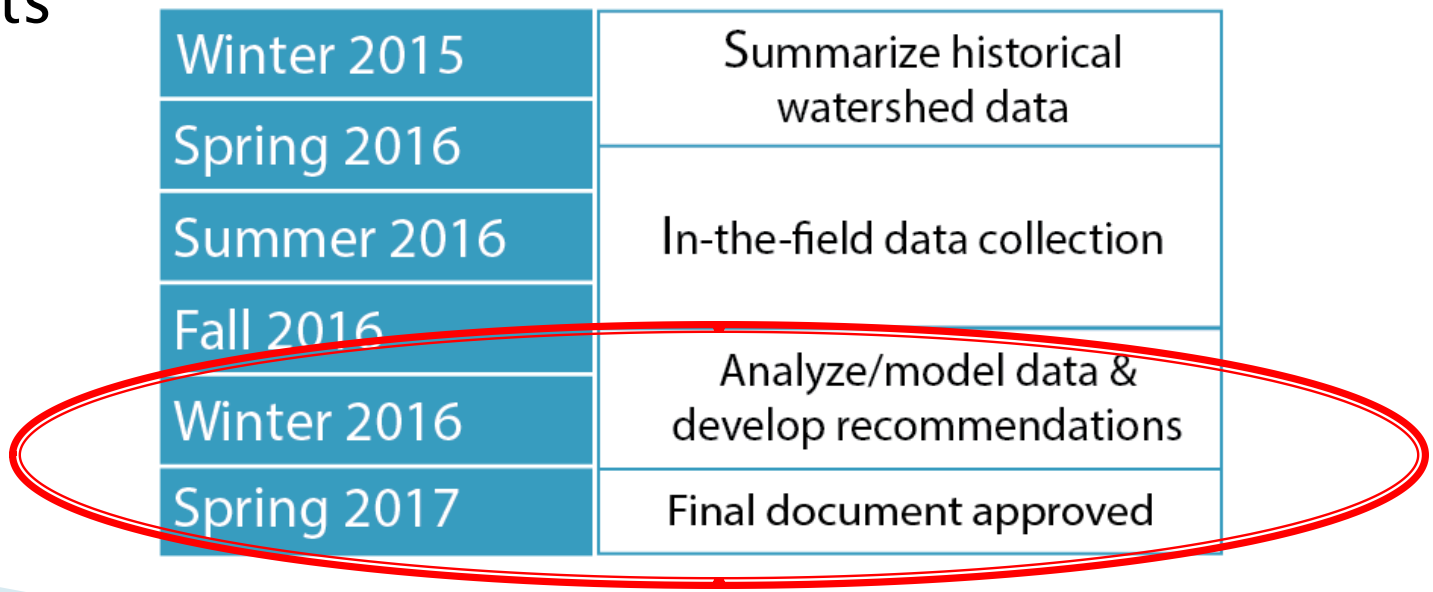


Cobus Creek Watershed Study

- Study funded through Indiana Dept. of Natural Resources
  - Lake and River Enhancement Program

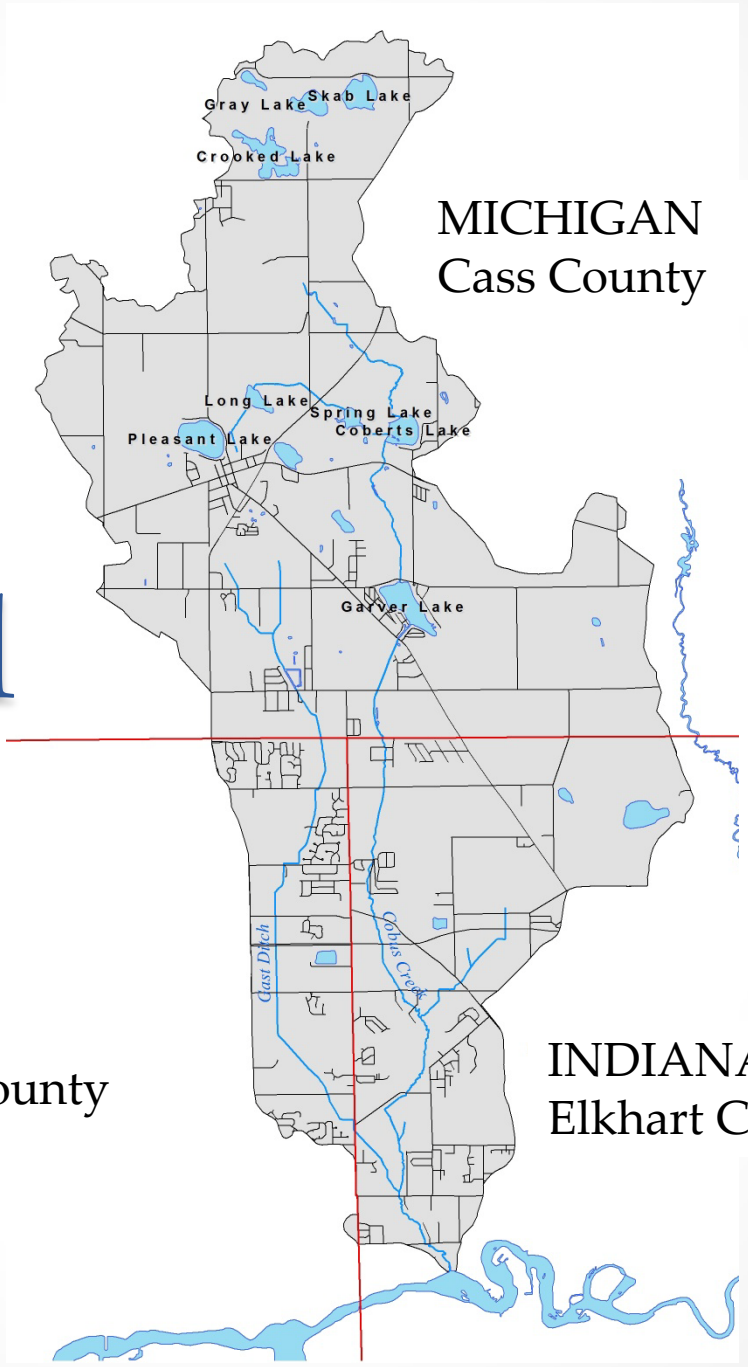
- Supporting Partners
  - Friends of Cobus Creek
  - Elkhart Conservation Club
  - Ontwa Township
  - City of Elkhart
  - St. Joseph River Valley Fly Fishers
  - Greater Elkhart County Stormwater Partnership
  - Cleveland Township
  - Eagle Lake Improvement Association
  - Elkhart Community Schools
  - Elkhart County Parks Dept.
  - Friends of the St. Joseph River

