

Developing A Watershed Approach to Mitigation

ELI Stream Compensatory Mitigation Webinar Series

14 December 2018

Nick Miller, Director of Science & Strategy, The Nature Conservancy in Wisconsin



Watershed Approach Handbook

Improving Outcomes and Increasing Benefits
Associated with Wetland and Stream Restoration and
Protection Projects

September 2014



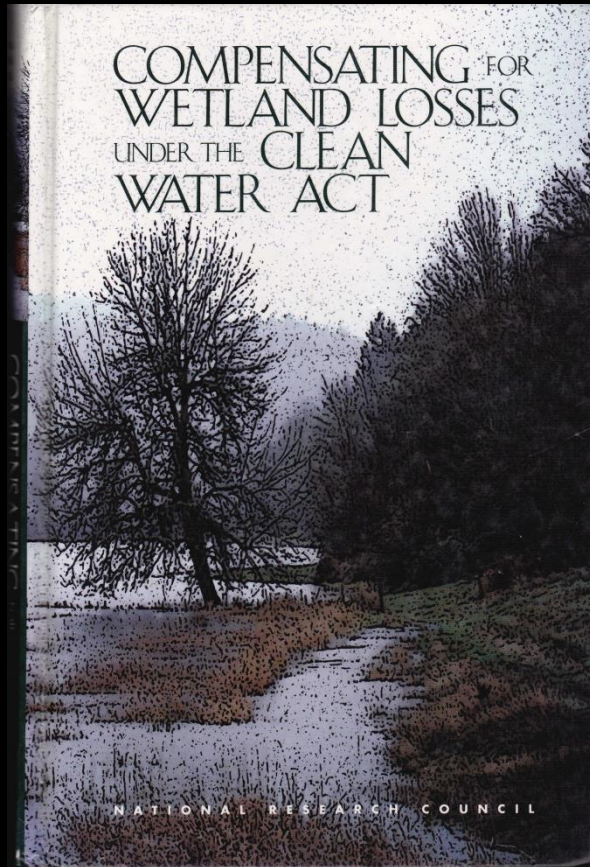
The Nature
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Protecting nature. Preserving life.™



Wetlands by Design

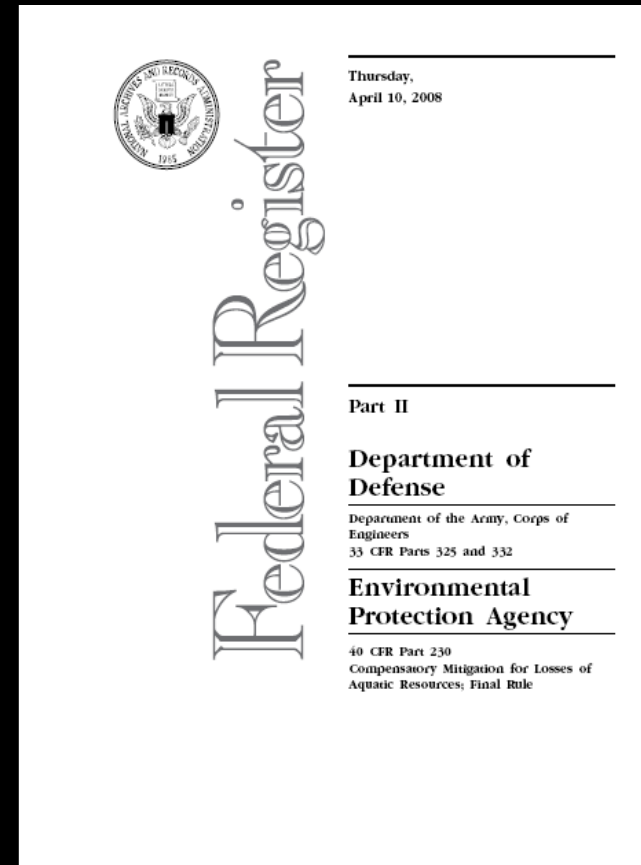
A Watershed Approach for Wisconsin

Compensatory Mitigation



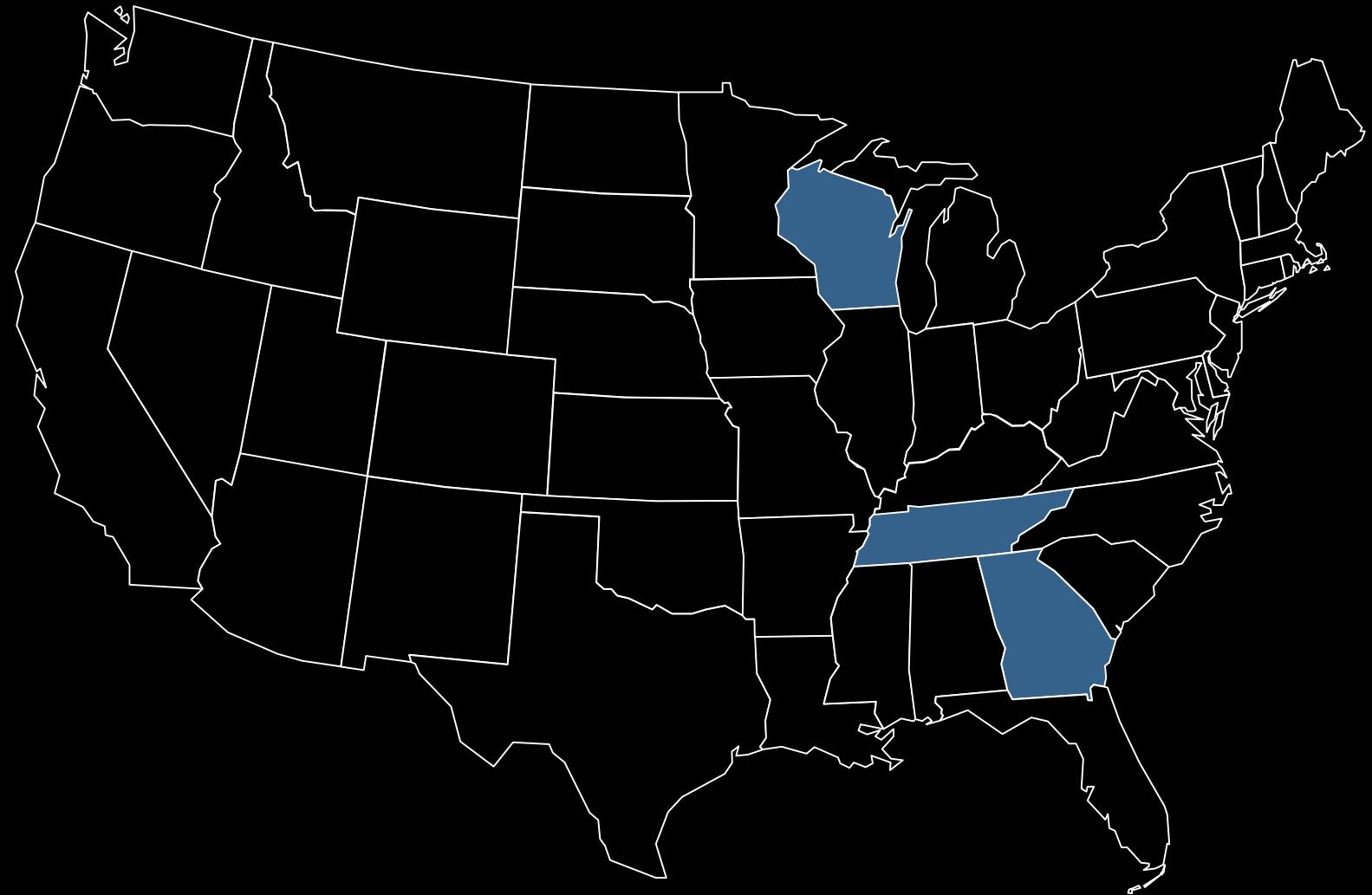
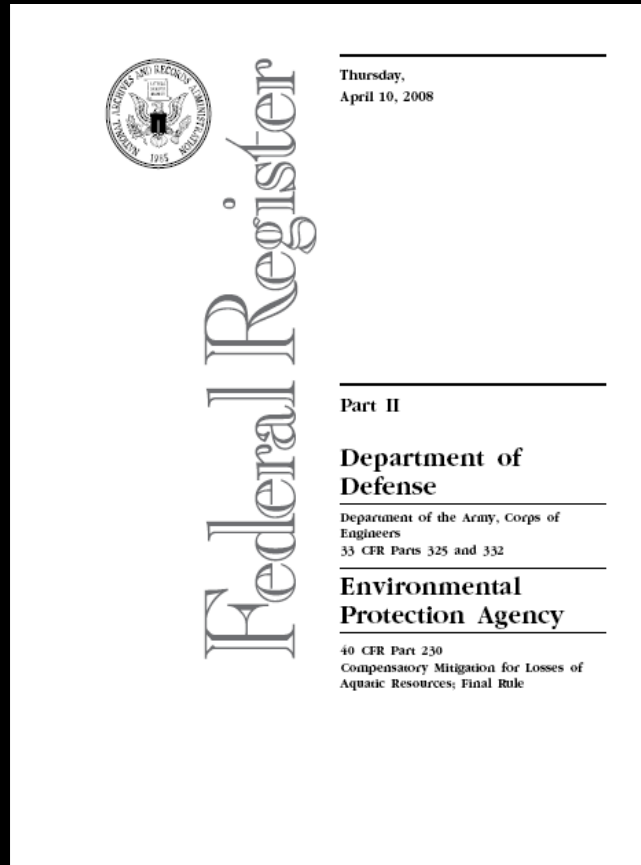
**2001: National
Research Council**

