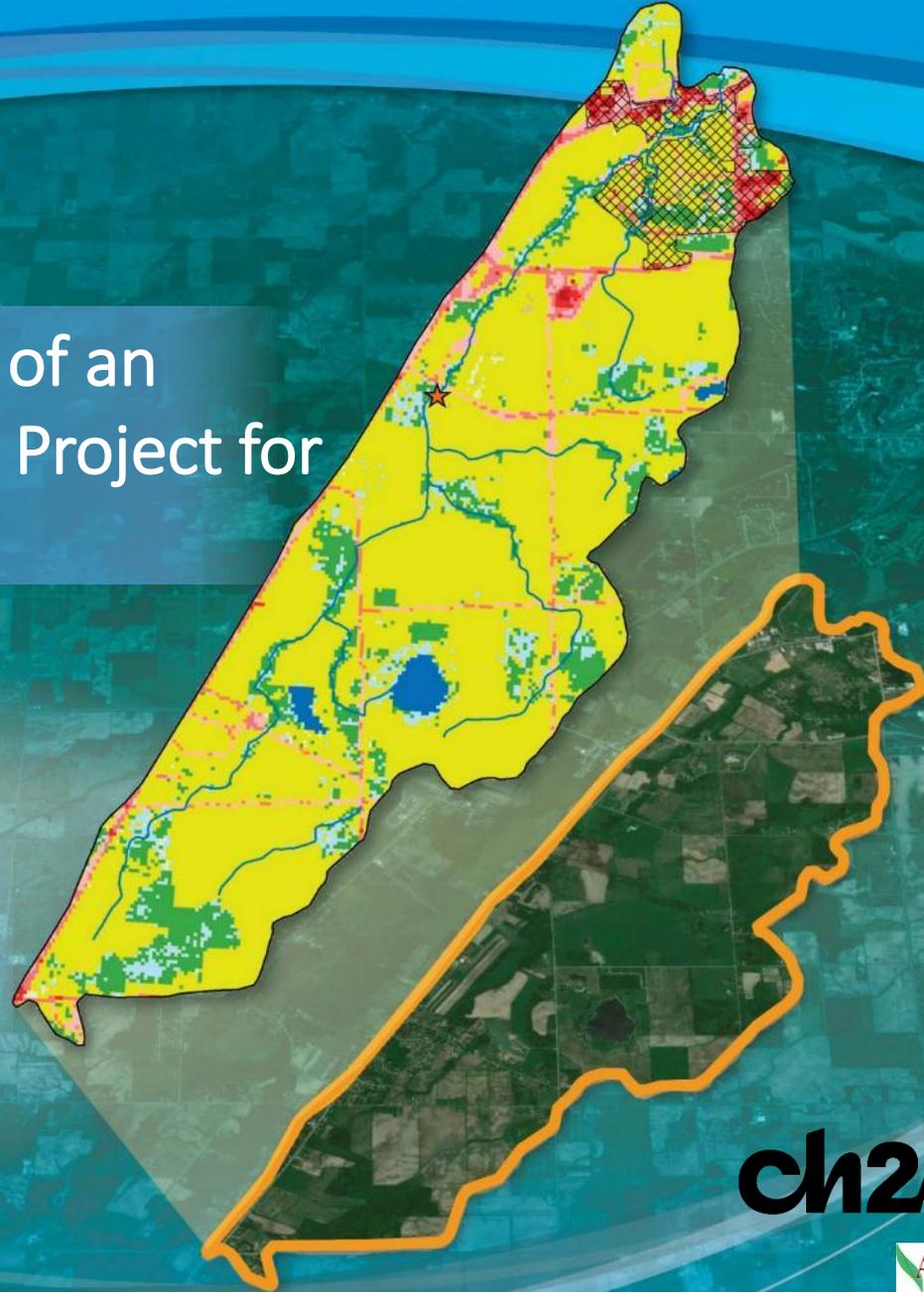


Design and Implementation of an Adaptive Management Pilot Project for the Silver Creek Watershed

Stakeholder Meeting

September 23, 2015



Meeting Purpose and Agenda

- Gather all stakeholders
- Provide project updates
- Receive feedback and input from stakeholders
- Learn more about other local projects

- Agenda
 - Very full agenda
 - Lunch at 11:30 during presentation
 - Adjourn at 1:00
 - Parking lot for ideas or issues that need further discussion

Project Vision

- Chartering developed Vision, summarized critical success factors and stakeholder commitments
- Vision

A robust and collaborative pilot study in the Silver Creek subwatershed that is consistent with stakeholder ecological restoration goals, and that provides NEW Water with the information to make an informed and confident decision on whether to use the adaptive management approach to meet the phosphorus and total suspended solids reductions required to meet designated use and water quality goals in the Lower Fox River Basin.

Project Goal

Design, implement, and evaluate stakeholder capacity for a cost effective, scientific-based agricultural-focused adaptive management pilot project that allows Silver Creek to achieve the phosphorus and sediment in-stream water quality standards.

- Design a process that engages stakeholders, leverages relationships, baselines water quality, and collect soils and land management information on all agricultural lands to support nutrient and conservation planning and predictive watershed water quality modeling (e.g. SWAT) that is repeatable and scalable.
- Implement the recommendations within the plans through collaborative partnerships with agronomic, grower, and owner support that will achieve water quality while maintaining or enhancing the vitality of farming, while evaluating the incentives required for permanent installation.

Project Goal Continued

- Evaluate stakeholder capacity for their current and future ability to provide professional, regulatory, and personal support to landowners, growers, and NEW Water, and to determine resource needs and delivery platforms that could be scalable for future implementation.
- Evaluate the cost of the pilot project in terms that are scalable, that capture realized and future costs, and are comparable to other permit compliance options.
- Scientific-based process that integrates agronomic experts and other technical experts, regulators, advocates, and modelers to support plan implementation through partnerships with landowners and growers, to reduce uncertainty in evaluating project success and scalability.

Project Goal Continued

- Agricultural-focused project design and implementation with partners that may have the opportunity to simultaneously improve operations while improving water quality and soil health, but may not have the resources to do so.
- Silver Creek watershed that is a representative agricultural dominated headwater watershed of manageable size where compliance can be associated with internal activities, to determine if compliance at its pour point can be achieved.
- Evaluate the attainment of water quality standards including the phosphorus criterion of 0.075 mg/L and the narrative total suspended solids standard set to be 18 mg/L in the TMDL.

A Few of Our Accomplishments

- Soil sampling on 108 of 109 cropped fields
- Water quality monitoring
- Opportunities for sediment sampling
- GIS and field data collection
- Field walks on 91 of 109 fields
 - 10 more after corn grain harvested
- Identified 2 to 3 “hard” practices per field → 200-300 practices
- 5 to 8 “soft” practices
- Templates to document and track opportunities, and to communicate benefits to growers
- Began implementation



A Few Criteria for Evaluating Full Scale Adaptive Management

- Water quality improvement
 - Cost
-
- Willingness of landowners and growers to participate
 - Capacity to implement, plan, design, construct, and monitor recommendations
 - Ability to implement recommendations
 - Ability to overcome challenges
-
- What is the correct watershed make-up (partners, growers, landowners, etc.) and project organization for Adaptive Management?

Example Observations Impactful to the Pilot Project

- Diverse field walk teams yields new perspectives and multiple options for conservation opportunities
- Interest in listening to proposals
- Grower trust is critical, but is variable
- Individualized review important, commonalities apparent
- Tillage practices single largest impact on soil loss
- Inability to enforce supports culture of “why should I do it”
- Growers want flexibility and independent decision making
- Contracts may not be required, or possible, for some growers
- Growers are stewards, but are businessmen first
- Every field has a need
- TEA Party ideals impart uncompromising view of “government” and “tax” dollars
- Grant or funding without “government”

Implementation, Funding, Cost Share Approach

- Primary strategy – stretch our \$\$\$ as far as possible to maximize implementation in watershed
- Taking advantage of funding opportunities
 - July EQIP
 - October EQIP
 - Grants
 - NRDA USFWS - \$100,000
 - Ducks Unlimited - \$140,000
 - Fund for Lake Michigan - \$100,000
 - GLRI - \$1.68 M
 - NEW Water \$\$\$