Cobus Creek Watershed Study

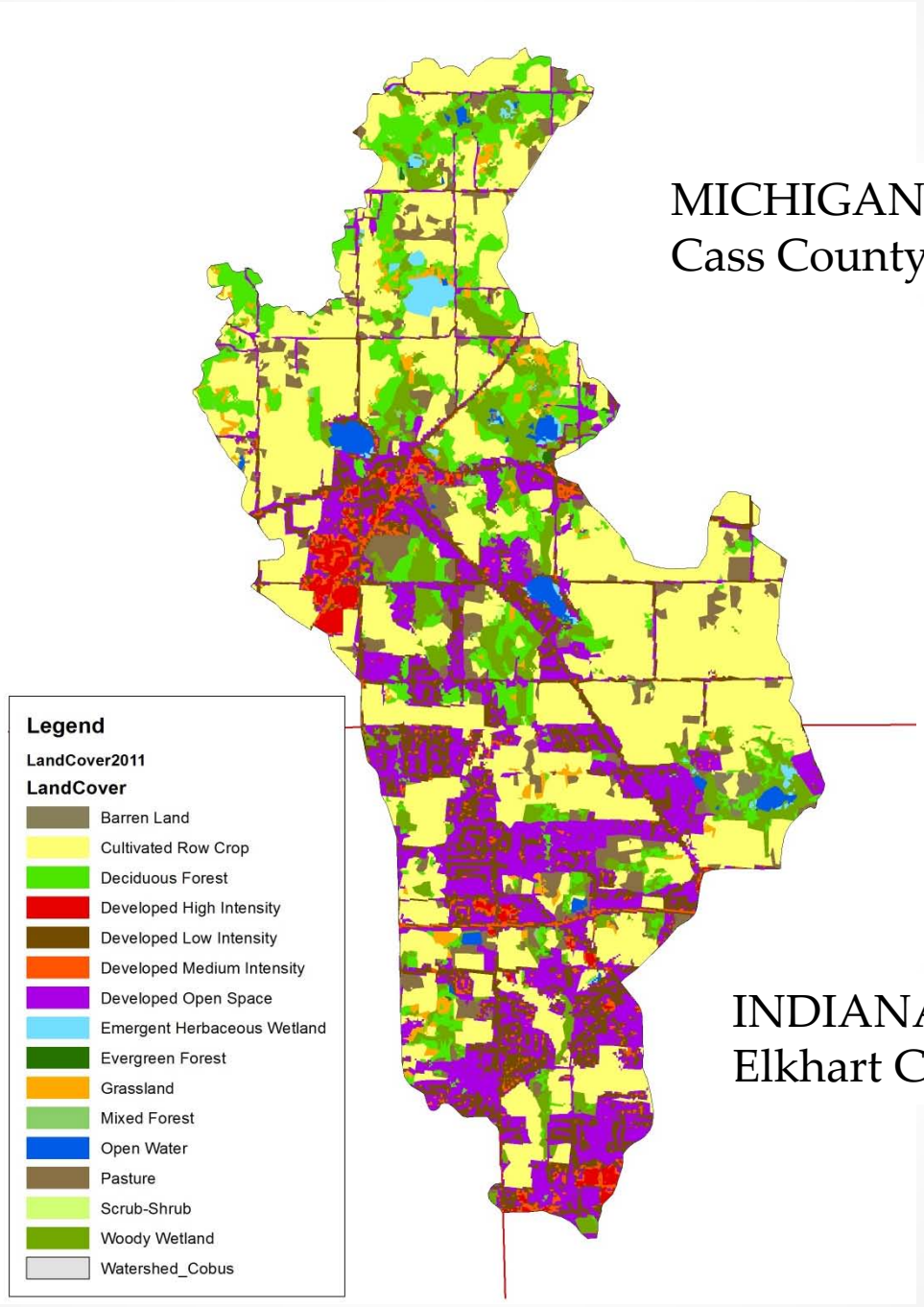
- Steering Committee
  - Cass County Conservation District
  - Cass County Drain Commissioner
  - City of Elkhart
  - Elkhart Community Schools
  - Elkhart Conservation Club
  - Elkhart County Health Dept
  - Elkhart County Parks Dept
  - Elkhart County Planning & Dev
  - Elkhart County Soil & Water Conservation District
  - Elkhart County Surveyor's Office
  - Friends of Cobus Creek
  - Friends of the St. Joseph River
  - Garver Lake Assc
  - Greater Elkhart County Stormwater Partnership
  - Indiana Dept of Environmental Management
  - Michiana Stormwater Partnership
  - Michigan Dept. of Environmental Quality
  - Michigan Dept. of Natural Resources
  - Ontwa Township
  - Pokagon Band of Potawatomi
  - Southwestern Michigan Planning Commission
  - St. Joseph County Area Plan Commission
  - St. Joseph County Dept. of Public Works
  - St. Joseph County Health Dept.
  - St. Joseph County Soil & Water Conservation District
  - St. Joseph River Valley Fly Fishers
  - Van Buren/Cass District Health Department

Cobus Creek Watershed

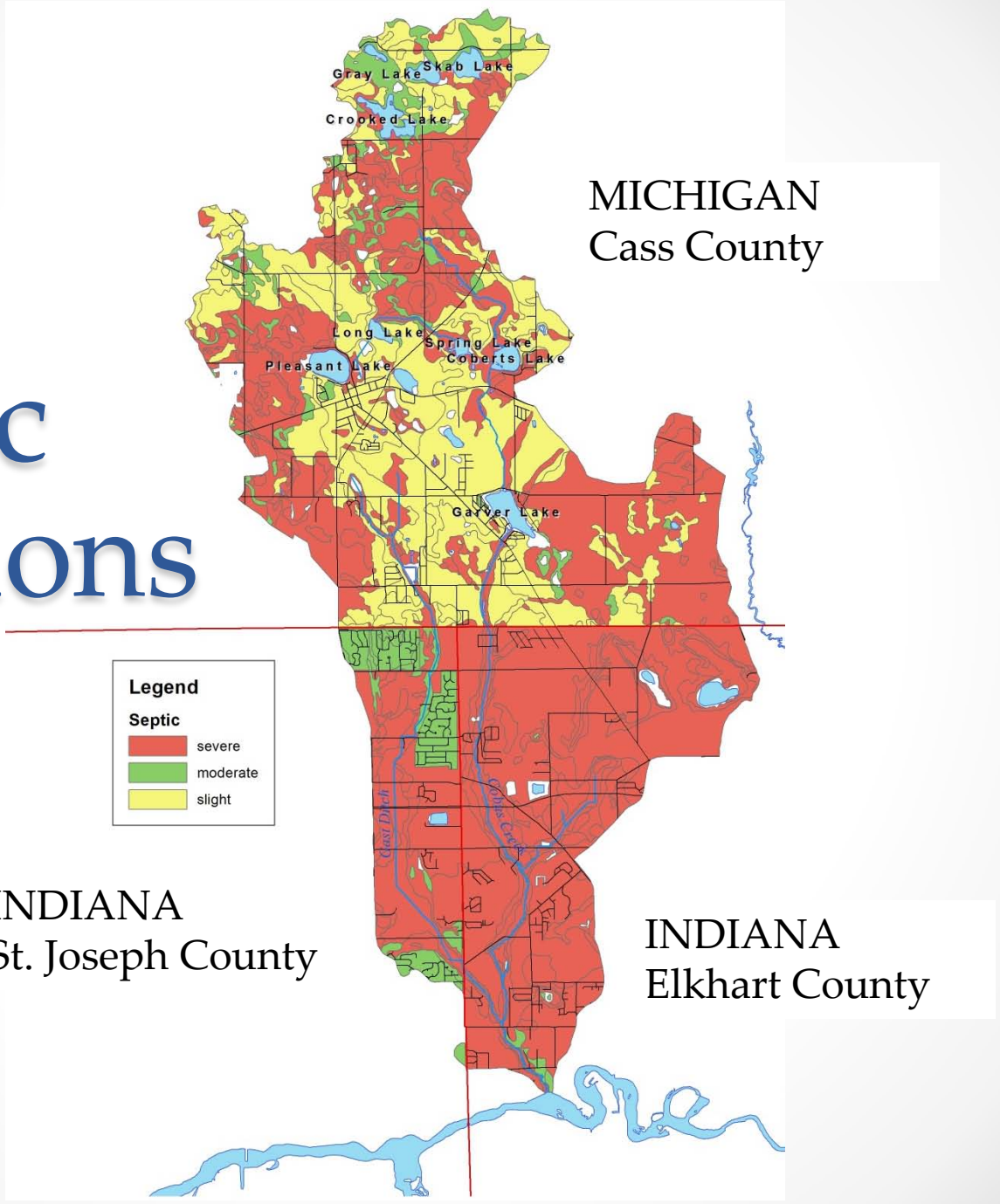
(23,412 acres)