**Avoid
Minimize
Compensate
\$2.9B**



**2008: Compensatory
Mitigation Rule**

ELI/TNC Pilot Watershed Approach Projects



**2008: Compensatory
Mitigation Rule**

Watershed Approach Handbook



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ENVIRONMENTAL
LAW-INSTITUTE



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Watershed Approach Handbook

Spectrum

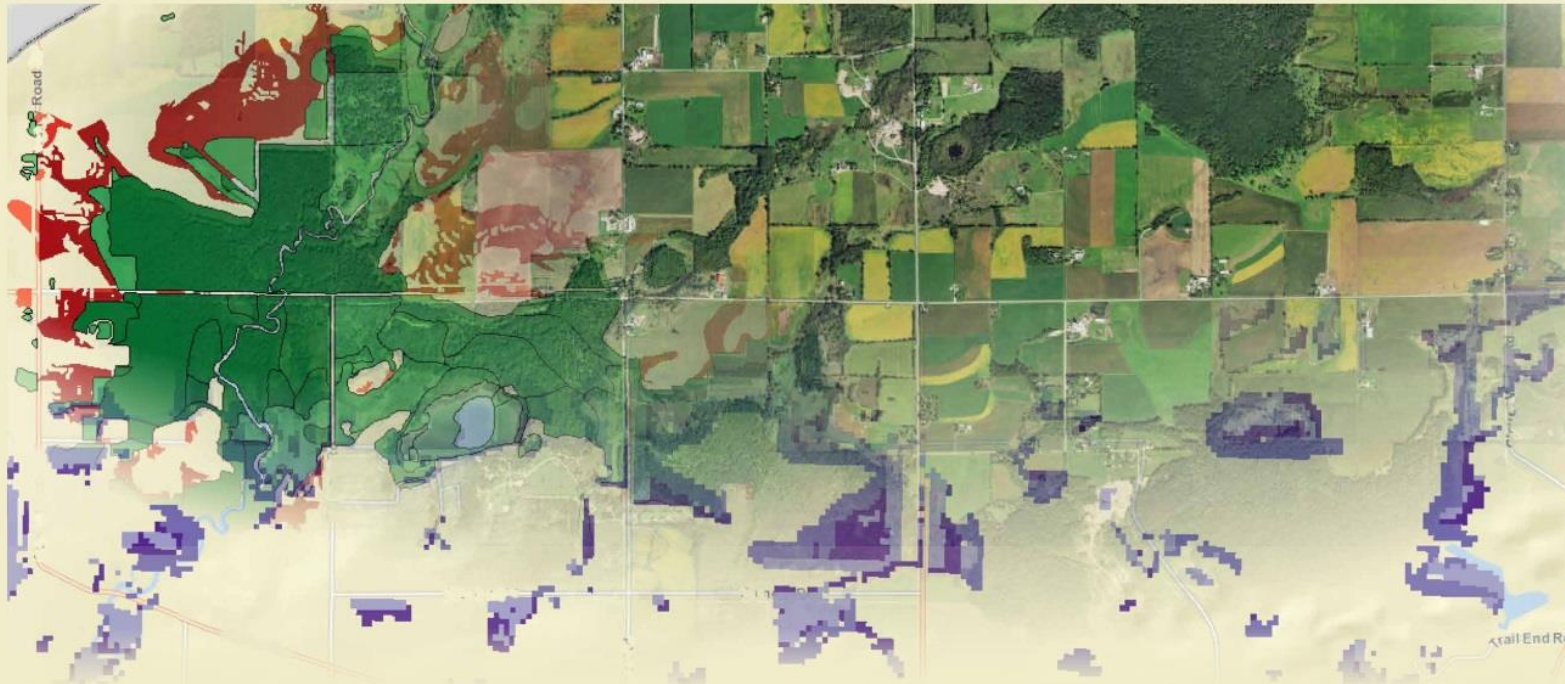
Site Decision Framework

Watershed Analysis

Watershed Plan

Elements

ID/assess watershed needs	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ID watershed outcomes	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ID sites across watershed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Assess how sites meet needs	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Prioritize sites & outcomes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

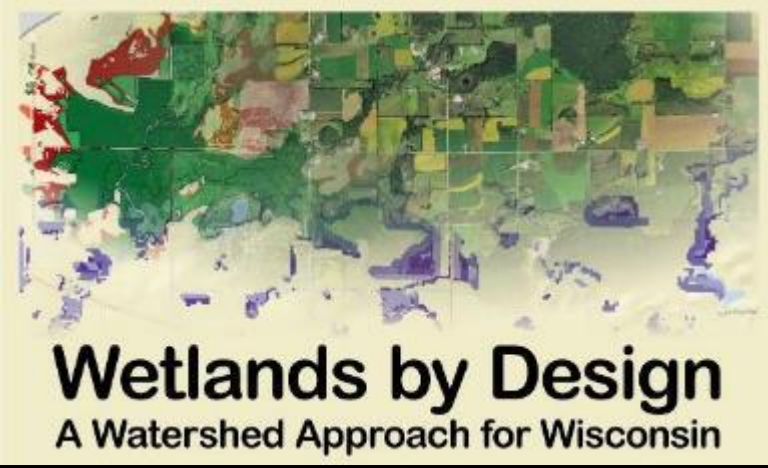


Wetlands by Design

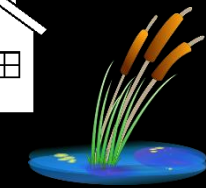
A Watershed Approach for Wisconsin



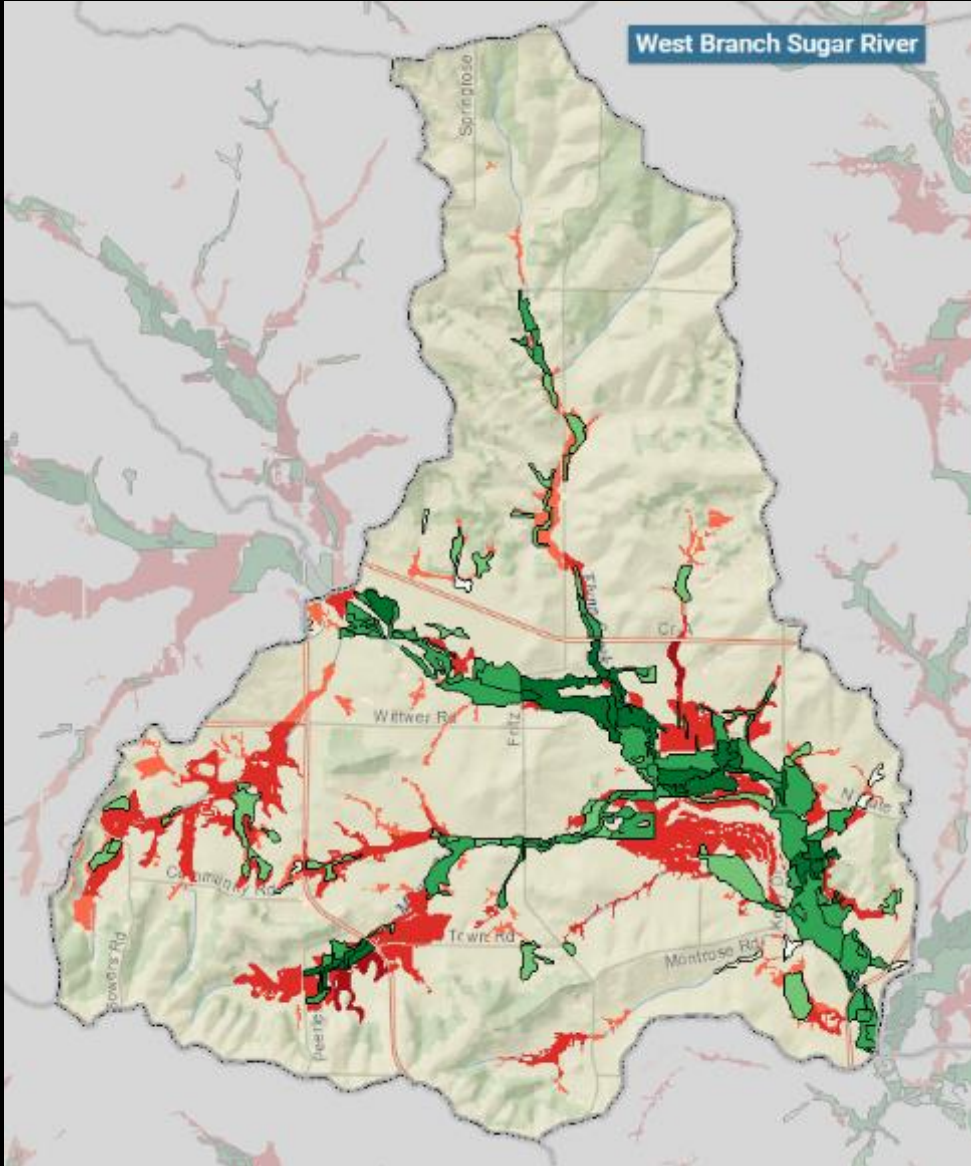
Nick Miller¹, Joanne Kline², Tom Bernthal³, John Wagner¹, Chris Smith³, Max Axler³, Matt Matrise³, Michele Kille¹, Matt Silveira¹, Patricia Moran¹, Sally Gallagher Jarosz³, Josh Brown³ | ¹The Nature Conservancy
²Conservation Strategies Group
³WI Department of Natural Resources



Why a Watershed Approach?