Grants Update and Cost Share Agreement

■ GLRI Grant update

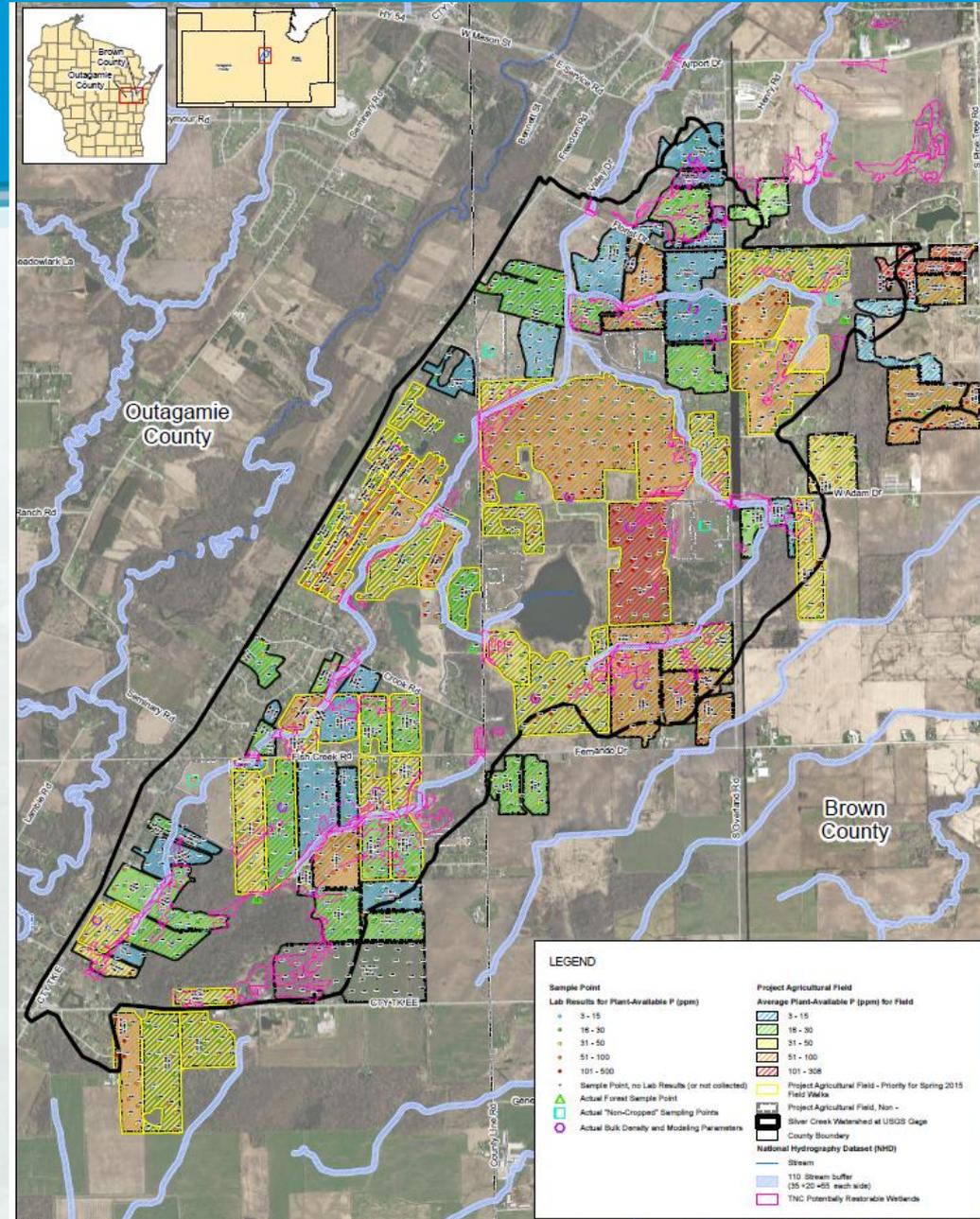
- Semi-annual report
- QAPP development – AEG (Tina Reese, Heidi Vigil)
- Grant Specialist – Annette Weisbach

■ Cost Share Agreement

- Final review, ready for use soon
- Will be used for all best management practices installed in Silver Creek
- Administered by Outagamie County or Oneida staff
- Approved by NEW Water

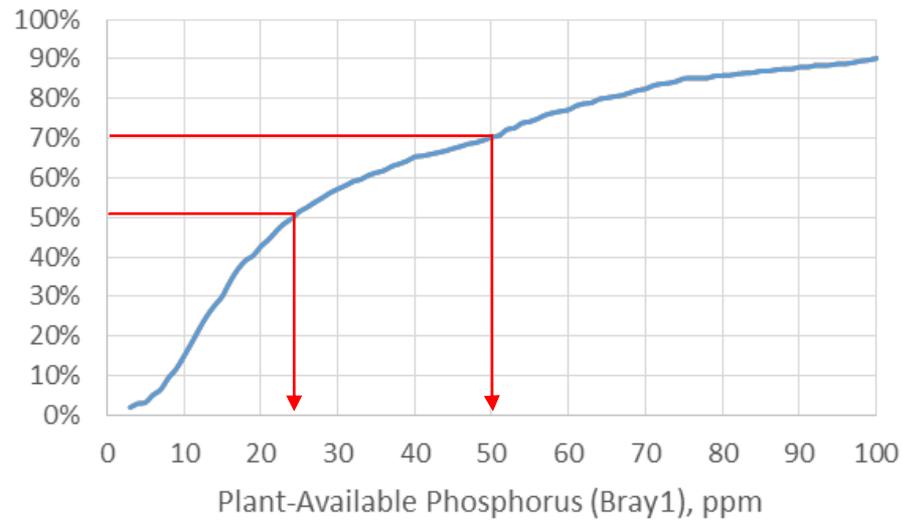
Soil Sampling Review

- 946 soil sample locations
- Variability
 - Soil P: 3 to 553ppm
 - 27 fields (25%) > 50ppm average soil P
- Informing prioritization for field walks and implementation
- SWAT modeling

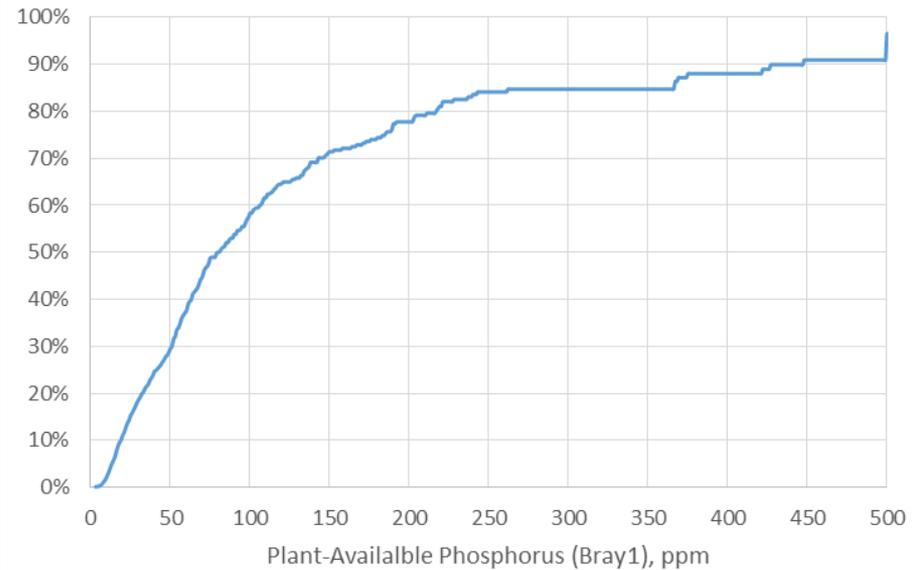


Soil Sampling Results

Plant-Available Soil P Concentrations, Cumulative Frequency Distribution



Plant-Available Soil P Mass, Cumulative Frequency Distribution



Conservation Field Walks and Enhanced NMPs

- Identify opportunities
 - Desktop storm water review
 - Agronomist and conservationist
 - Owner
-
- 91 field walks complete
 - 10 field walks after harvest
 - 7 fields may not get walked due to owner resistance
-
- Two field walk review workshops to refine opportunities, recommend practices, and establish priorities

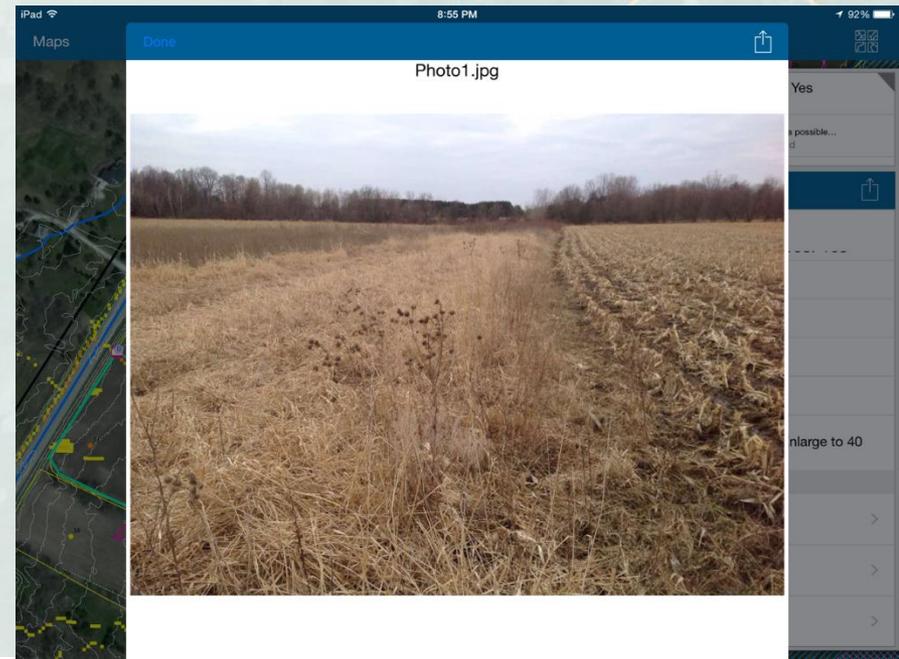
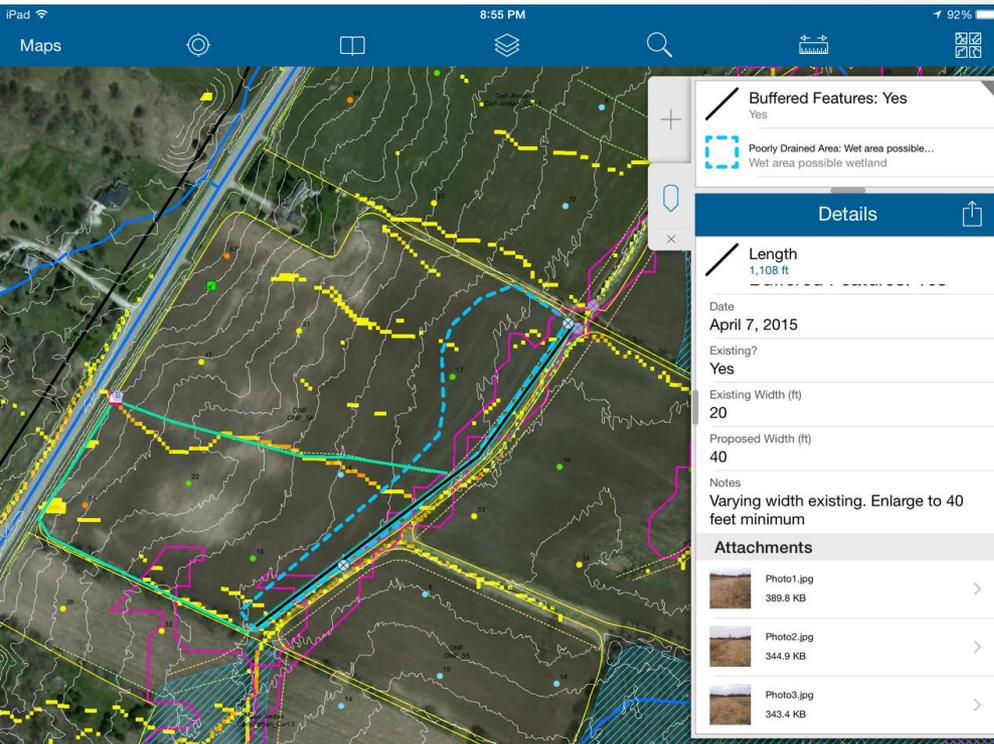