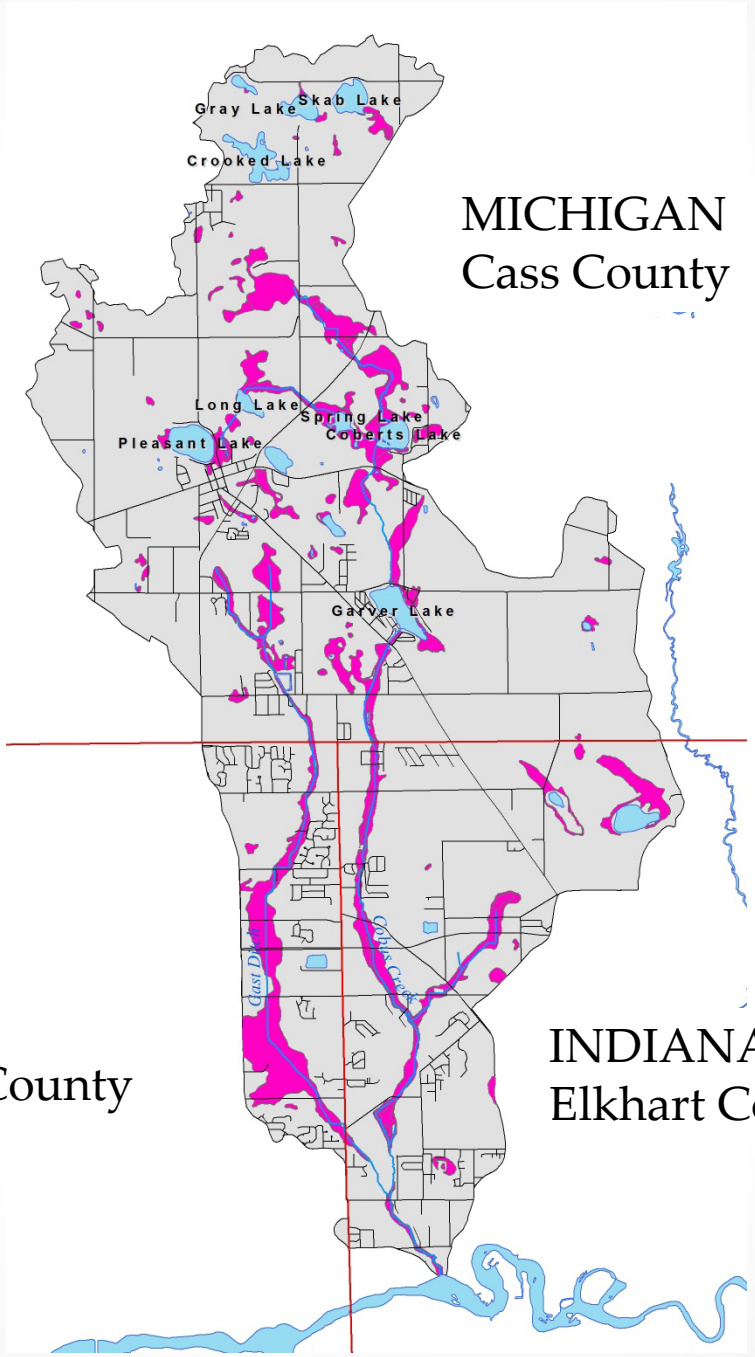
Land Cover


MICHIGAN
Cass County
INDIANA
Elkhart County
Legend
LandCover2011
LandCover
Barren Land
Cultivated Row Crop
Deciduous Forest
Developed High Intensity
Developed Low Intensity
Developed Medium Intensity
Developed Open Space
Emergent Herbaceous Wetland
Evergreen Forest
Grassland
Mixed Forest
Open Water
Pasture
Scrub-Shrub
Woody Wetland
Watershed_Cobus