Sites & Opportunities



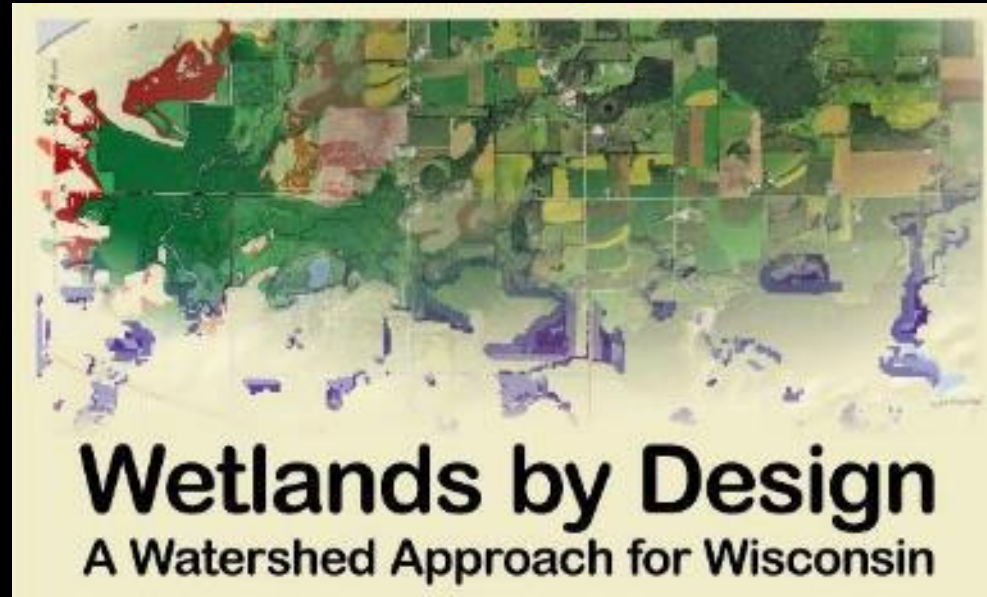
Preservation Opportunities

- *DNR Wisconsin Wetland Inventory*

Restoration Opportunities

- *DNR Potentially Restorable Wetlands v3*



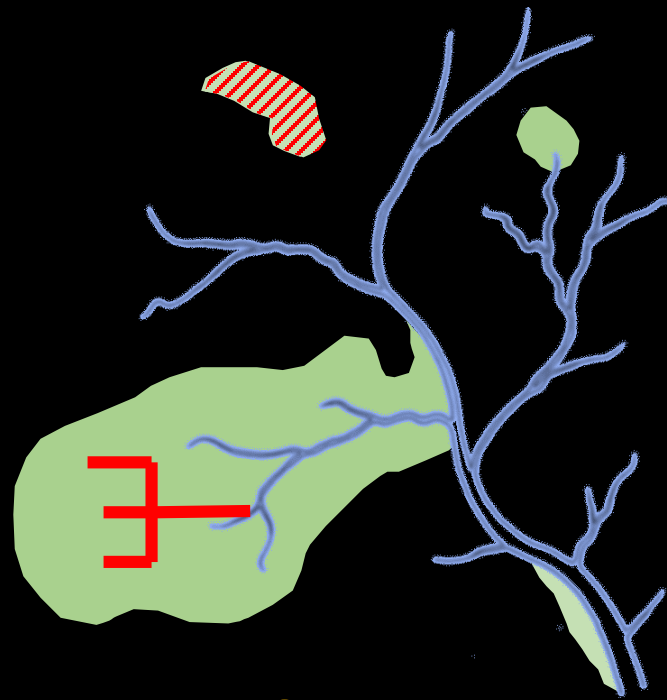


- A. Determine Watershed Needs
- B. Prioritize Sites
- C. Consider Wetland Wildlife Habitat

A. Watershed Needs



**Historical
Service Provision**



**Current
Service Provision**



Watershed Service

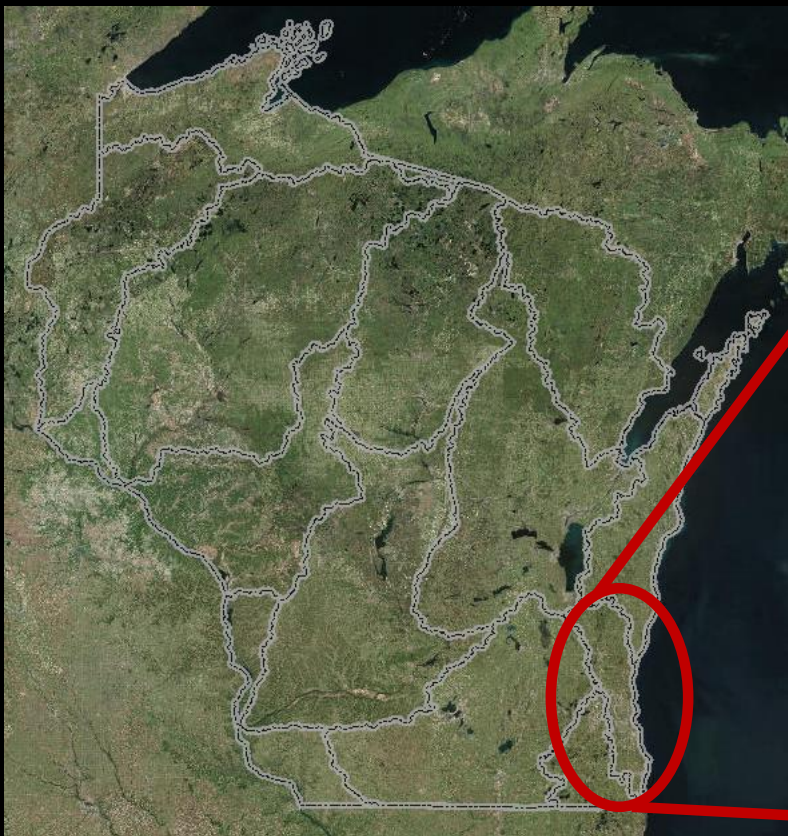
Loss

Need

Opportunity

- Flood Abatement
- Fish & Aquatic Habitat
- Sediment Retention
- Nutrient Transformation
- Surface Water Supply

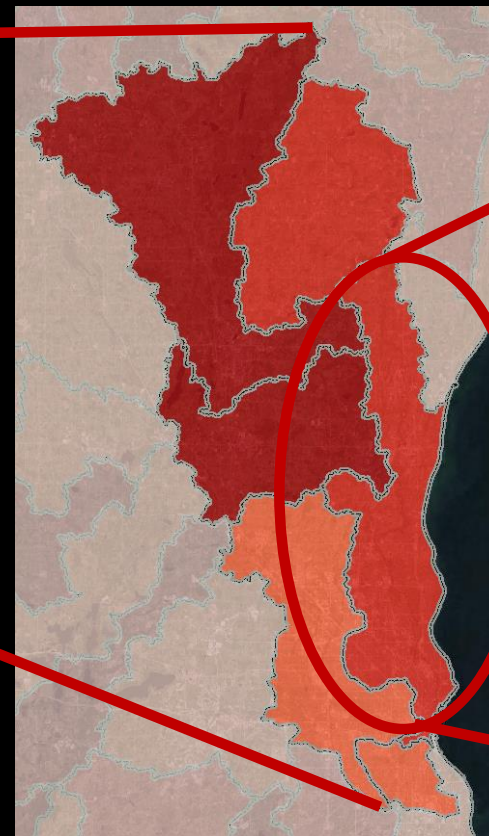
A. Watershed Needs (Results)