Conservation Field Walks and Enhanced NMPs

- Used Stream Power Index instead of EVAAL output
- Frequent “hard practice” recommendations:
 - Buffers
 - Grassed Waterways
 - Critical Area Plantings
 - Poorly Drained Areas (potential wetland)
- Universal “soft” opportunities dependent on rotation:
 - Cover crops
 - Residue
 - Tillage practices



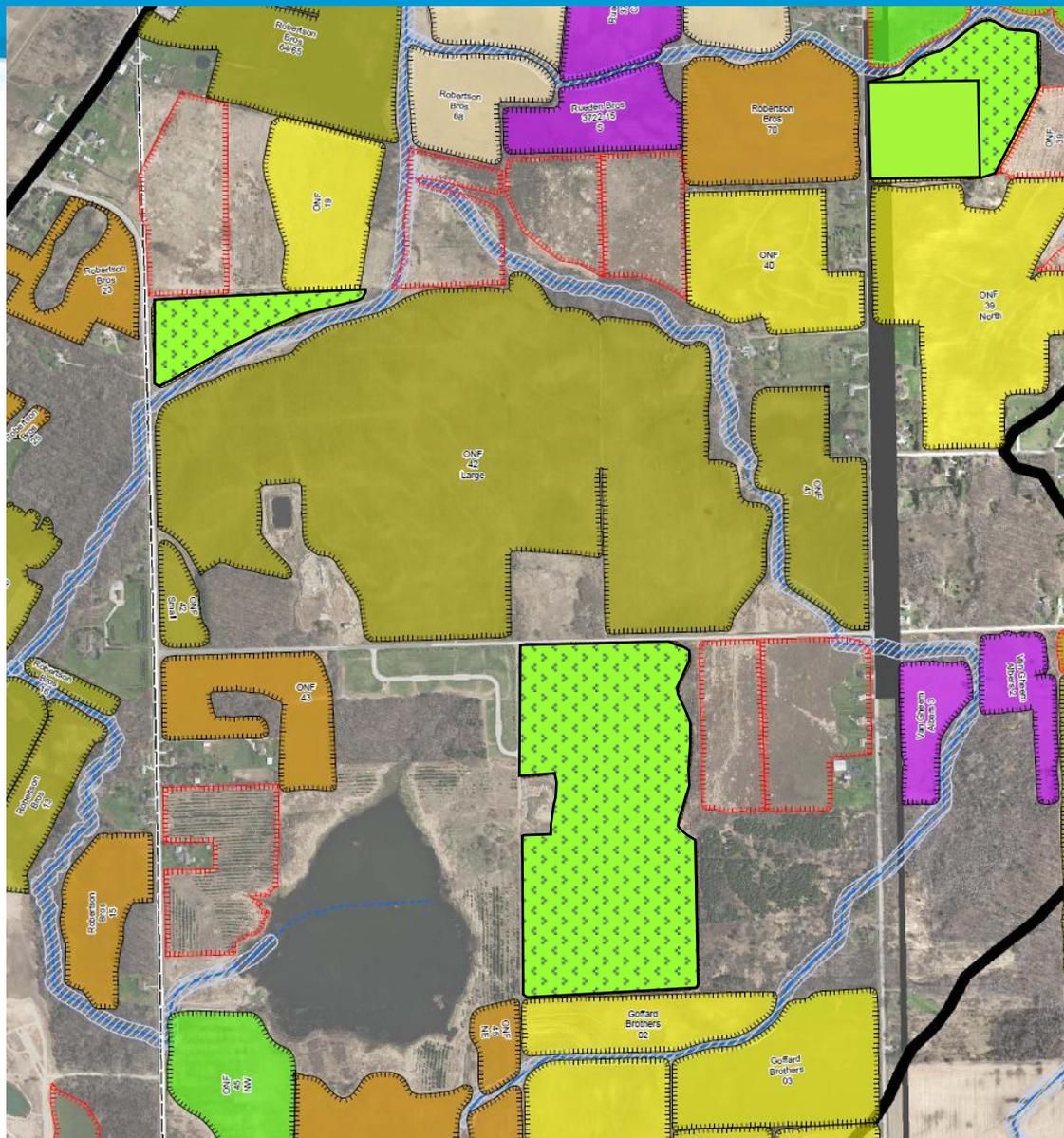
Conservation Field Walks



Brief tour of online GIS



July GLRI-EQIP Applications



LEGEND

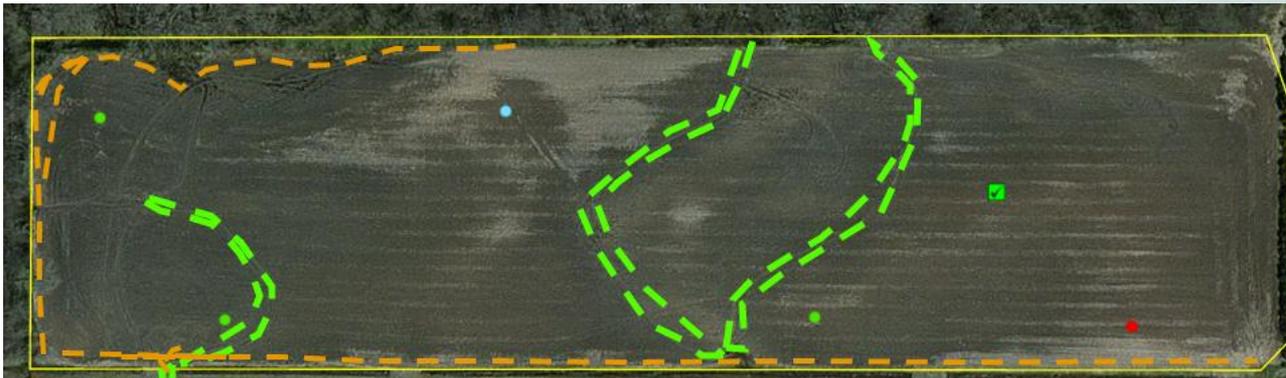
Project Agricultural Field

Crop

- Unknown
- Alfalfa/Hay (1-2 years)
- Alfalfa/Hay (3+ years)
- Corn Grain
- Corn Silage
- Grass
- Pasture
- Soybeans
- Winter Wheat

October EQIP

- 2 Buffers
 - 1 Crossing
 - 2 Waterways
 - 1 Critical area planting
-
- 2 Buffers
 - 3 Critical area plantings



October EQIP

- 1 Buffer
- 1 Crossing
- 1 Waterway or critical area planting



October EQIP

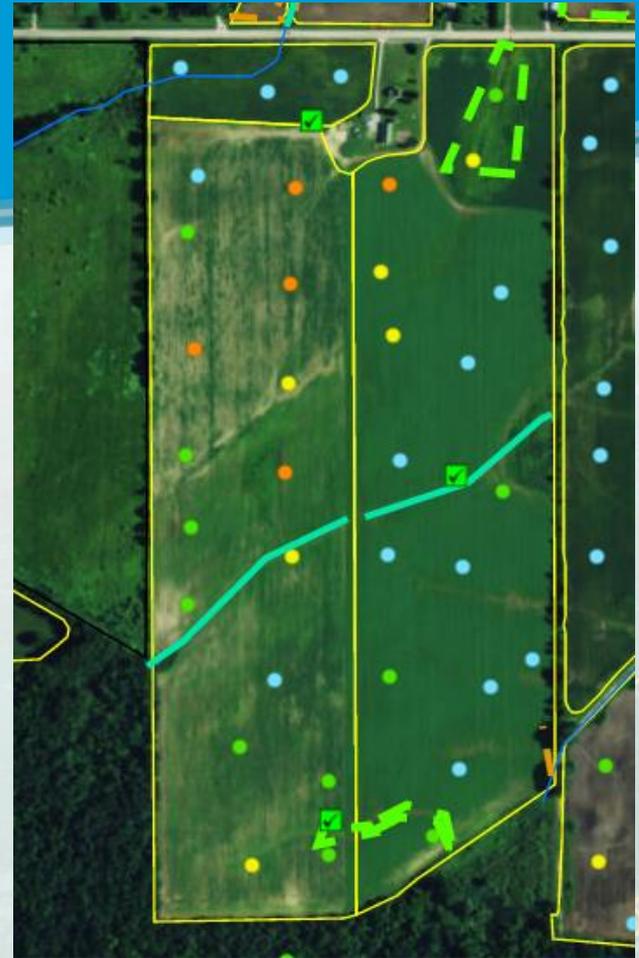
- 1 Buffer
- 2 Waterways

- 1 Waterway
- 1 Critical area planting
- Tile outlets (??)