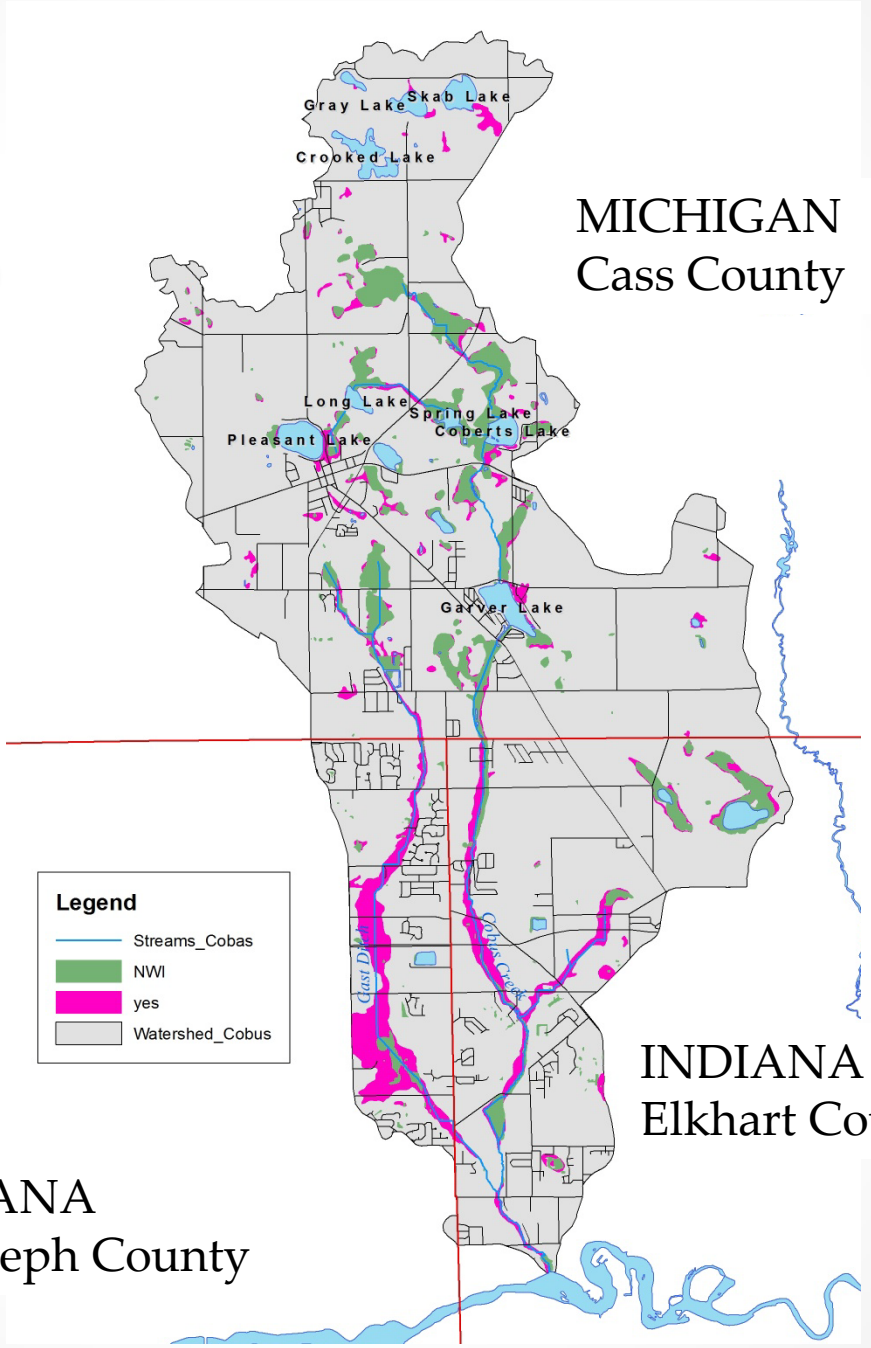
Septic Limitations



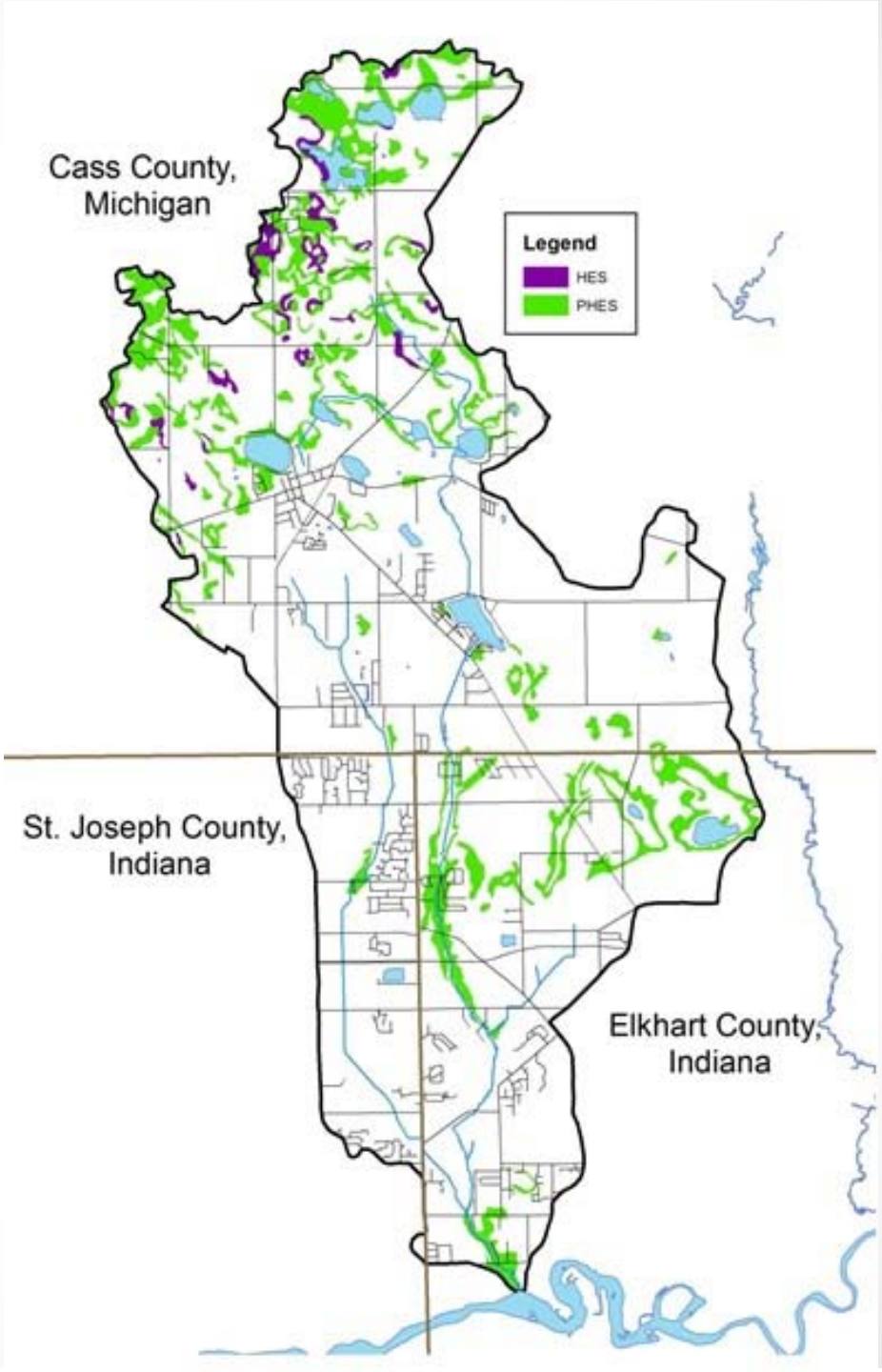
Hydric Soils



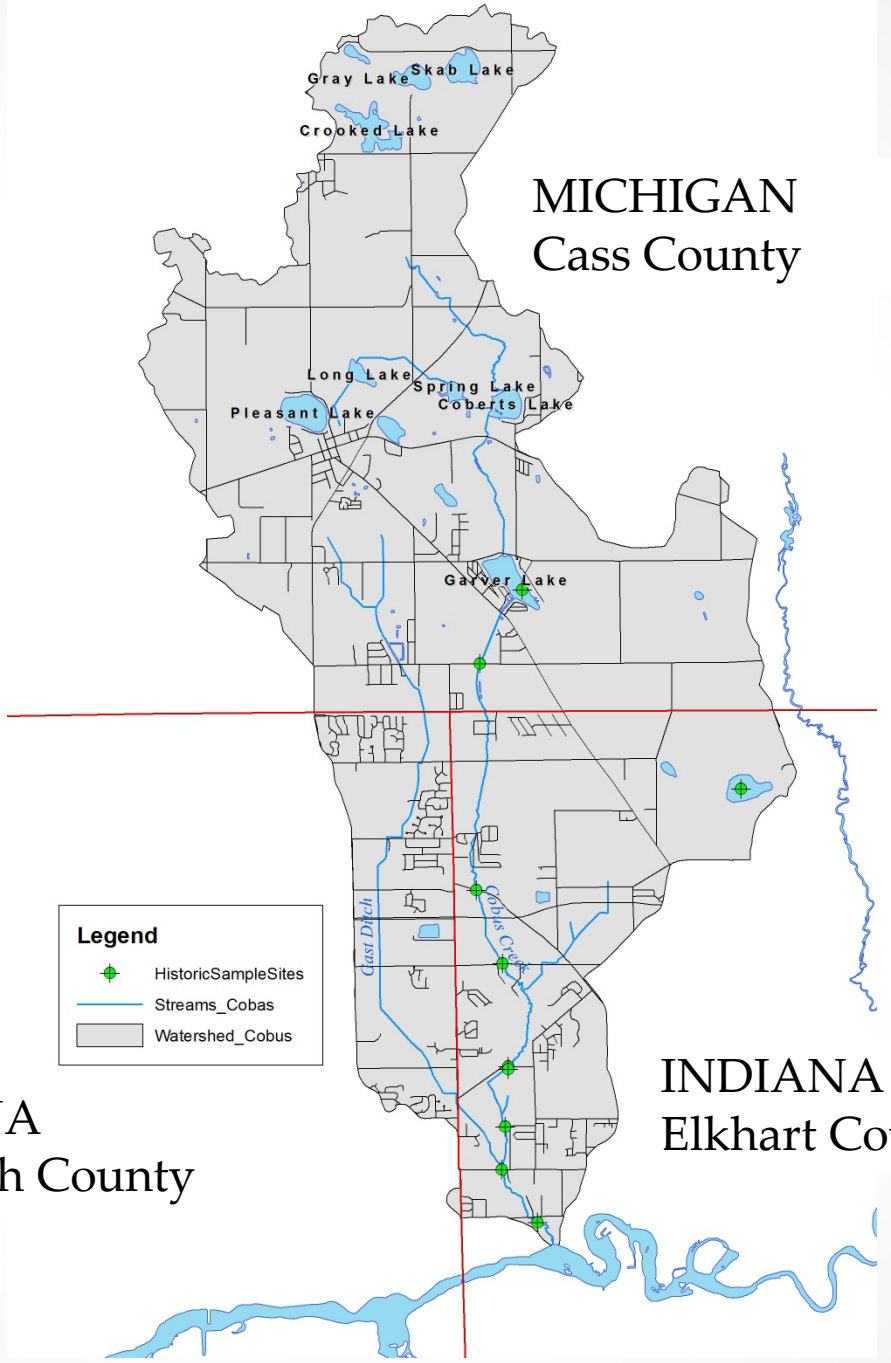
Wetlands and Hydric Soils



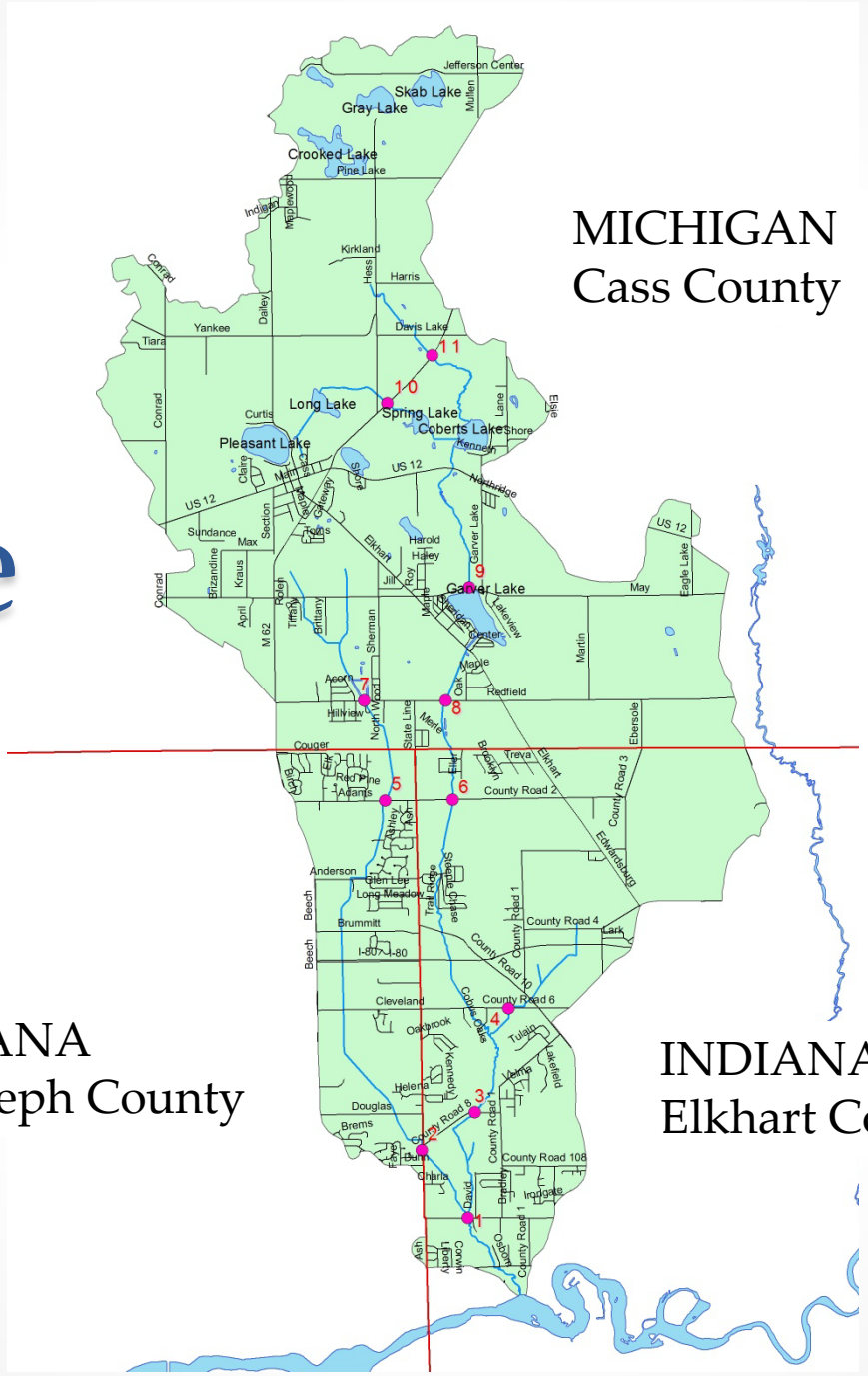
Erodible Soils



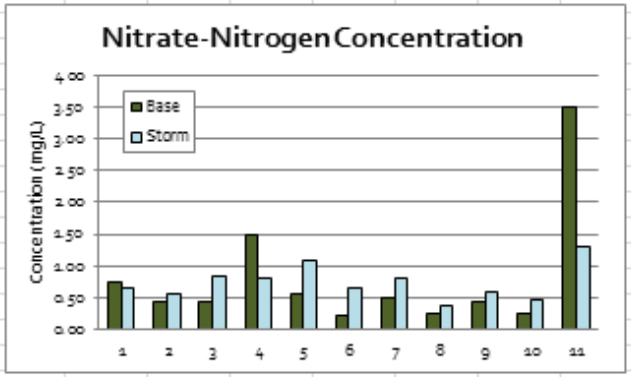
Historic Sample Sites

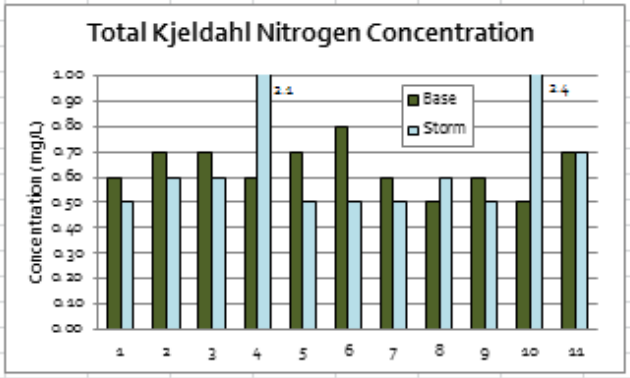


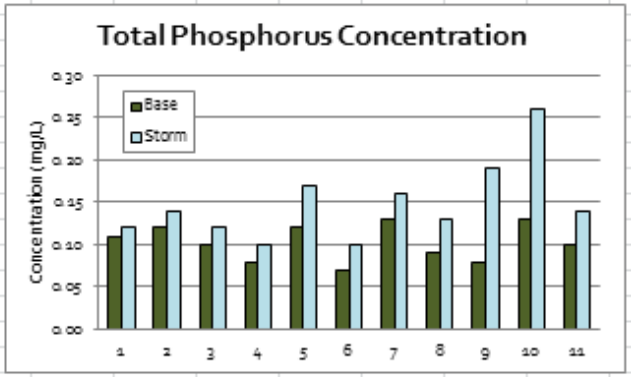
Study Sample Sites

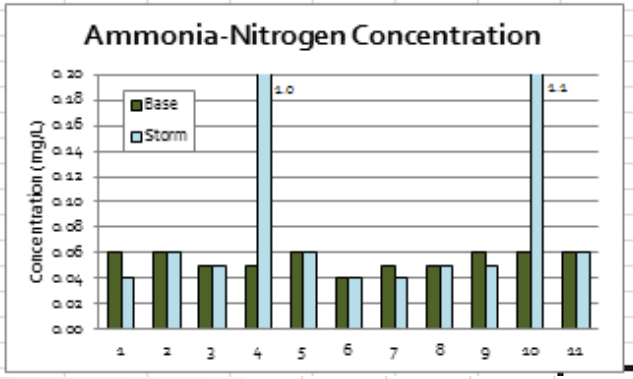