SW Lake Michigan



**Milwaukee
River**



**Lower
Milwaukee
River**



**Pigeon
Creek**

B. Prioritize Sites

Example: Flood abatement



Water Quality

- Nitrogen Reduction
- Phosphorus reduction
- Sediment Reduction

Shoreline protection

Fish & aquatic habitat

Surface water supply

Carbon storage

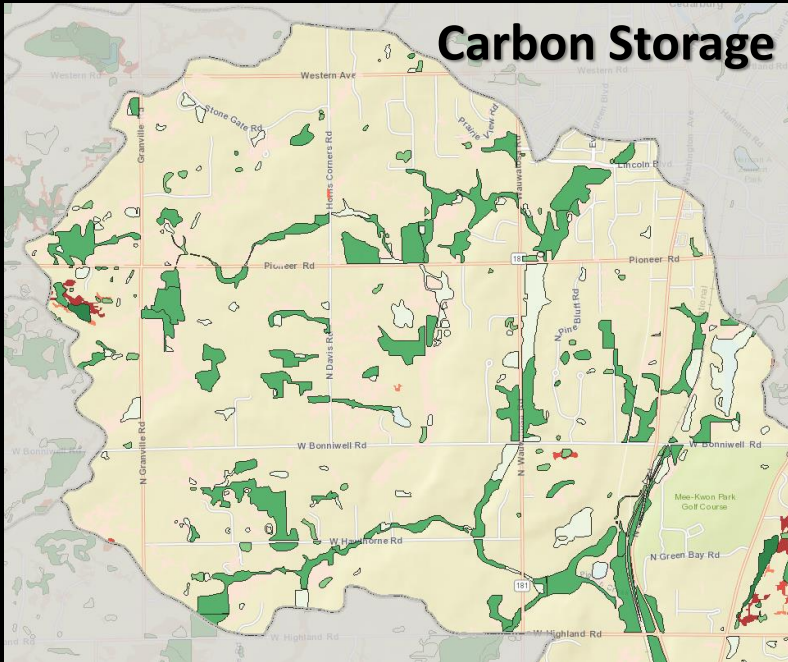
Floristic Integrity

Opportunity

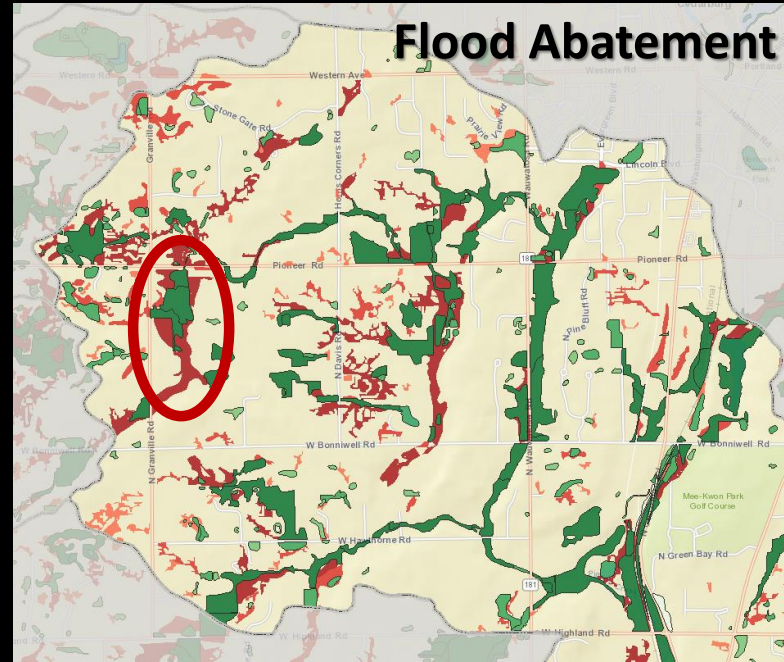
Effectiveness

Social significance

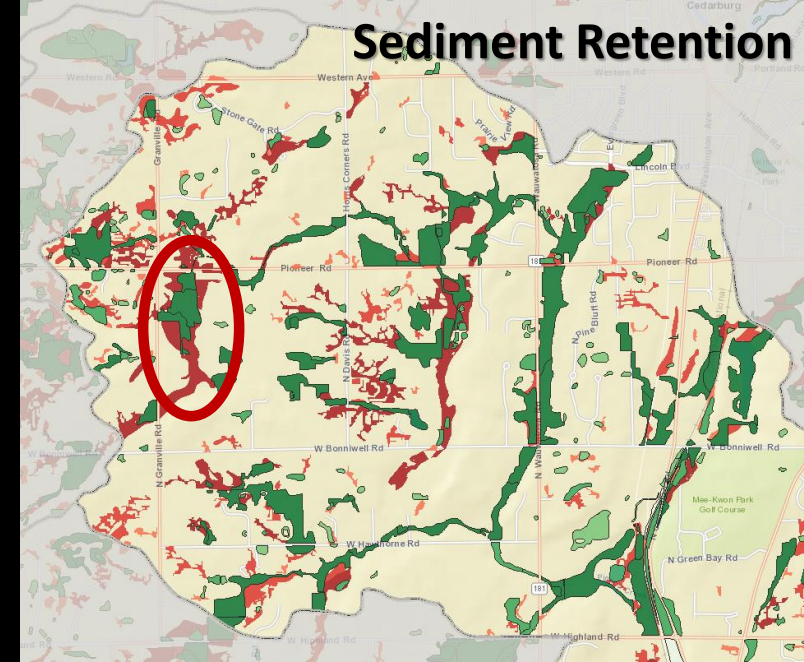
Carbon Storage



Flood Abatement

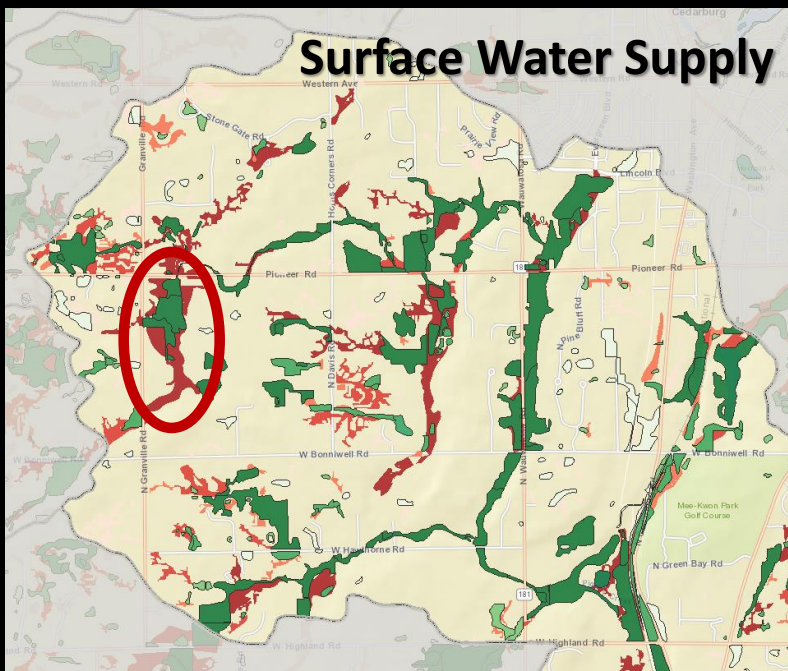


Sediment Retention



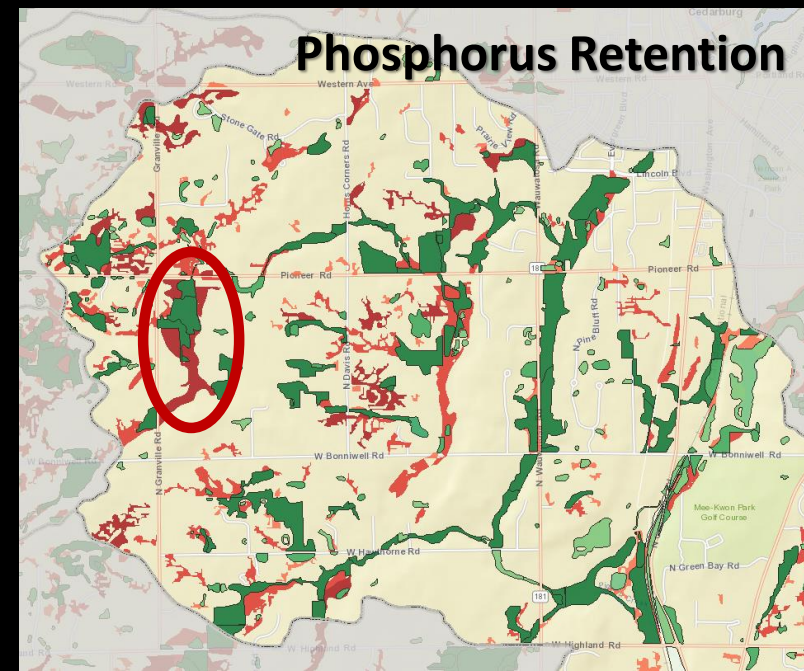
B. Prioritize Sites (Results)