October EQIP

- 1 Buffer
- 1 Waterway
- 1 Critical area planting



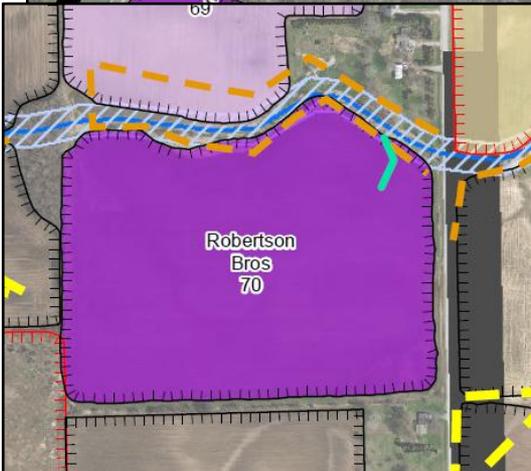
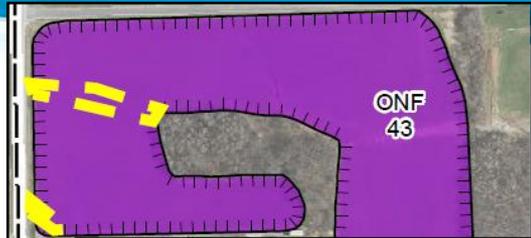
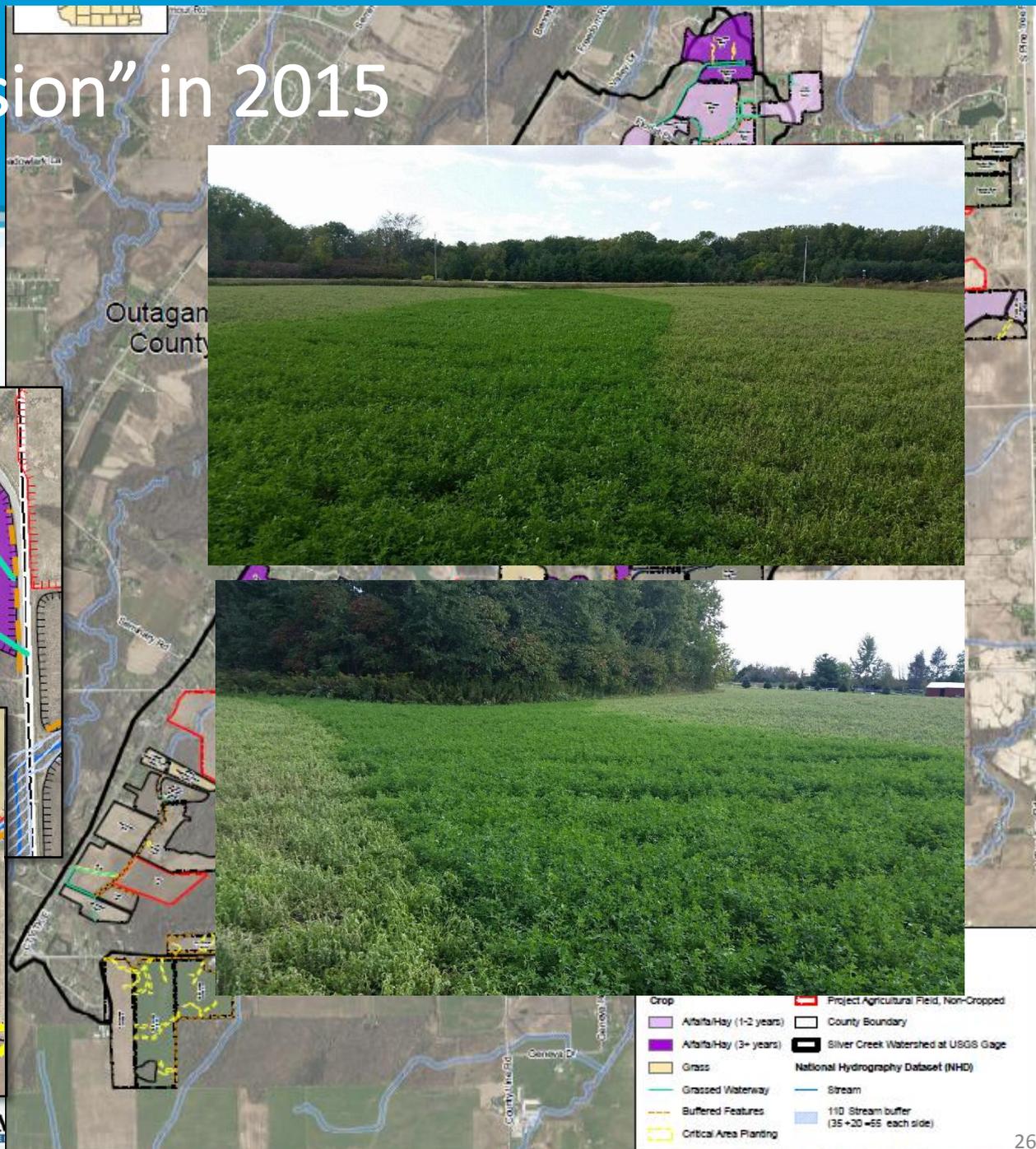
- 1 Waterway
- 2 Critical area plantings

Installation in 2015

- 1 Waterway
- Possibly additional waterway and critical area plantings



Alfalfa "Conversion" in 2015

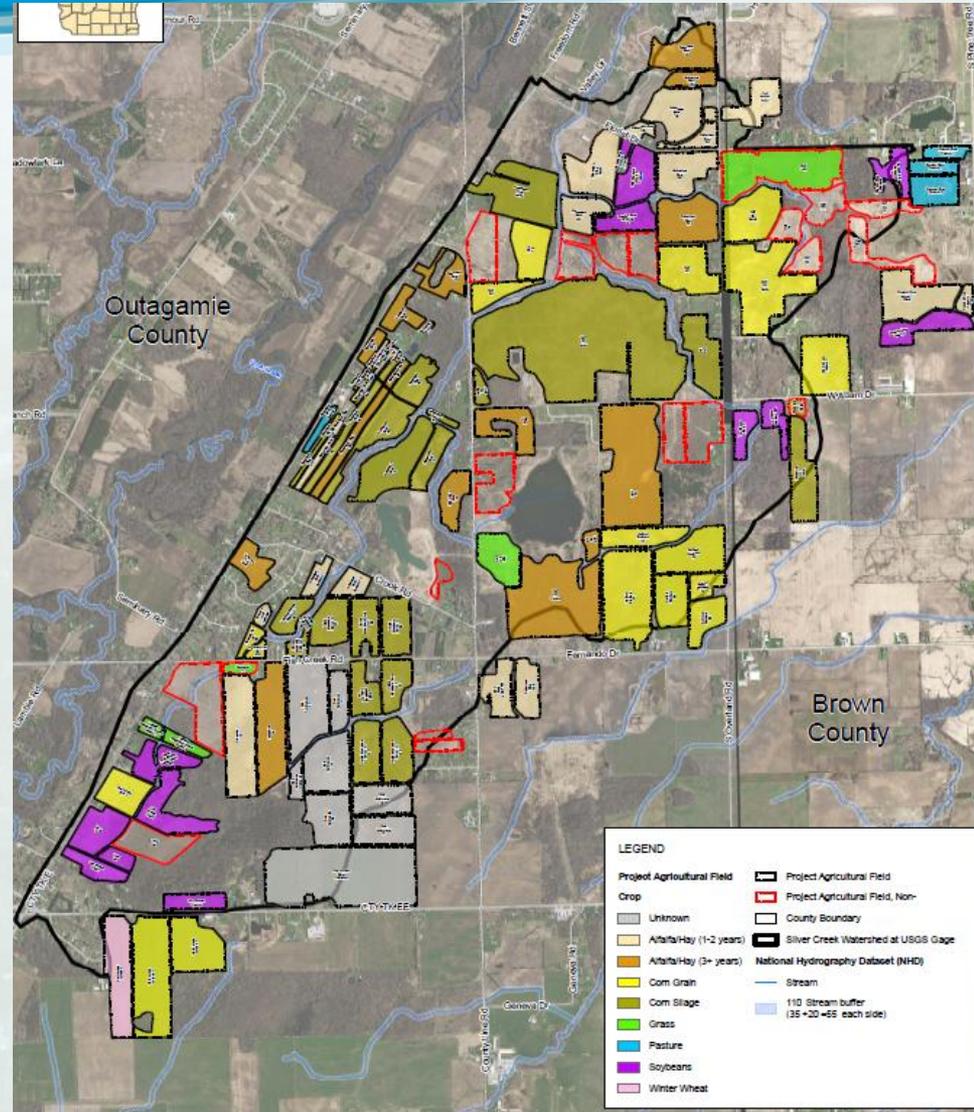


Developing Conservation Plans and “Enhanced” Nutrient Management Plans

- “Enhanced” means what is needed, based on professional judgement of agronomists, conservationists, and storm water engineers
 - Not limited to existing regulation
- Document, track and prioritize opportunities, and to communicate benefits to growers
- Example plan

Planning for Field Changes

- No fields in CRP coming out prior to 2020
- Some fields in forage – track for return to active cropping
 - Red outlined fields
 - Oneida Methodist Church
- ONF 45NW coming out of biomass