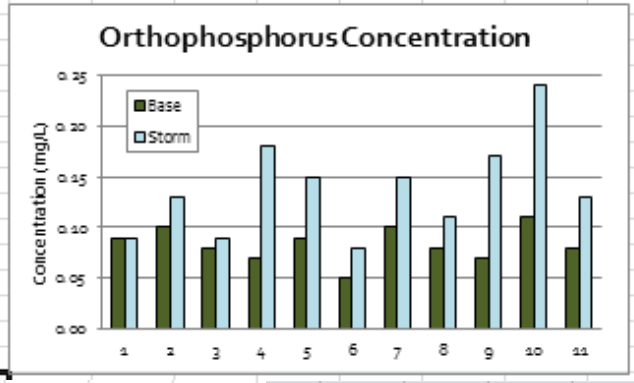
Water Chemistry Data

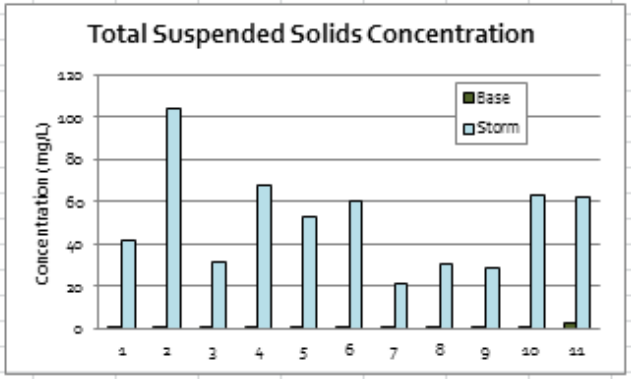


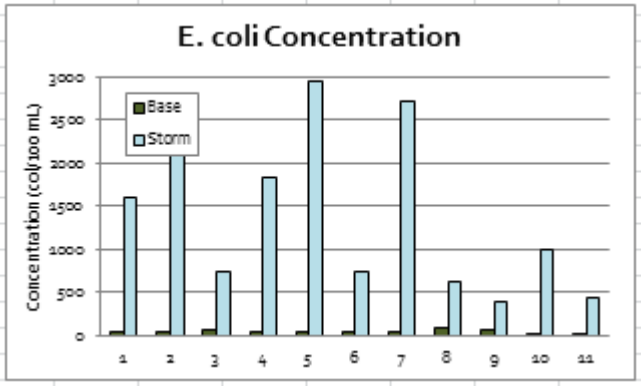


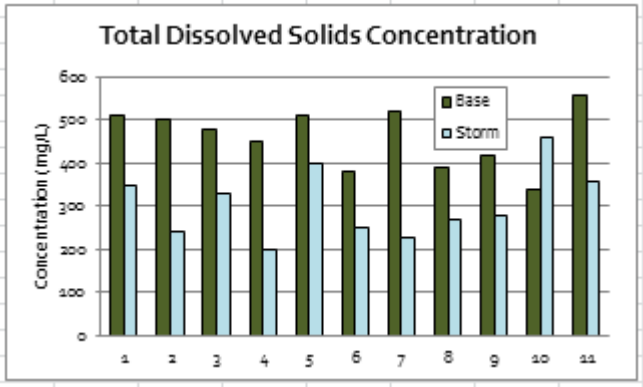






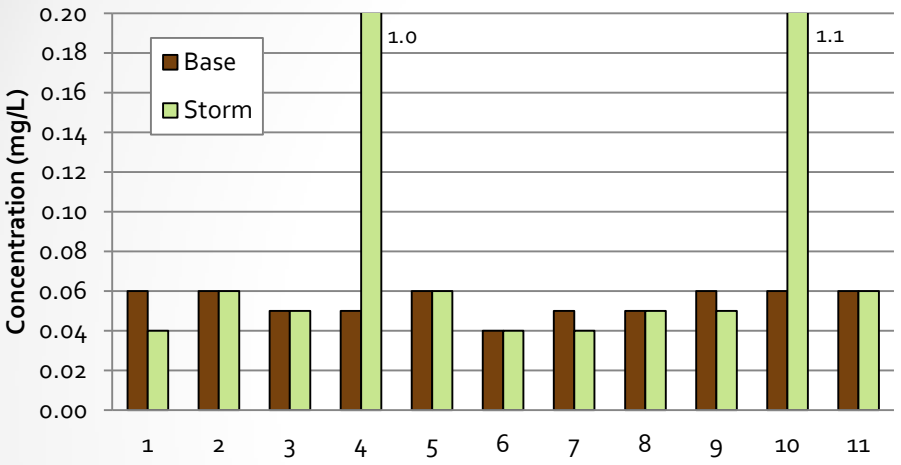




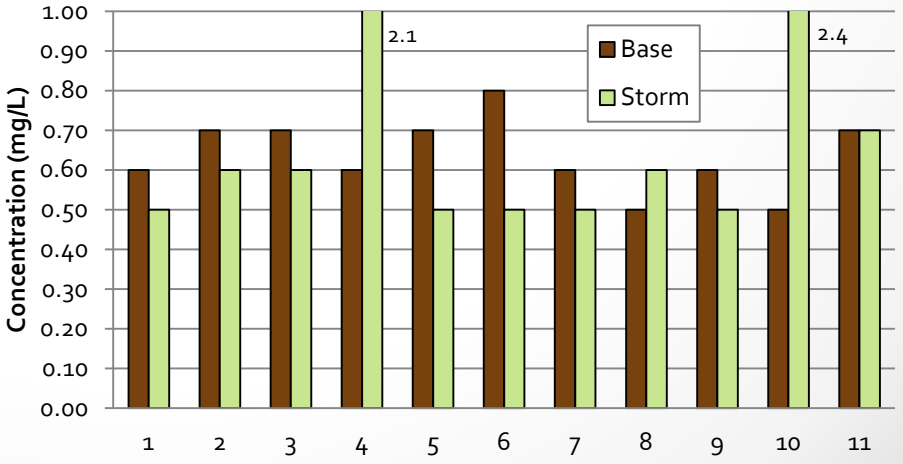


Nitrogen

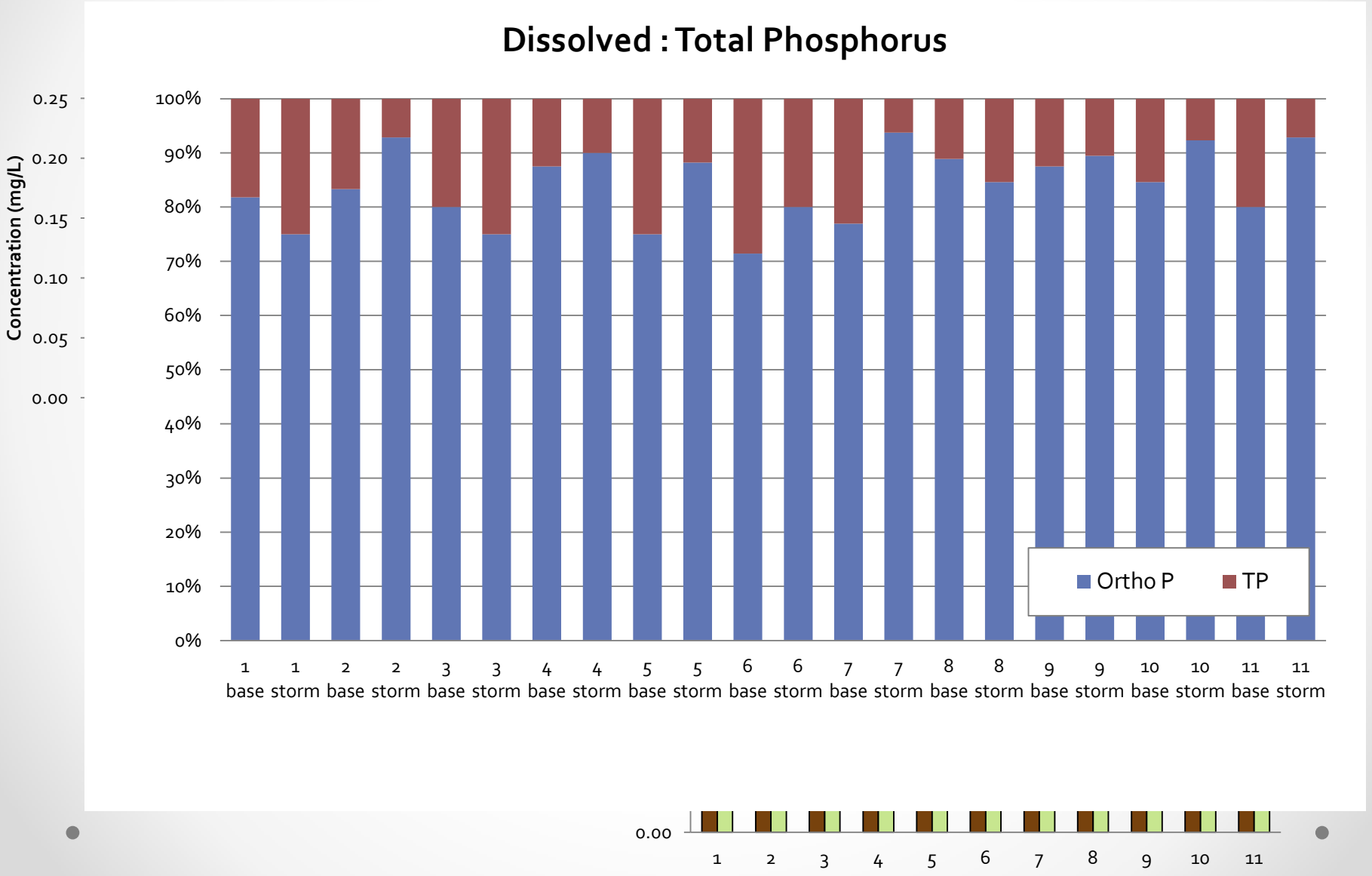
Ammonia-Nitrogen Concentration



Total Kjeldahl Nitrogen Concentration



Phosphorus