Surface Water Supply



**Pigeon Creek
(Milwaukee River)**

Phosphorus Retention



C. Wetland Wildlife Habitat

Forest Interior Guild



Shallow Marsh Guild



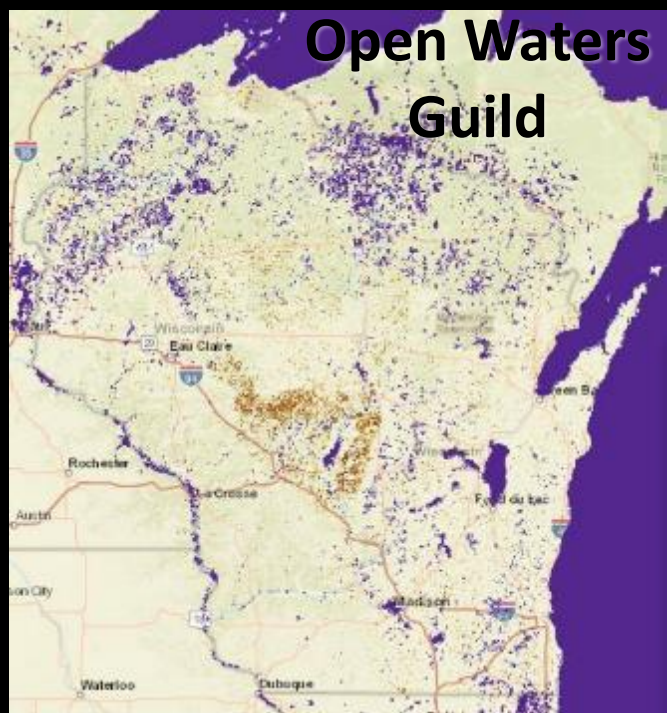
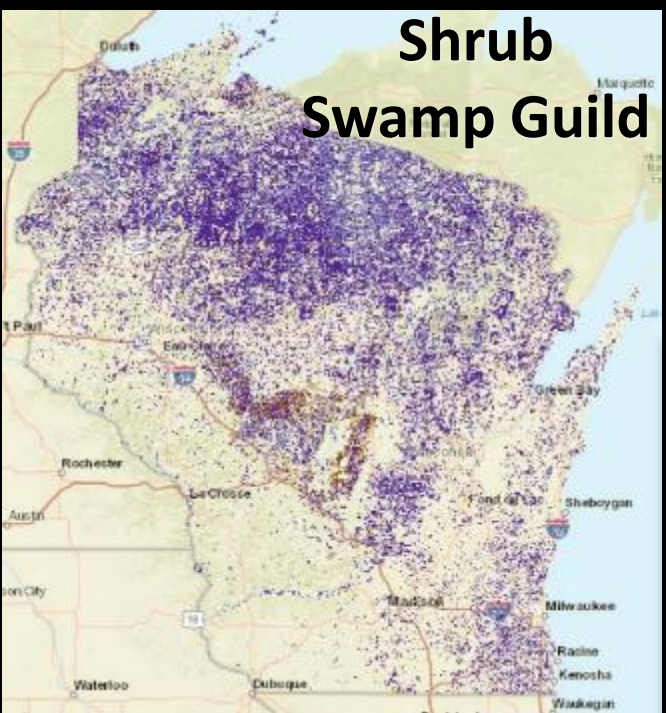
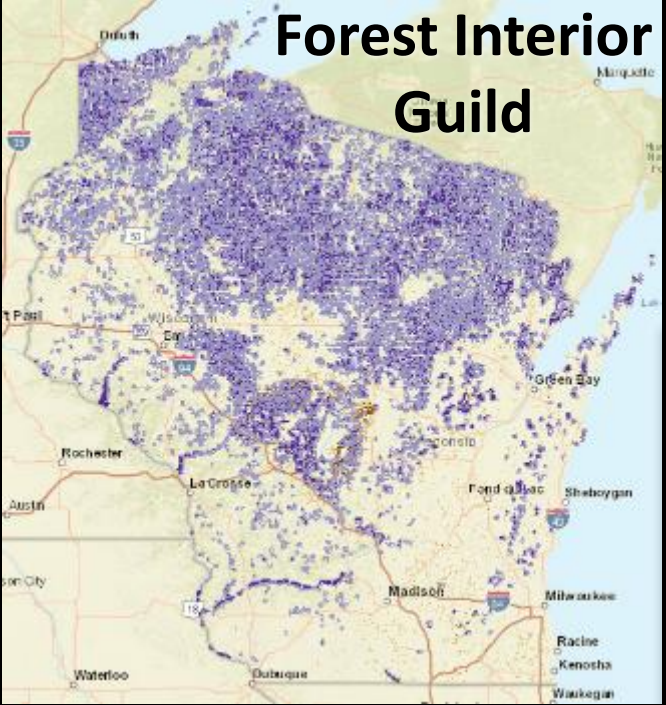
Open Waters Guild



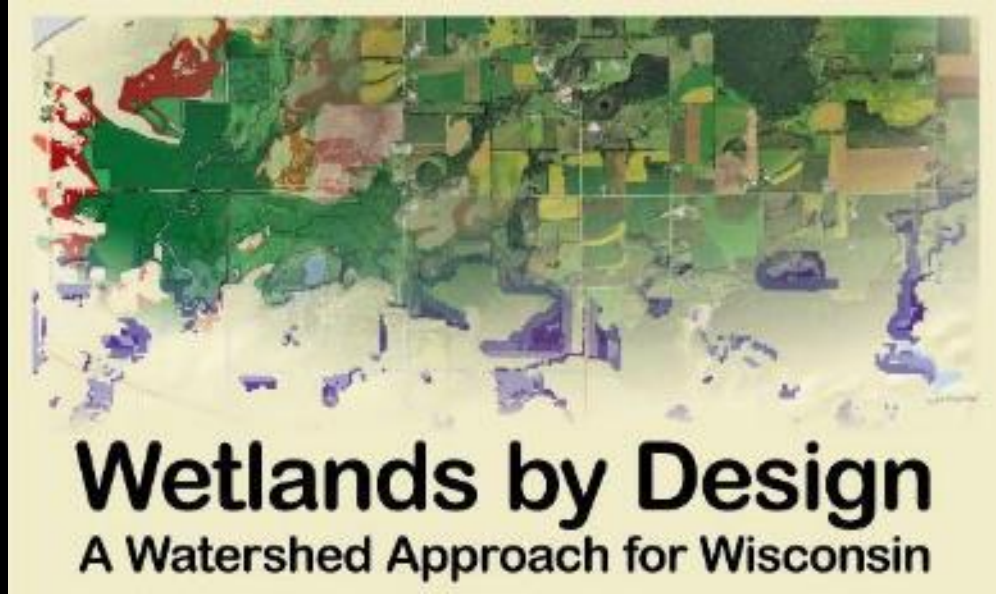
Shrub Swamp Guild



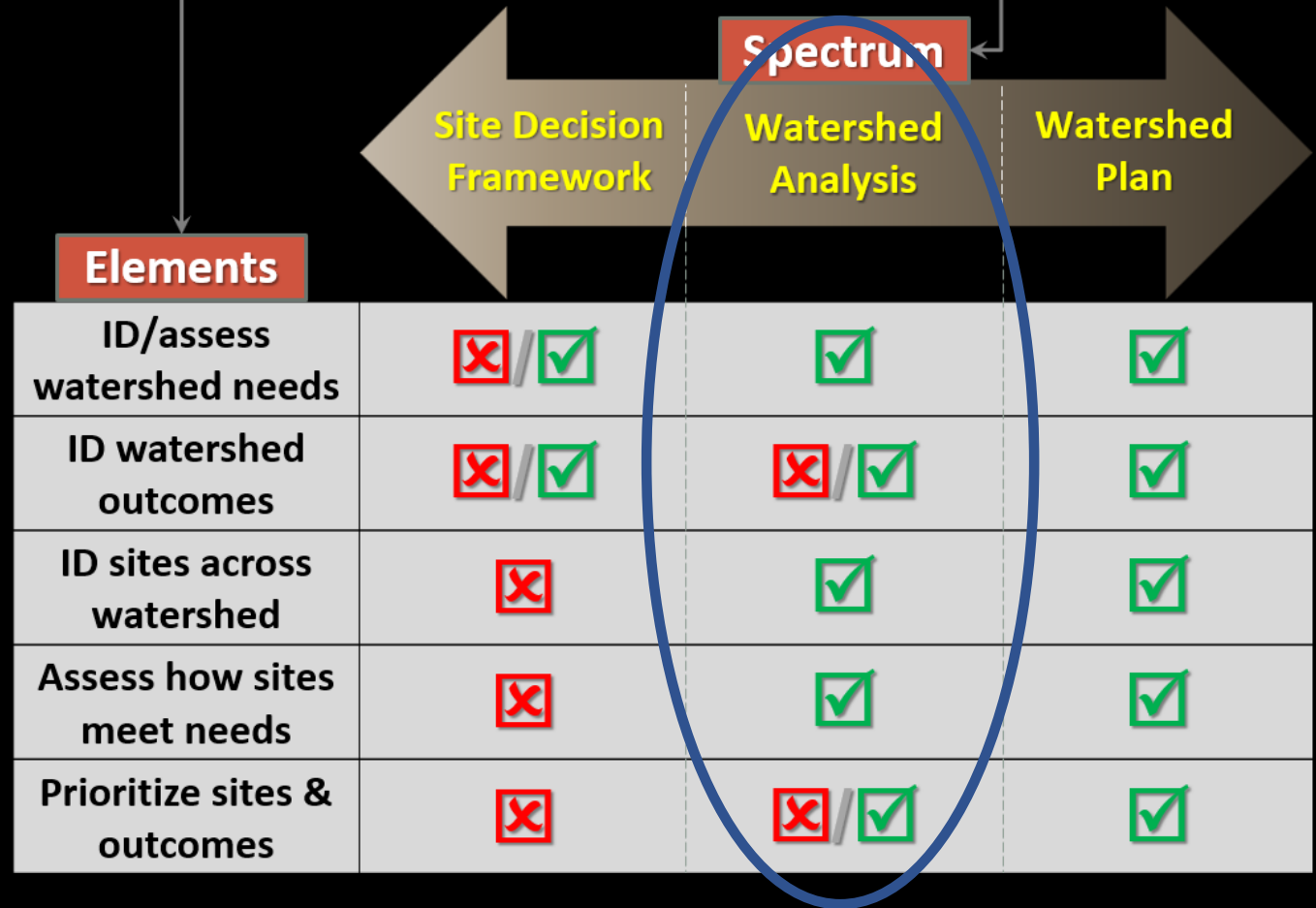
C. Wetland Wildlife Habitat (Results)