Demonstration Farms Update

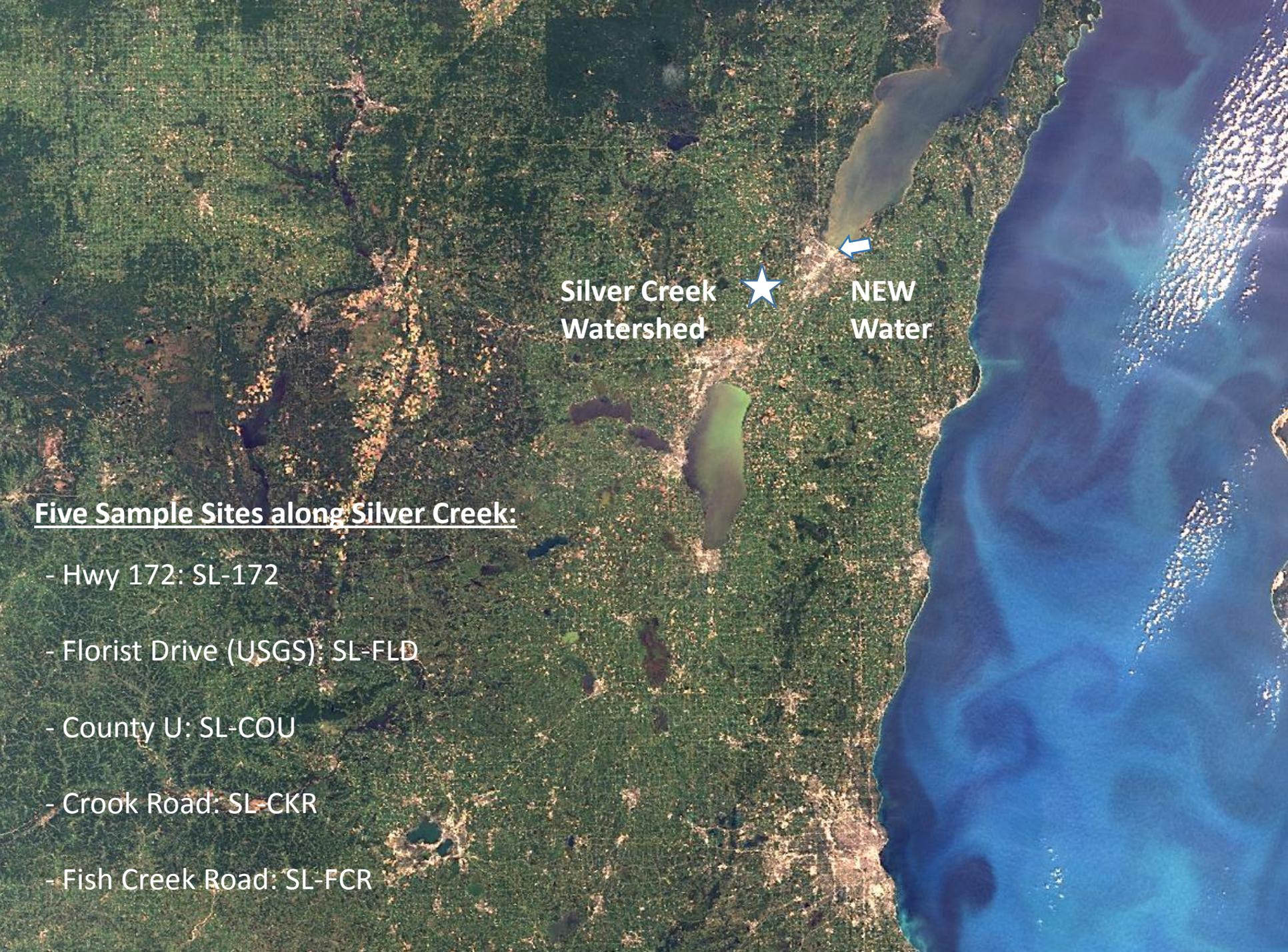
- Brent Petersen, Brown County



Water Quality Monitoring Update

- Erin Wilcox – NEW Water



A satellite map showing a green, forested watershed area. A white star is placed in the center of the watershed. To the right, a blue arrow points to a specific location labeled 'NEW Water'. The right side of the image shows a large body of water in shades of blue and cyan. The text 'Silver Creek Watershed' is written in white over the forested area.

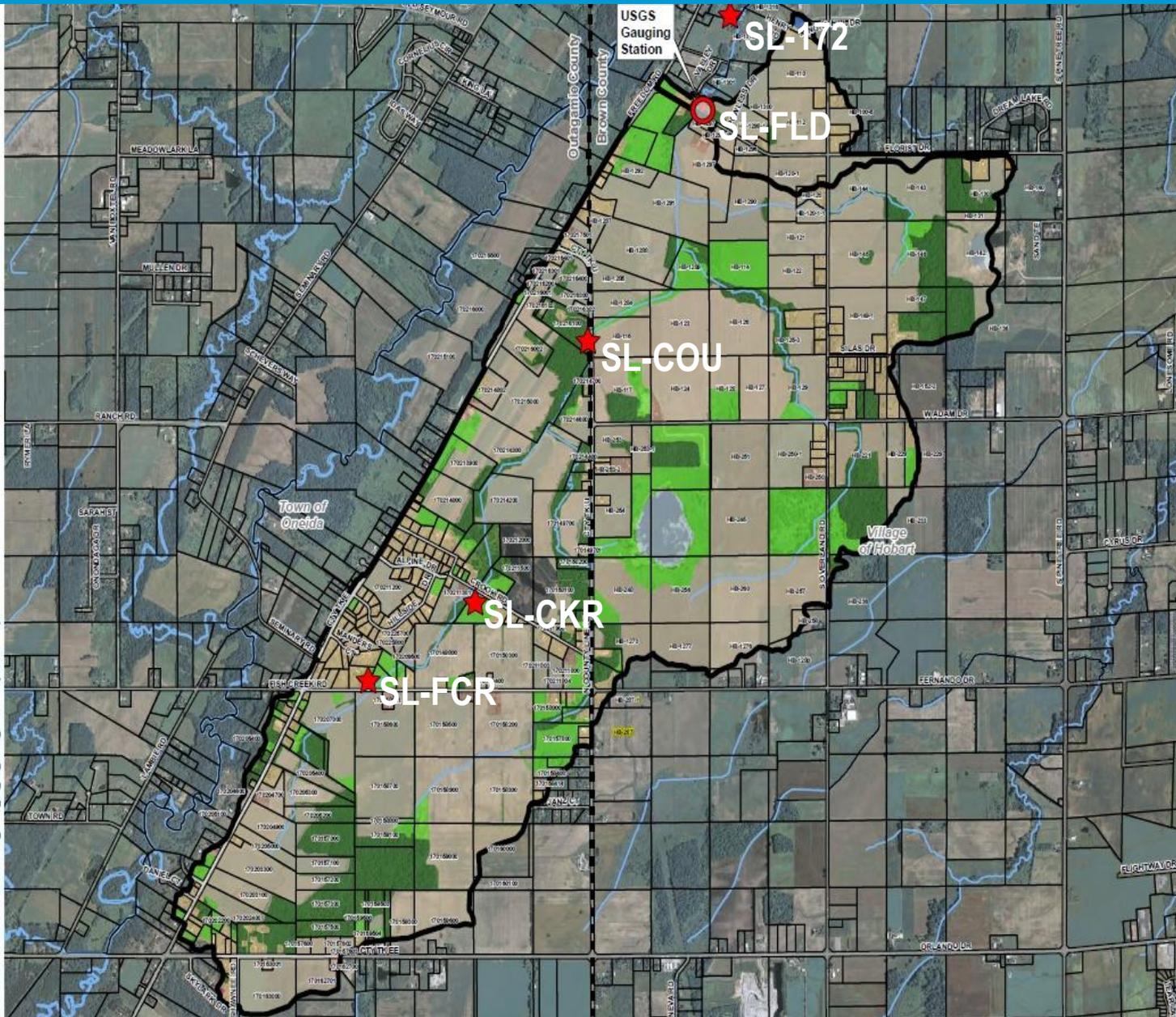
Silver Creek
Watershed



NEW
Water

Five Sample Sites along Silver Creek:

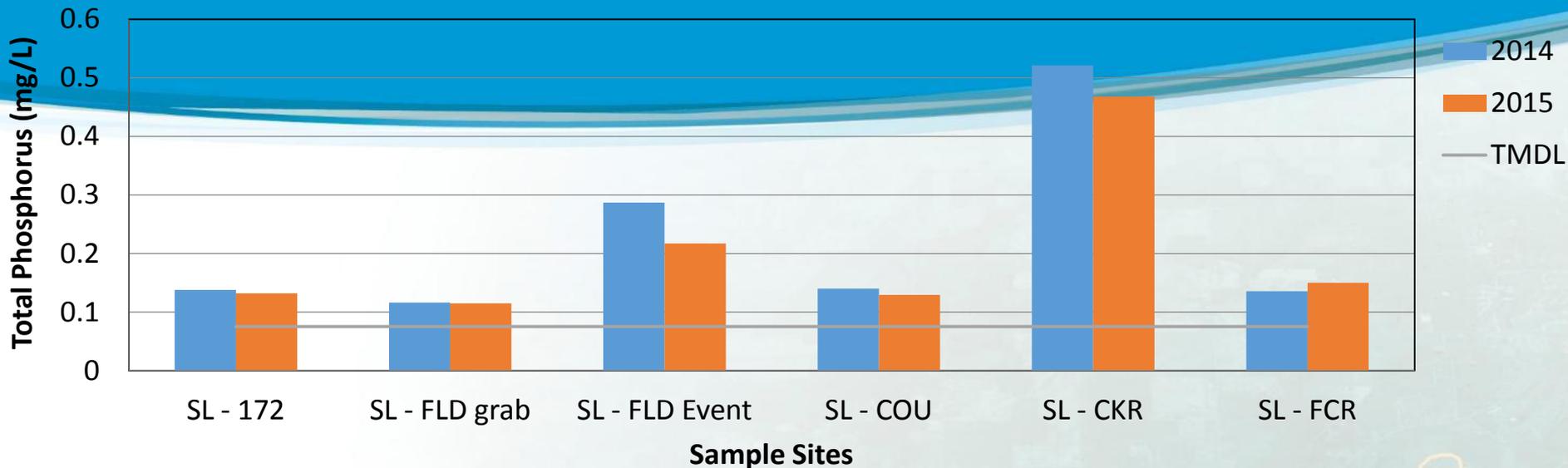
- Hwy 172: SL-172
- Florist Drive (USGS): SL-FLD
- County U: SL-COU
- Crook Road: SL-CKR
- Fish Creek Road: SL-FCR