Dissolved : Total Phosphorus
Concentration (mg/L)
0.25
0.20
0.15
0.10
0.05
0.00
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1 base
1 storm
2 base
2 storm
3 base
3 storm
4 base
4 storm
5 base
5 storm
6 base
6 storm
7 base
7 storm
8 base
8 storm
9 base
9 storm
10 base
10 storm
11 base
11 storm
Ortho P
TP
0.00
1
2
3
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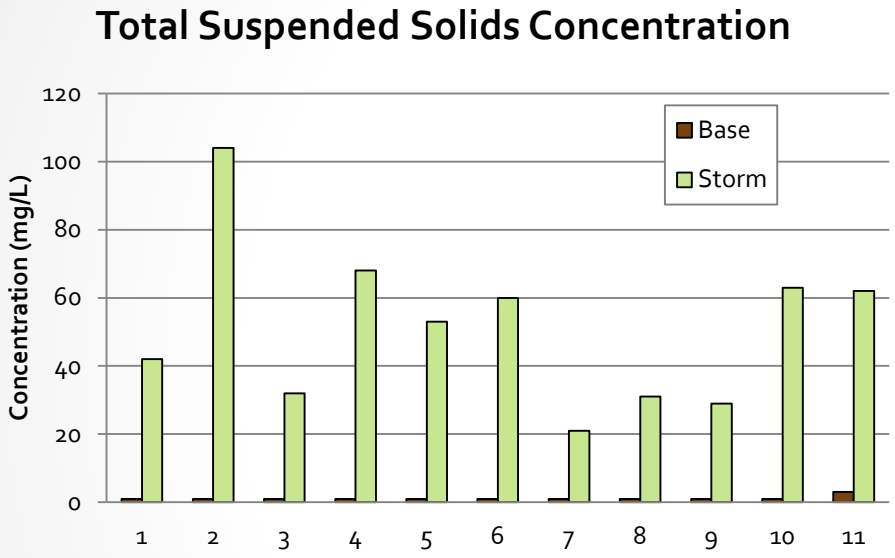
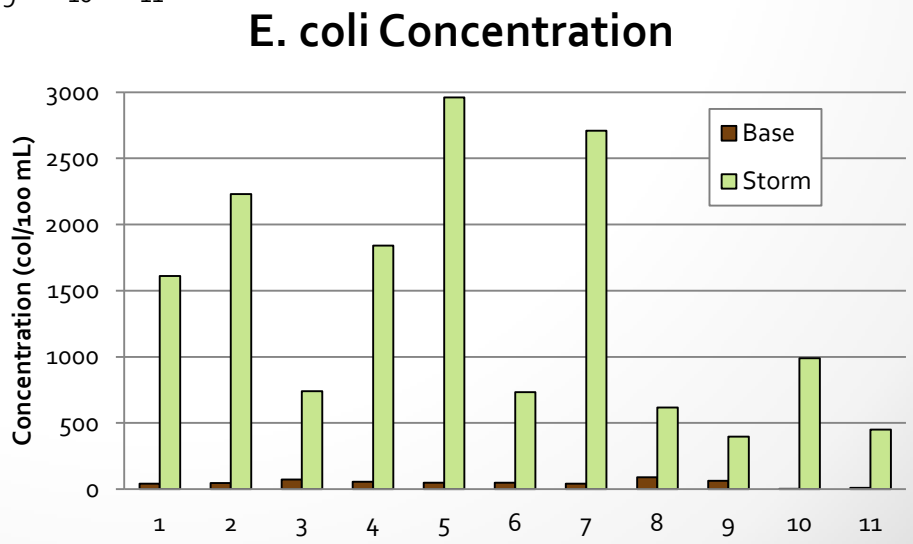
11