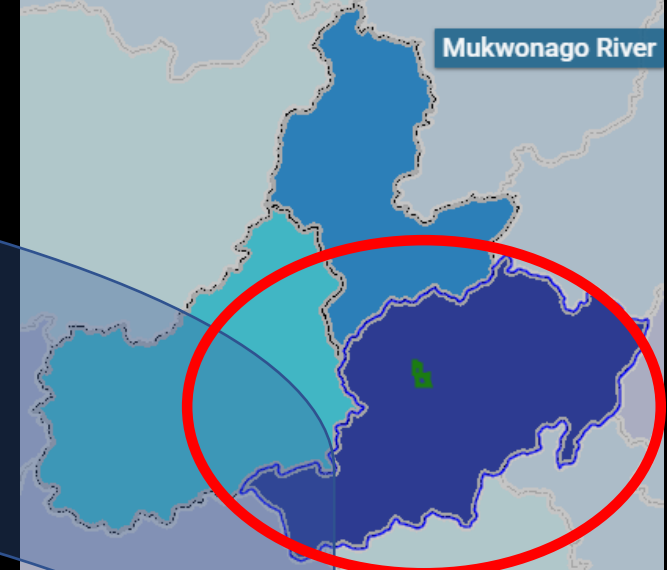
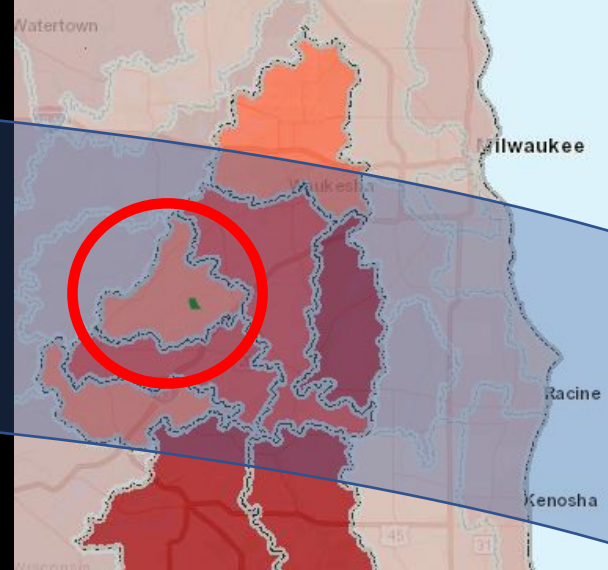
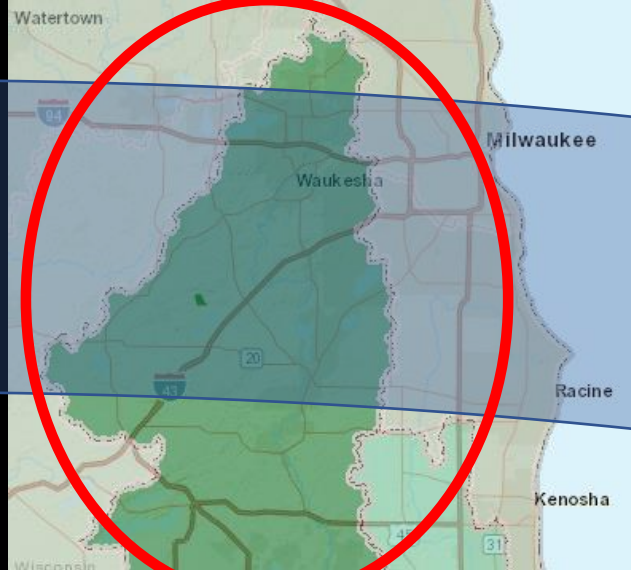


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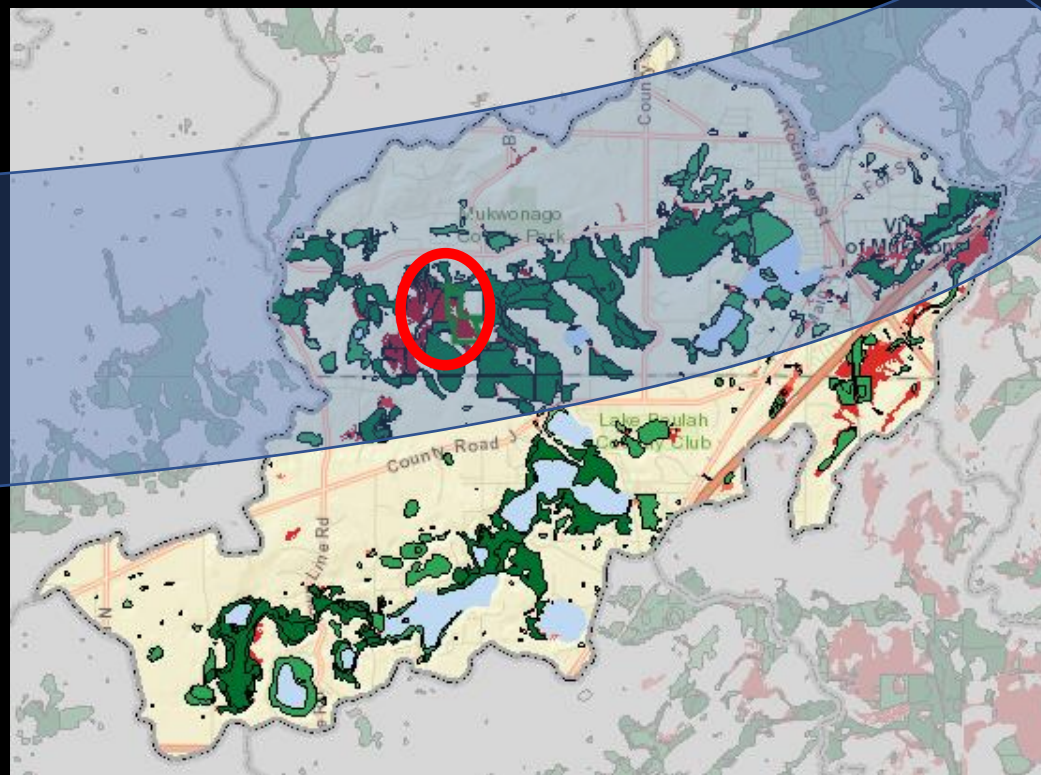