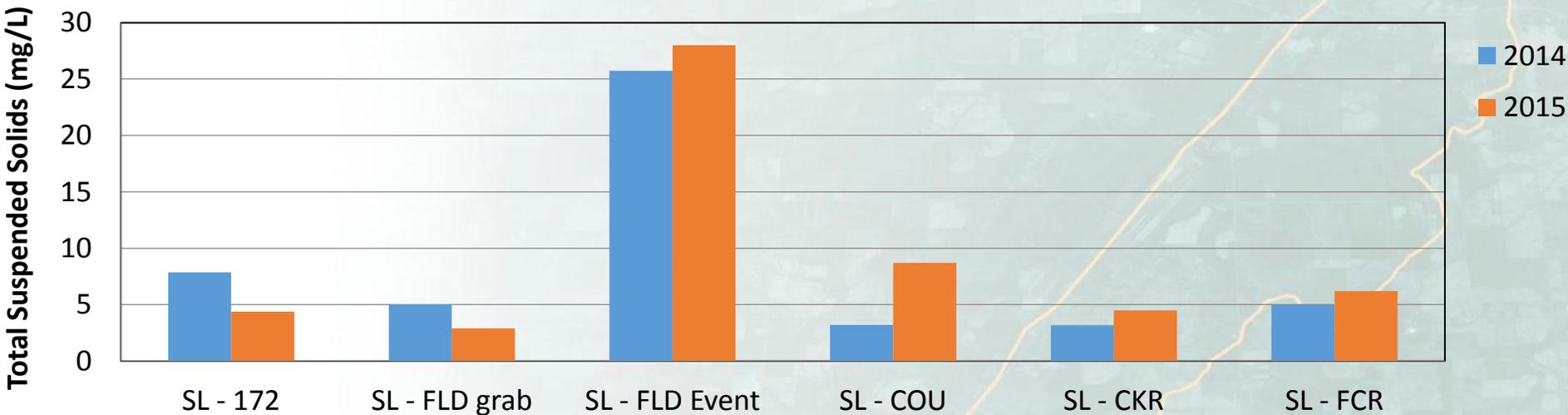
Water Year 2015

- Collected weekly grab samples throughout spring thaw and rain events
- Collected bi-weekly grab samples during the summer months
- Conducted stream sediment walk and initial assessment with Faith Fitzpatrick
 - Met with Bill Richardson to see how our project fits with his sediment assessment GLRI grant
- Determined locations for wetland restoration sites
 - Started work with TNC on wetland project funded by a Fund for Lake Michigan grant

Silver Creek WDNR Median Total Phosphorus



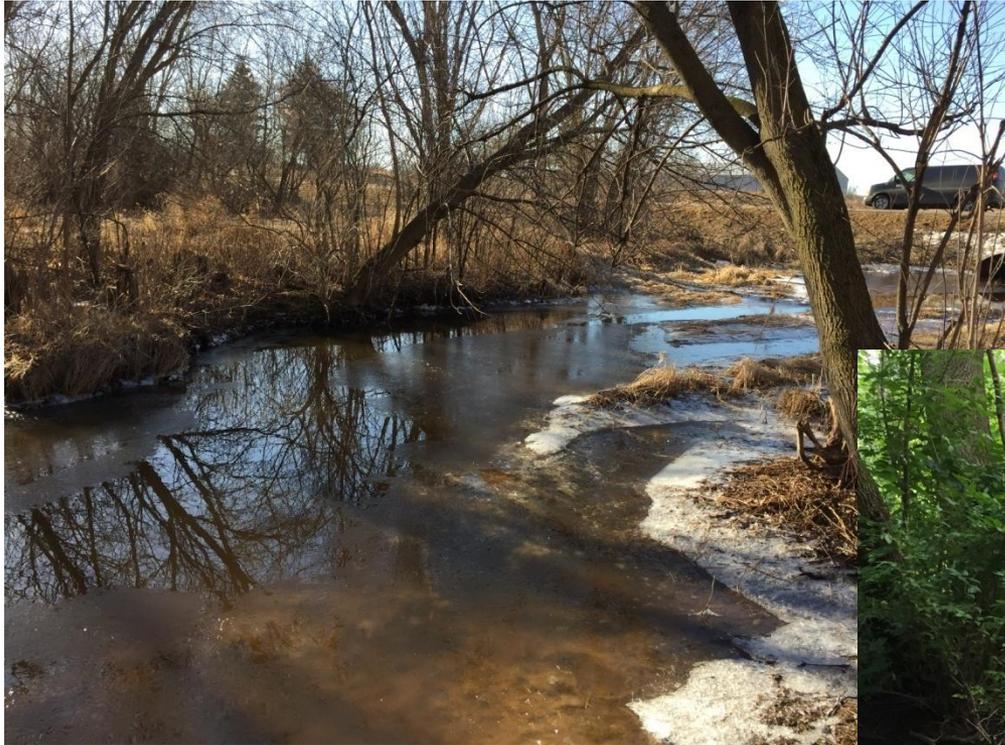
Silver Creek WDNR Median Total Suspended Solids



Next Steps

- Continue grab sampling through 2015 in coordination with USGS and UWGB
- Collect sediment samples in creek to determine legacy sediment contribution to nutrient concentration in water this fall
- Add sampling locations, as more wetland projects and BMPs get implemented, to monitor change in water quality
- Continue to attend wetland and other breakout group meetings to discuss additional monitoring, as needed

Questions....



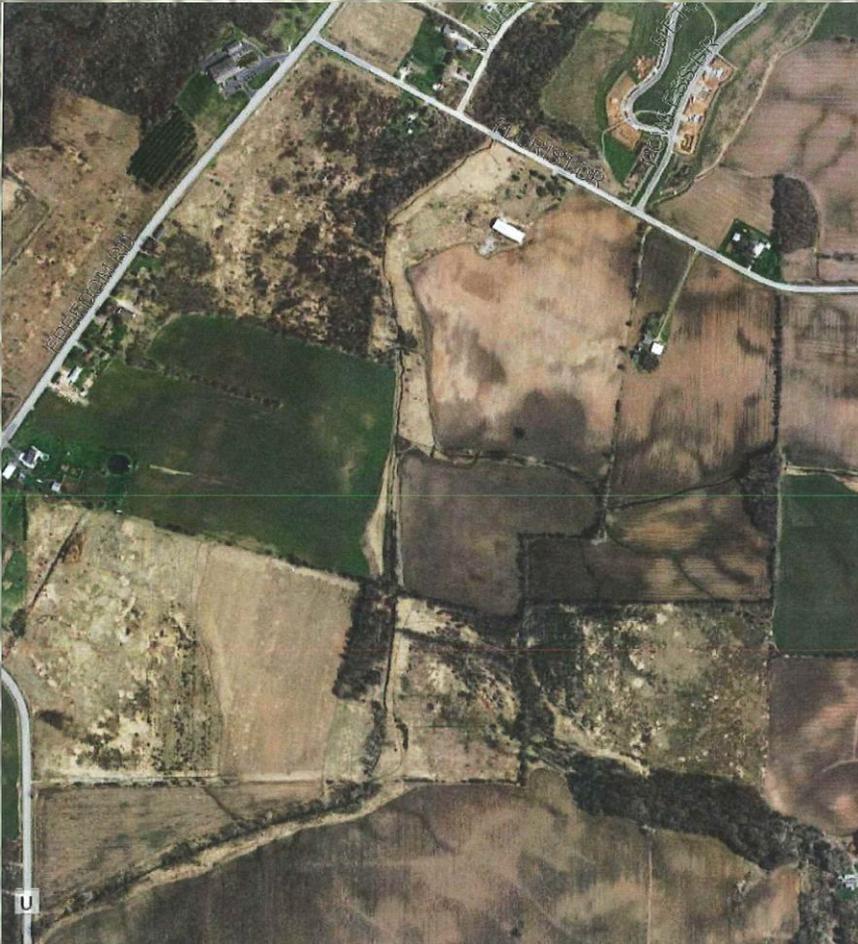
Biological Assessment

- Jim Snitgen, Oneida Tribe



Biological Monitoring of Silver Creek

Pre-Restoration





Monitoring Site







**Oneida Tribe of Indians of Wisconsin
Water Resources Program
Aquatic Invertebrate Data Sheet**

Date of sample collection: 6/13/2014
 Sample location: Silver Cr @ Florist Sample collected by: J.H. Sartzon
 Sieve mesh size: 500µm Collection method: Qualitative
 Date sorted: _____ Sorted by: LSRI
 Date identified: 11/21/14 Identified by: J.H. Sartzon

Taxon	No.	Taxon	No.
Diptera		Diptera - Other	
Chironomidae	3		
Chironominae	2	<i>Simulium</i> sp.	6
<i>Conchapelapic</i> sp.	8		
<i>Corynoneura</i> sp.	14		
<i>Cricotopus</i> sp.	16	Trichoptera	
<i>Cricotopus bicinctus</i>	15	<i>Anabolia</i> sp.	1
<i>Microhodgier</i> sp.	2	<i>Hydropsychidae</i>	8
<i>Eukiefferiella</i> sp.	1		
<i>Cricotopus tritarsis</i>	1		
<i>Psectrocladius</i> sp.	1		
<i>Paralimnithys</i> sp.	1	Ephemeroptera	
<i>Parametriocnemus</i> sp.	2		
<i>Paramerina</i> sp.	1		
<i>Polypedilum avicaps</i>	16		
<i>Orthocladiinae</i>	14		
<i>Paratrichocladius</i> sp.	1		
<i>Polypedilum</i> sp.	8		
<i>Tanypterus</i>	2	Plecoptera	
<i>Tanypterus</i> sp.	2	<i>Isoperla</i> sp.	2
<i>Thienemannella xena</i>	46		
<i>Dicentropus modestus</i>	1		
<i>Rhyacotanypterus</i> sp.	5	Coleoptera	
<i>Microhodgier pedellus</i> group	1		
<i>Stictochironomus</i> sp.	2	<i>Dytiscidae</i> (prob <i>Hydroscelus</i>)	2
<i>Nanocladius</i> sp.	1	<i>Stenelmis</i> sp.	1
<i>Lucania bavarica</i> group	1		
<i>Microspectra</i> sp.	1		
<i>Endochironomus</i> sp.	1	Odonata	
<i>Cladotanypterus</i> sp.	1	<i>Enallagma</i> sp.	1
<i>Tanytarsini</i>	1		
<i>Diplocladius</i> sp.	1		

Oneida Tribe of Indians of Wisconsin
 Water Resources Program
 Aquatic Invertebrate Data Sheet
 (Continued)