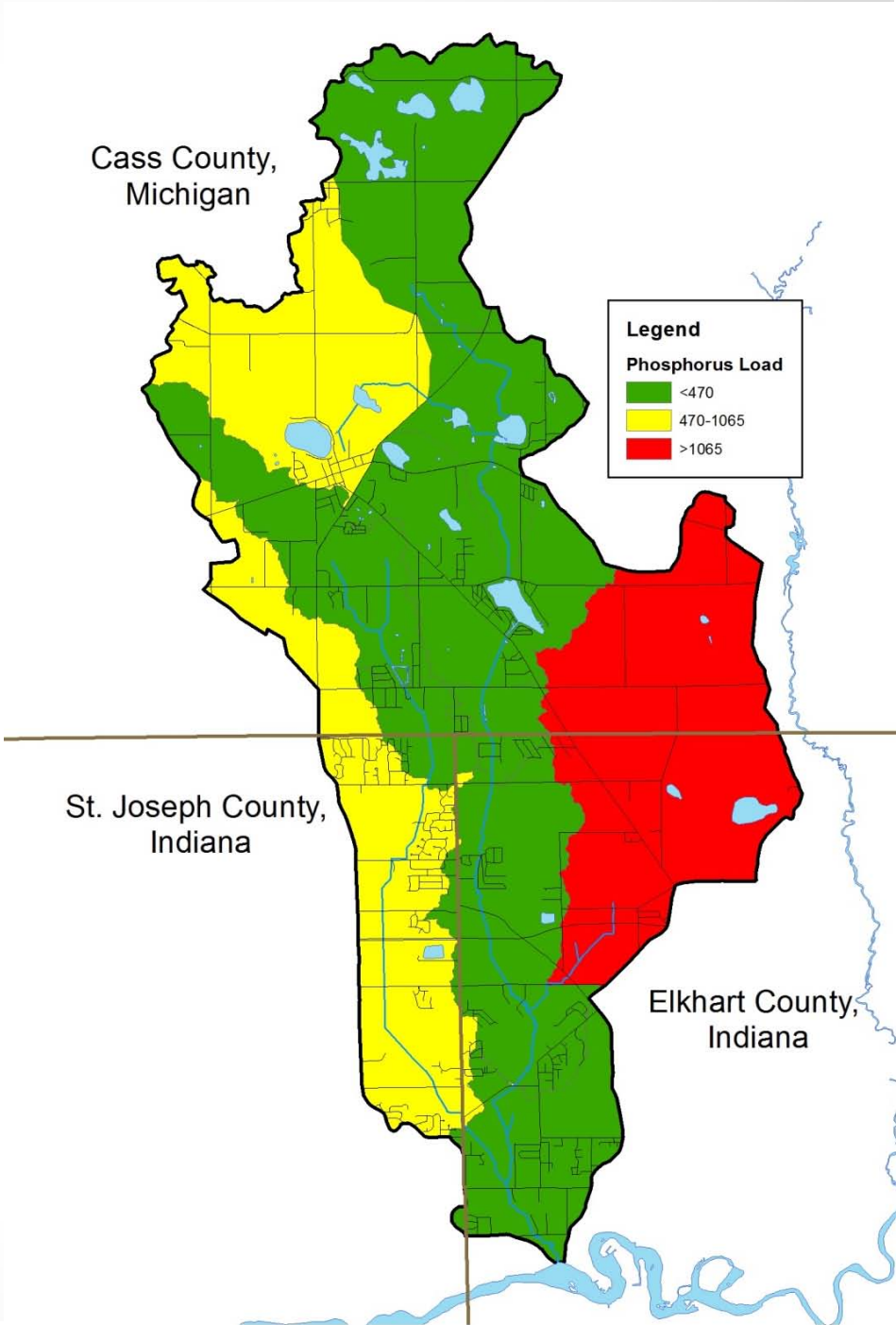
Sediment & Pathogens



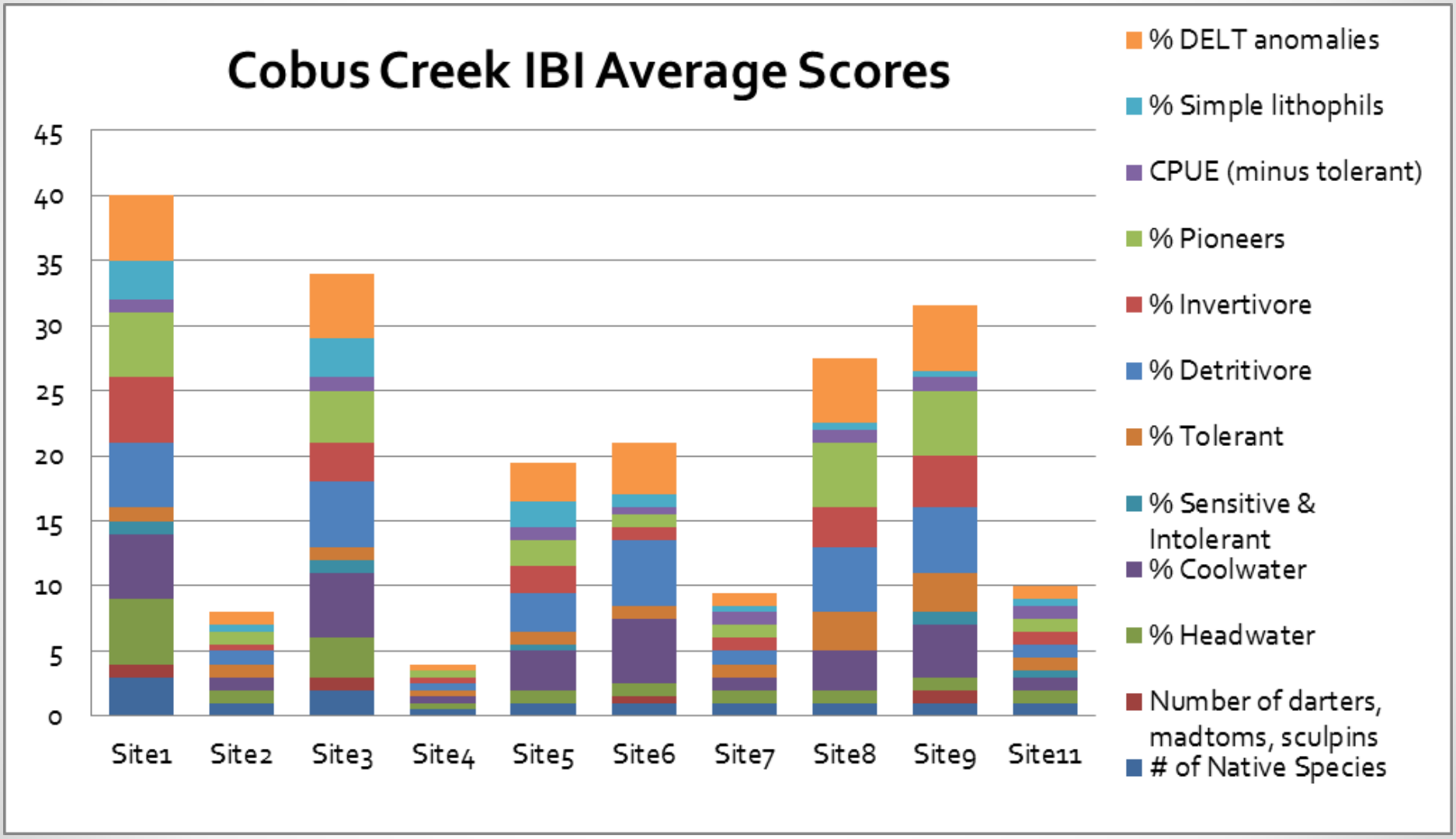


Water Quality

- Ammonia and particulate nitrogen elevated at Sites 4 & 10
- Elevated phosphorus concentrations at all sites
  - Most phosphorus is in the dissolved, available form
- Elevated sediment and pathogen concentrations during storm conditions