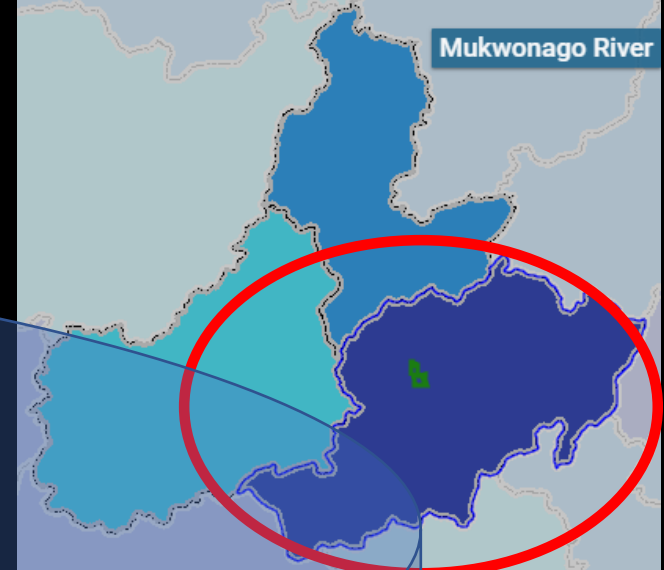
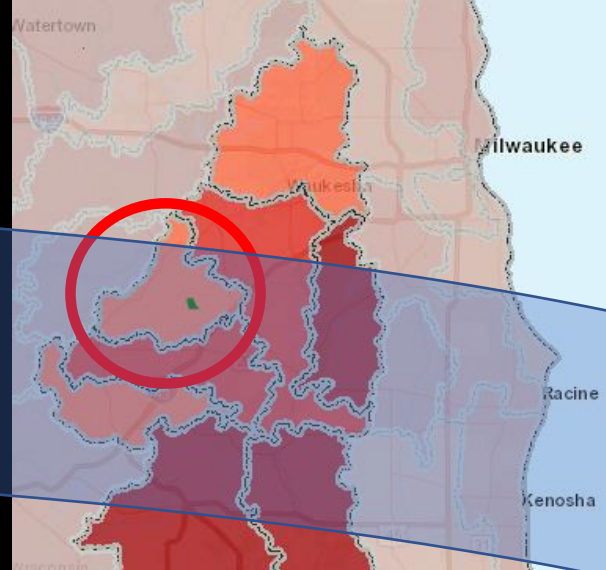
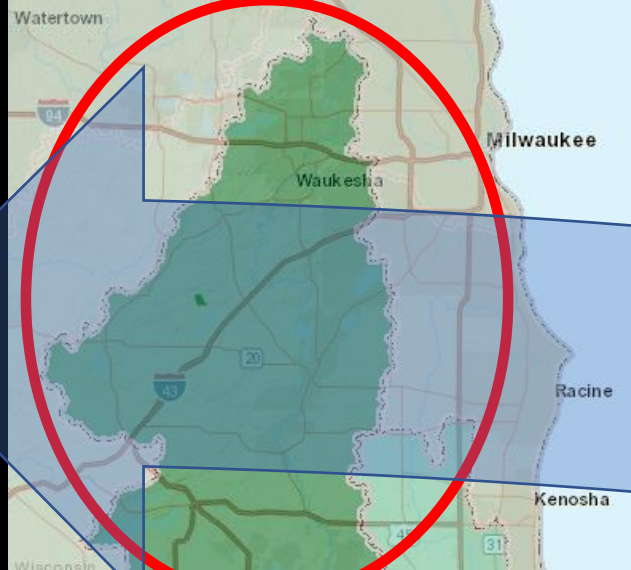
- A. Determine Watershed Needs
- B. Prioritize Sites
- C. Consider Wetland Wildlife Habitat



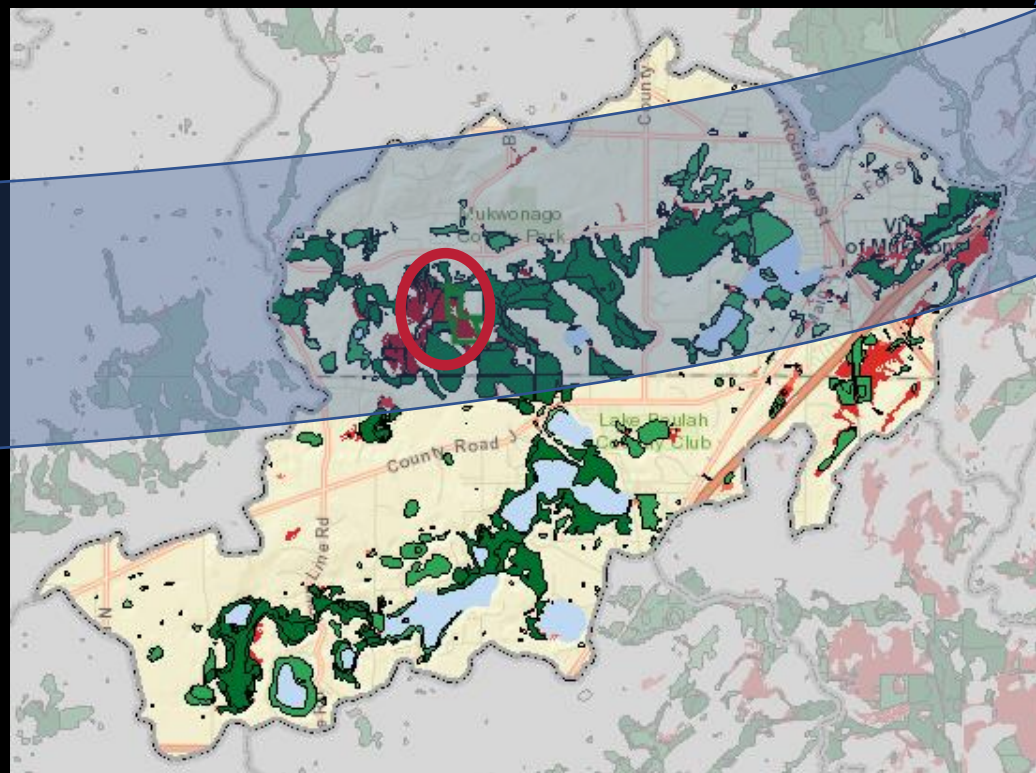


Watershed-to-Site





Site-to-Watershed



Mukwonago ILF Site



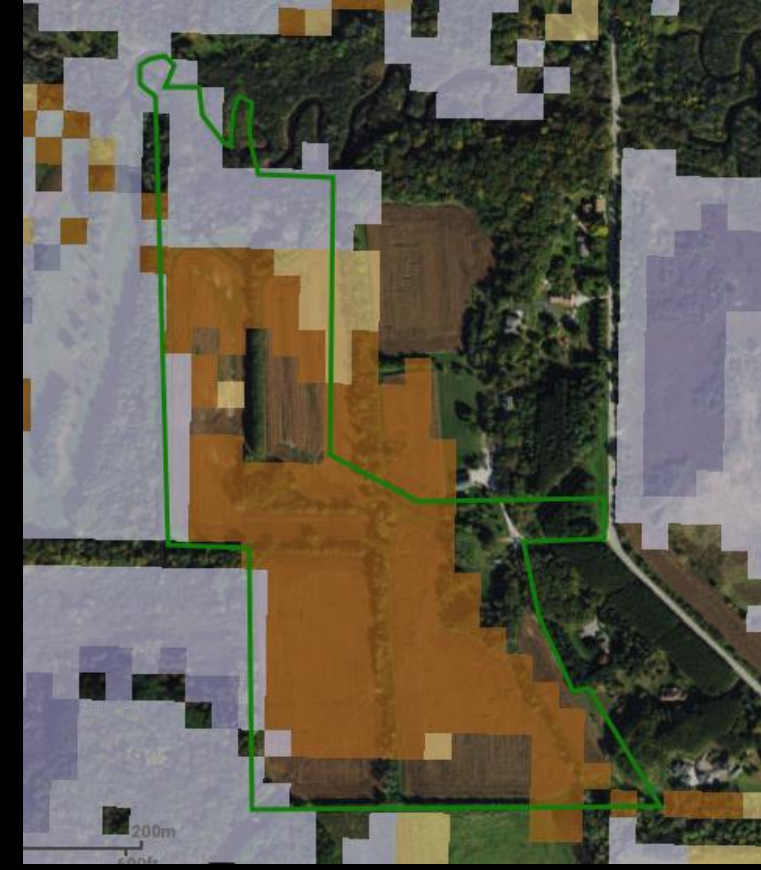
Top-tier site for...

- Flood Abatement
- Fish & Aquatic Habitat
- Water Quality (N reduction)
- Surface Water Supply
- Total # of Services