Taxon	No.	Taxon	No.
Hemiptera		Oligochaeta	
		Enchytraeidae	1
		Nais sp.	10
		Naididae	2
Amphipoda			
Gammarus pseudolimnensis	45		
Isopoda		Others	
Cacchodeta sp.	25	Hydracarina	5
Pelecypoda			
Gastropoda			
Helisoma sp.	2		
Physidae	1		
Stagnicola sp.	1		

Date data entered: 4/16/15 Data entered by: JL Smith
 Total taxa: 32 Total no. organisms: 288
 HBI taxa: 32 HBI total no. organisms: 211

Seasonality adjusted HBI total no. organisms: 5.42

Table 1. Water quality ratings for HBI values
(from Hilsenhoff 1987)

HBI Value	Water Quality Rating	Degree of Organic Pollution
≤ 3.50	Excellent	None Apparent
3.51-4.50	Very Good	Possible Slight
4.51-5.50	Good	Some
5.51-6.50	Fair	Fairly Significant
6.51-7.50	Fairly Poor	Significant
7.51-8.50	Poor	Very Significant
8.51-10.00	Very Poor	Severe



Collected second sample June 9, 2015
Additional metrics will be calculated
following processing of this year's sample

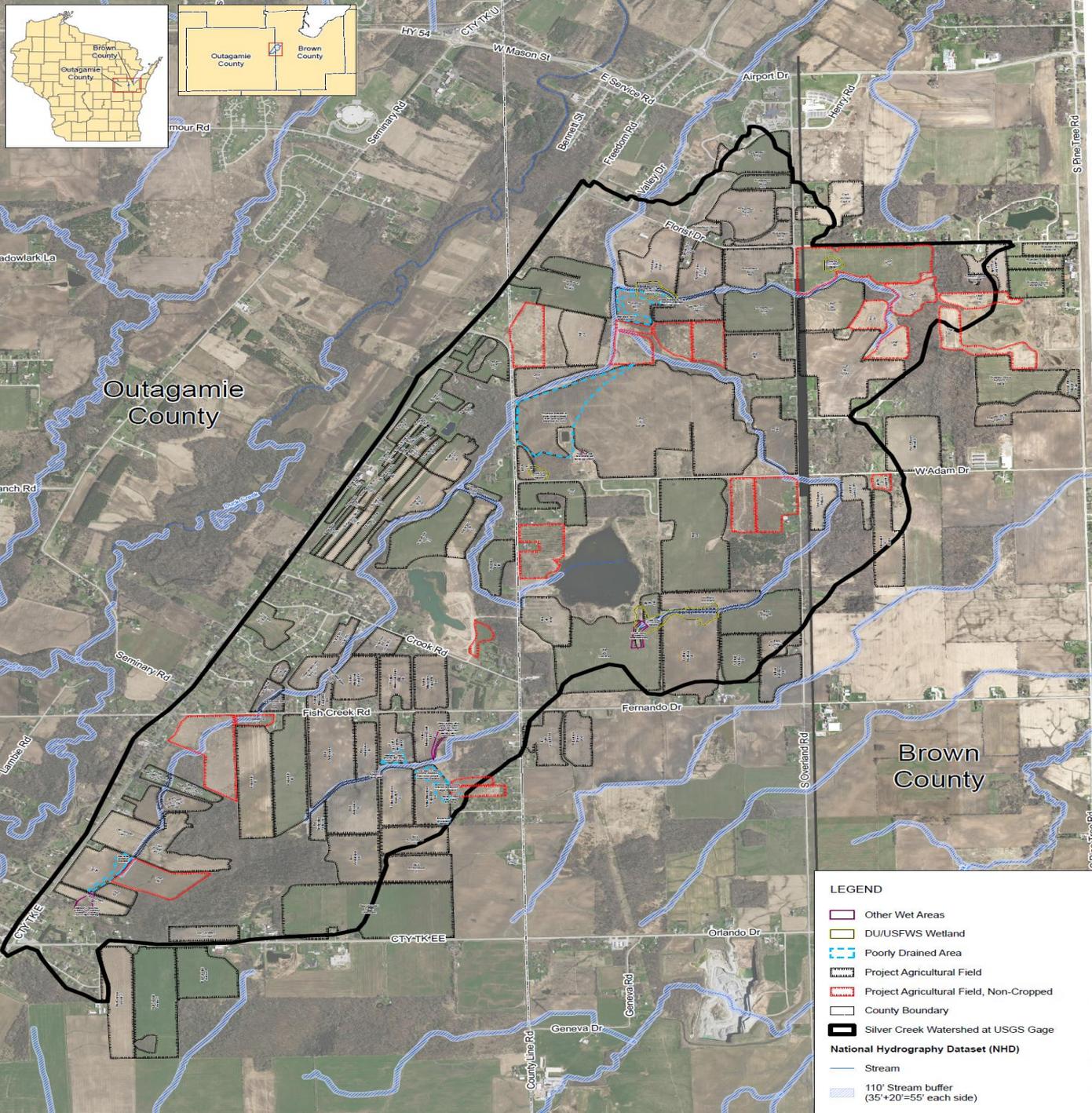
Habitat Implementation Update

- Wetland Team – DU/USFWS
- Vegetated Water Treatment System – UWGB/Oneida
- TNC Wetland Project – Grimm/Van Helden

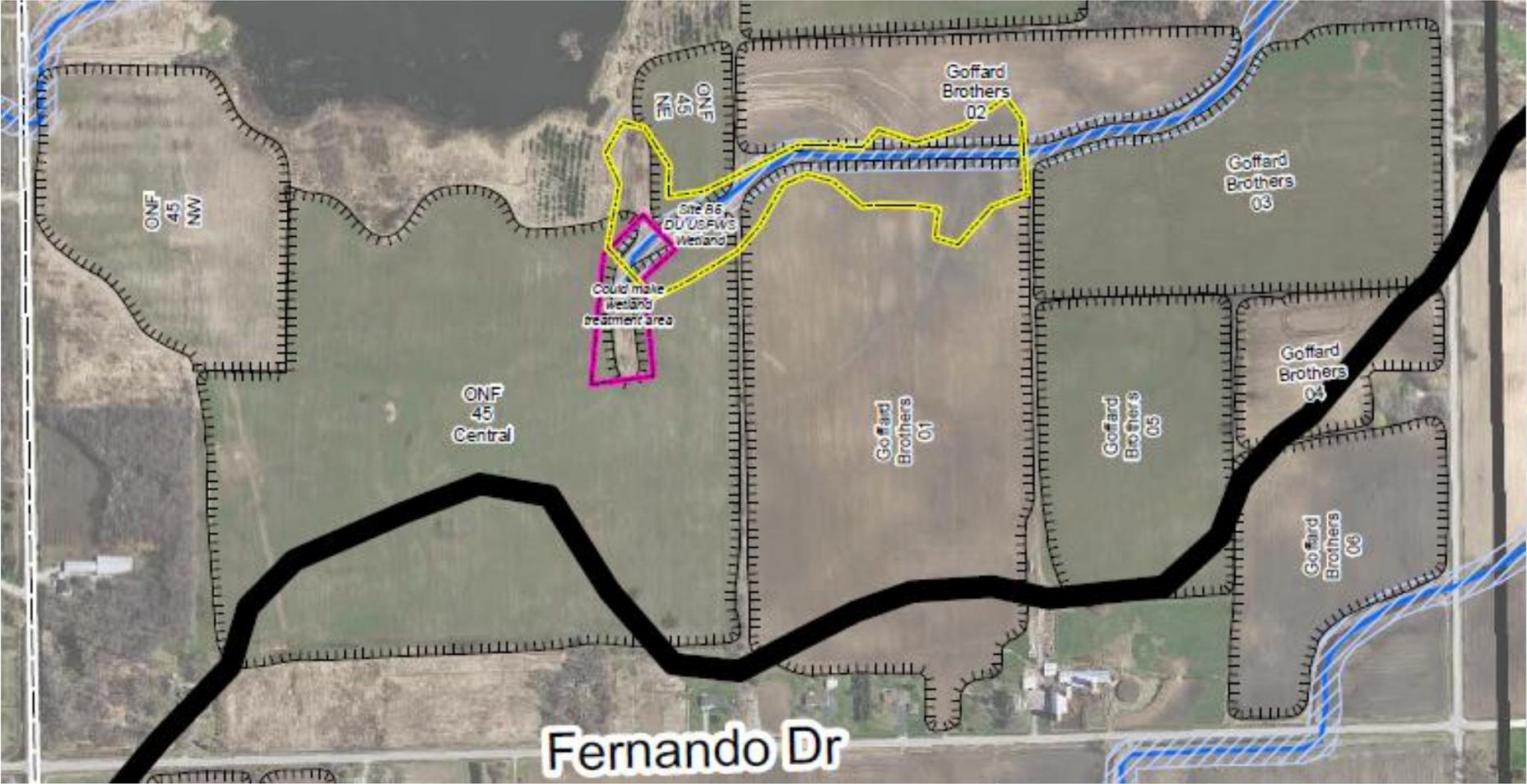


Wetland Team

- Brian Glenzinski, Ducks Unlimited
- Gary VanVreede and Betsy Galbraith, USFWS
- Tony Kuchma and Jim Snitgen, Oneida Tribe
- Erin Wilcox and Jeff Smudde, NEW Water