Fish


Cobus Creek IBI Average Scores
45
40
35
30
25
20
15
10
5
0
Site1
Site2
Site3
Site4
Site5
Site6
Site7
Site8
Site9
Site11
% DELT anomalies
% Simple lithophils
CPUE (minus tolerant)
% Pioneers
% Invertivore
% Detritivore
% Tolerant
% Sensitive & Intolerant
% Coolwater
% Headwater
Number of darters, madtoms, sculpins
# of Native Species

Interesting Finds

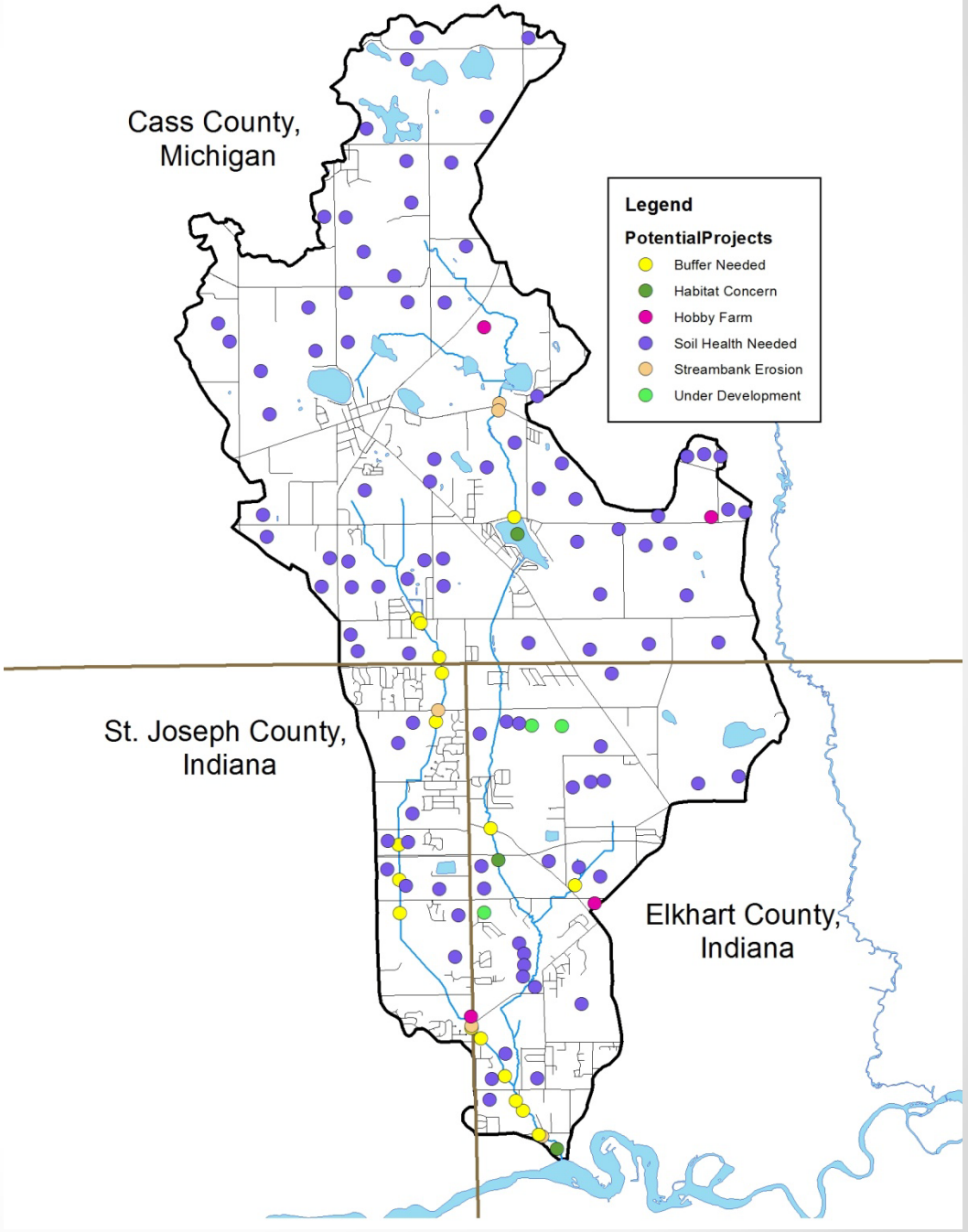
- 25 species of fish collected, including several species that are considered pollution intolerant
- 1 rare species for this area "Iowa Darter"
- The presence of large and beautiful brown trout
- Natural reproduction of trout in the Creek

Community & Habitat Limitations

- Cool-water stream
- Channelization
- Limited pools and riffles
- Limited instream habitat
- Fish migration barriers

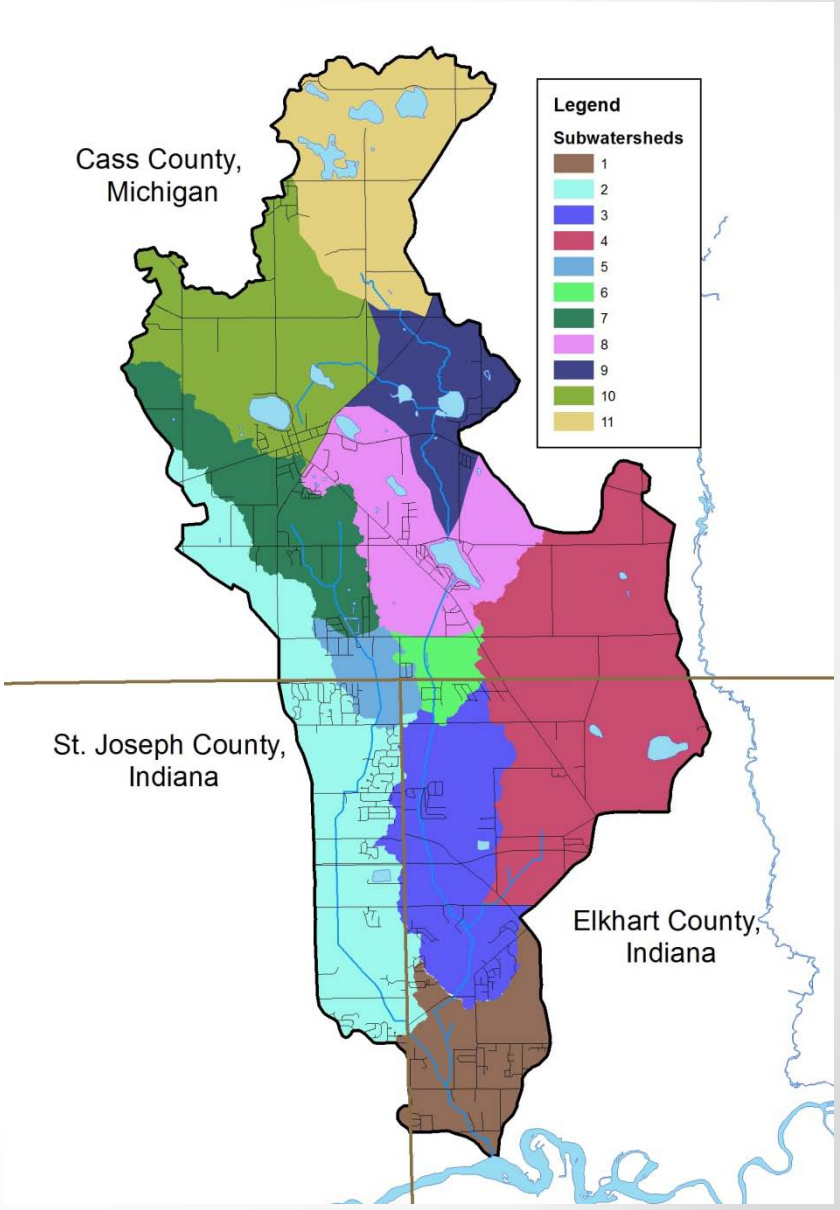
Potential Projects

- Implement a soil health program
- Promote urban BMPs
- Encourage agricultural BMP adoption
- Address streambank erosion and instream habitat concerns



Cobus Creek Summary

- Phosphorus concentrations are elevated
  - Implement BMPs which reduce P concentrations
- Sediment and pathogen concentration are elevated during storm flow conditions
  - Implement BMPs targeting stormwater retention and sediment cover
- Habitat improvement in needed to improve fish and macroinvertebrate communities



Questions?

Sara Peel

Arion Consultants

speel@arionconsultants.com

765-337-9100

Community Input

- Help us prioritize recommendations for the Cobus Creek Watershed
- Are there recommendations that are missing? If so, add them to the sheets on your table.
- Use your dots to vote for YOUR priority action items