Project underway

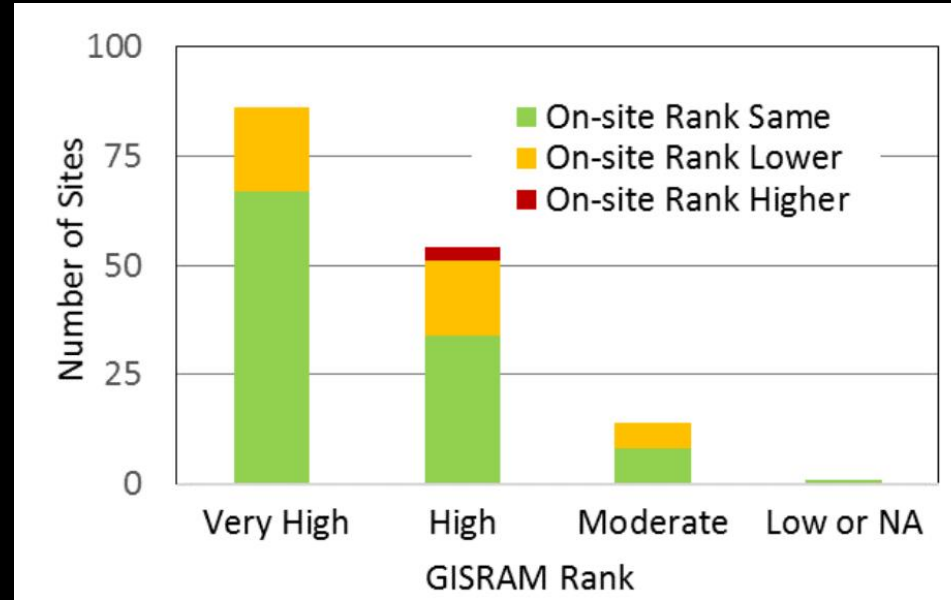
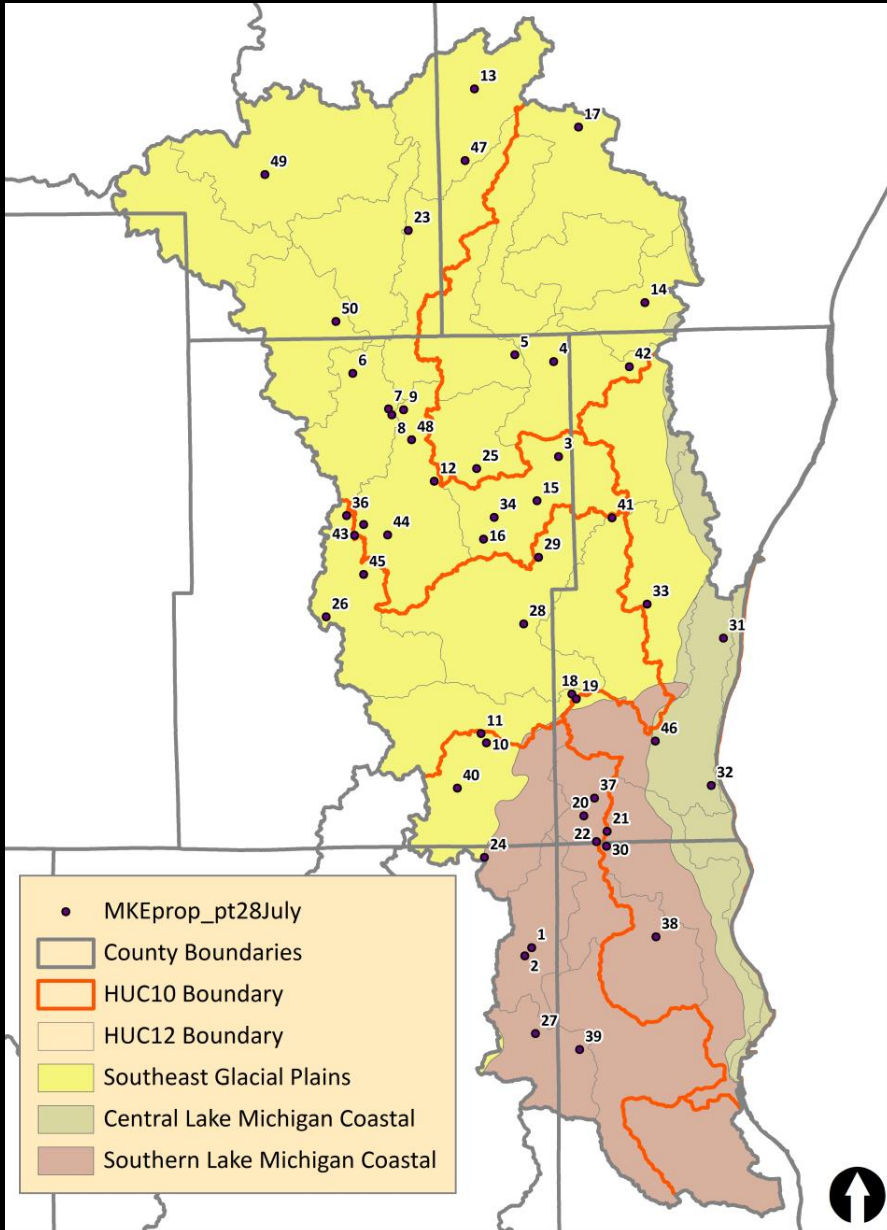
- ~50 ac generating credits
- ~\$880K



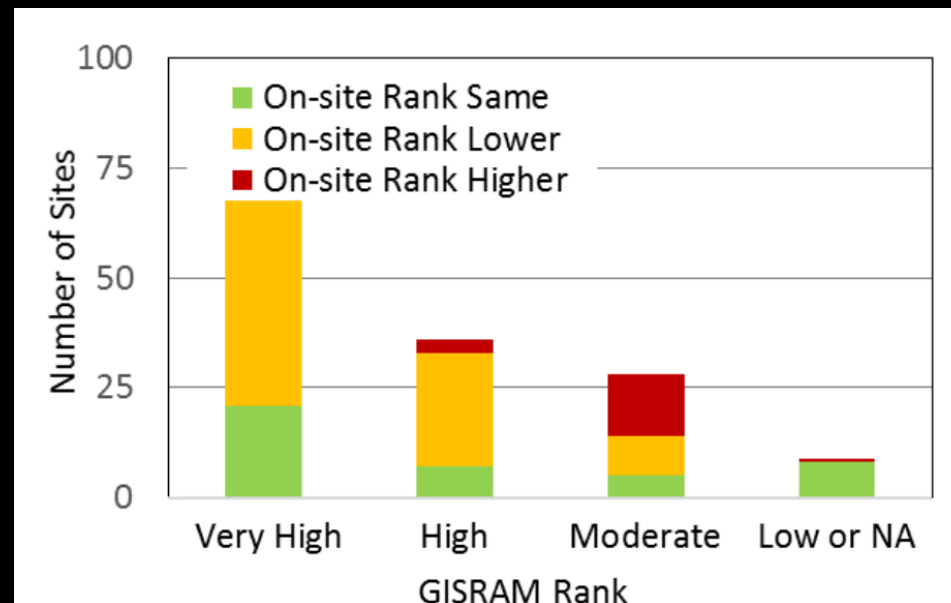
Habitat opportunities for...

- Forest interior species
- Shallow marsh species
- Shrub swamp species

Validation: Comparing GIS & Field Assessments



**Flood
Abatement**



**Floristic
Quality**

Who is this for?

Land Trusts
Local governments
Wetland Consultants
Planners (Counties, RPC's)
Nutrient Management Specialists
Mitigation regulators & project sponsors
Wildlife & Natural Resource Managers
Universities & Extensions
Watershed Planners
Private Businesses
Lake Associations

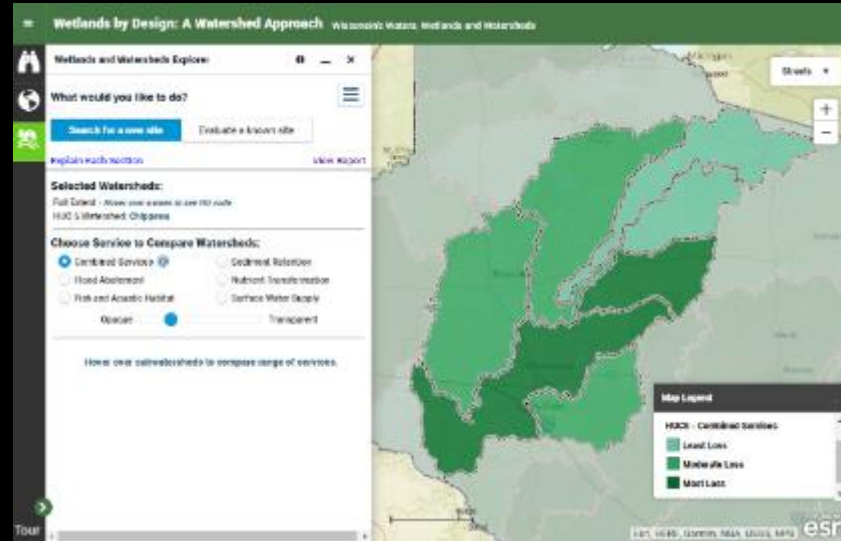
Potential Applications

Watershed plans
Grant proposals
Conservation planning
Outreach & education
Site selection, assessment, and design
Local & regional Comprehensive Plans
Nutrient trading & Adaptive Management
Siting natural infrastructure (e.g., for flood control)
Lake management plans (incl. shoreline protection)
Nutrient management planning
Wetland service valuation
Habitat improvement
Prioritizing projects
Research

www.WetlandsByDesign.org



Report



Wetlands & Watersheds Explorer



Webinar training

Stream vs. Wetland Watershed Approach

- **Similarities:**
 - Watershed-scale perspectives necessary for project success
 - Planning & program require careful integration (Instrument/CPFs, site selection, proposal review)
 - Regulatory context: Relevant for compensation *and* avoidance
 - Non-reg context: Opportunities to aggregate multiple interests/funds toward site- & watershed-scale outcomes
 - Similar/same DSS environment
- **Differences:**
 - Which functions/services, and how assessed
 - Stream Watershed Approach more conducive to prescribed outcomes?