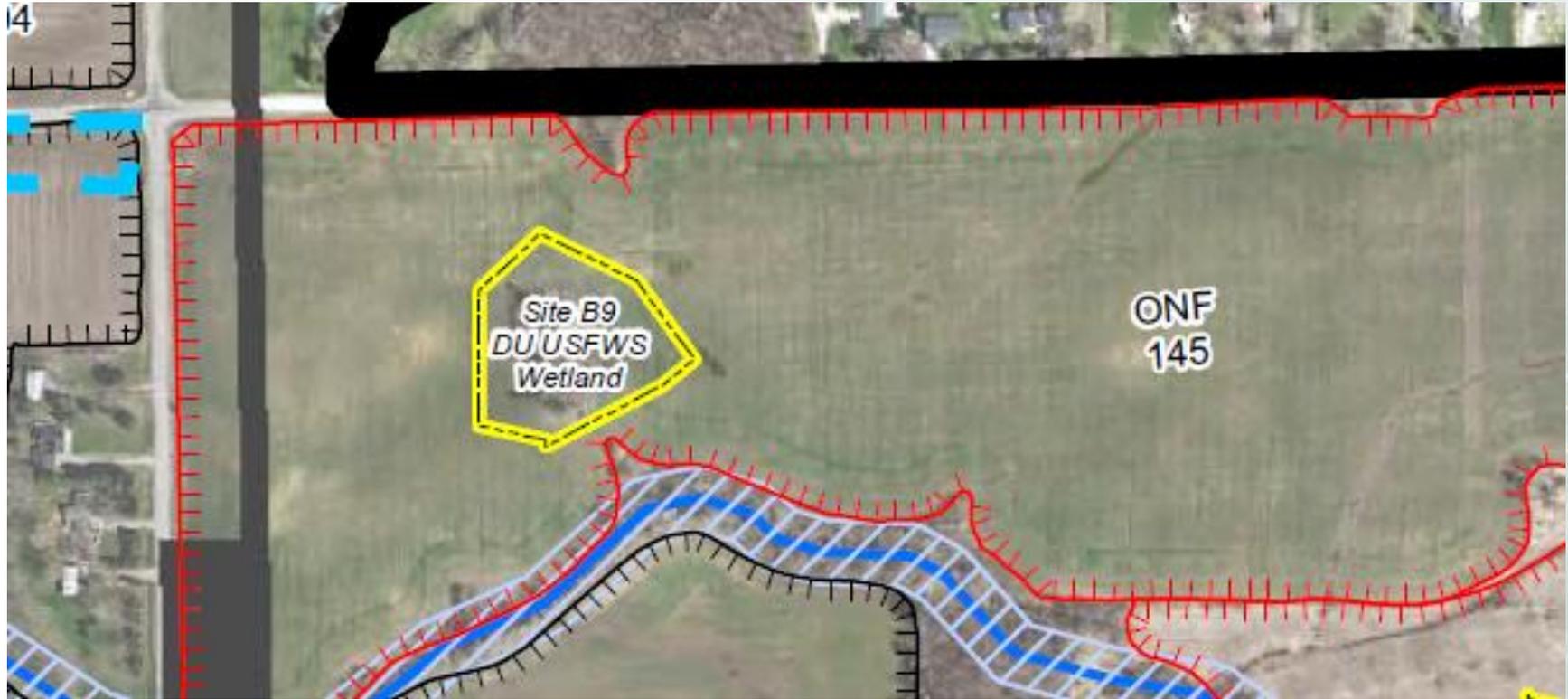
Possible Sites – ONF45/ B6



Conceptual Designs – Site B6



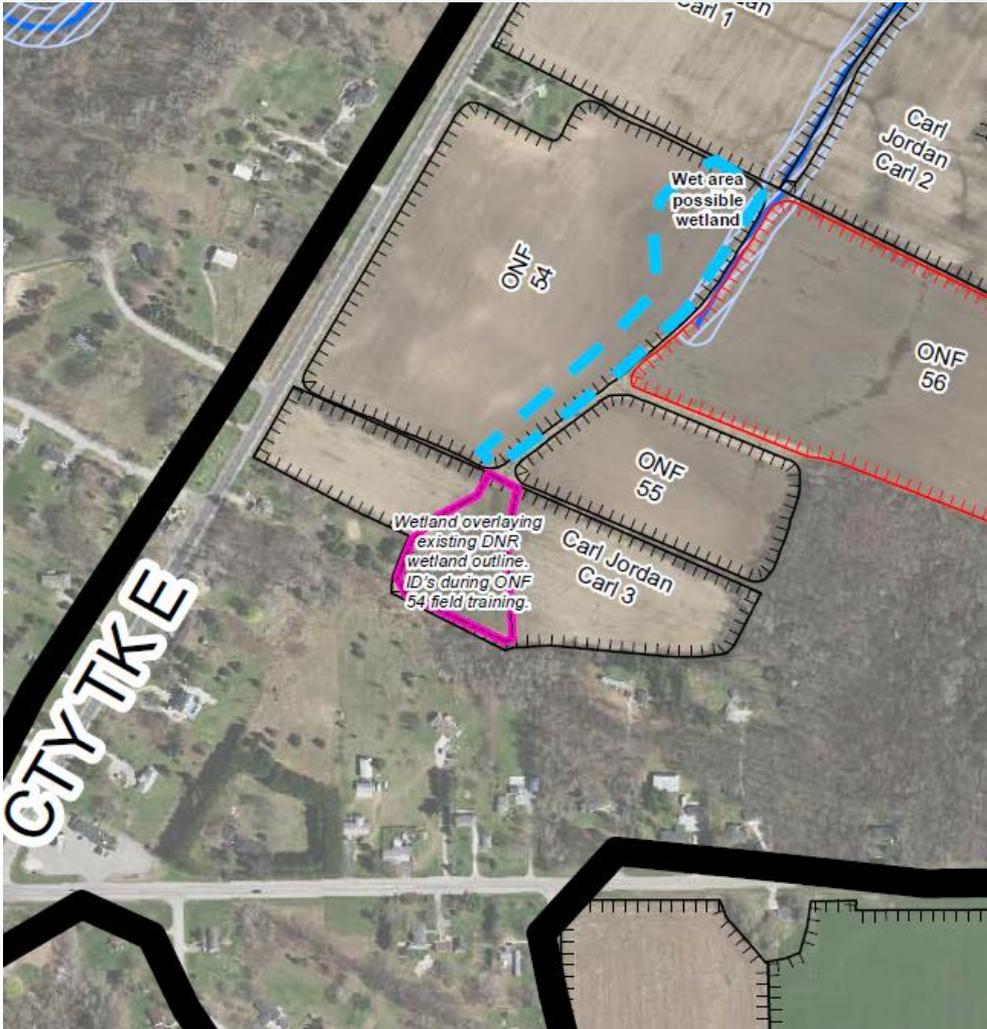
Possible Sites – B9



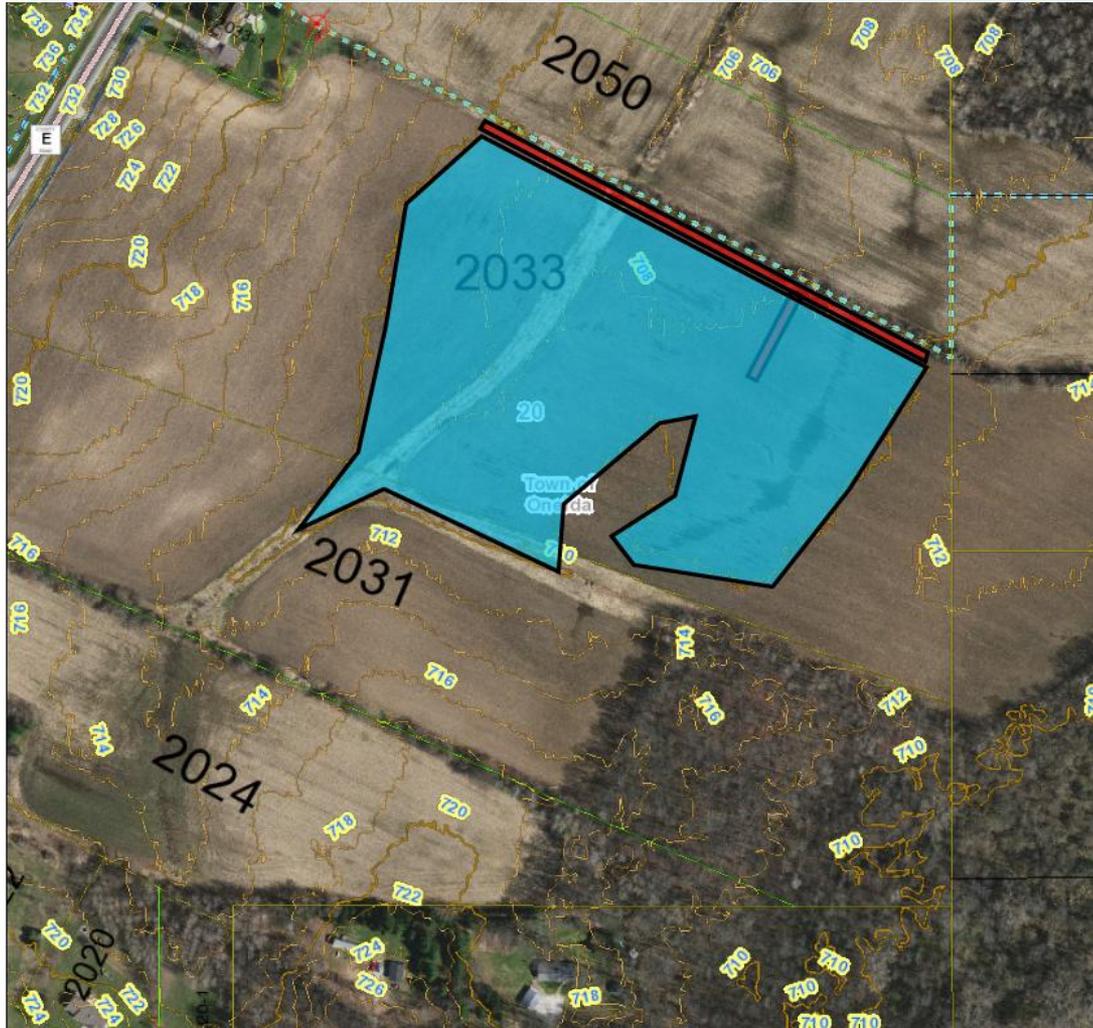
Conceptual Designs – Site B9



Possible Sites – ONF 54



Conceptual Designs - ONF 54



Possible Sites – United Meadows

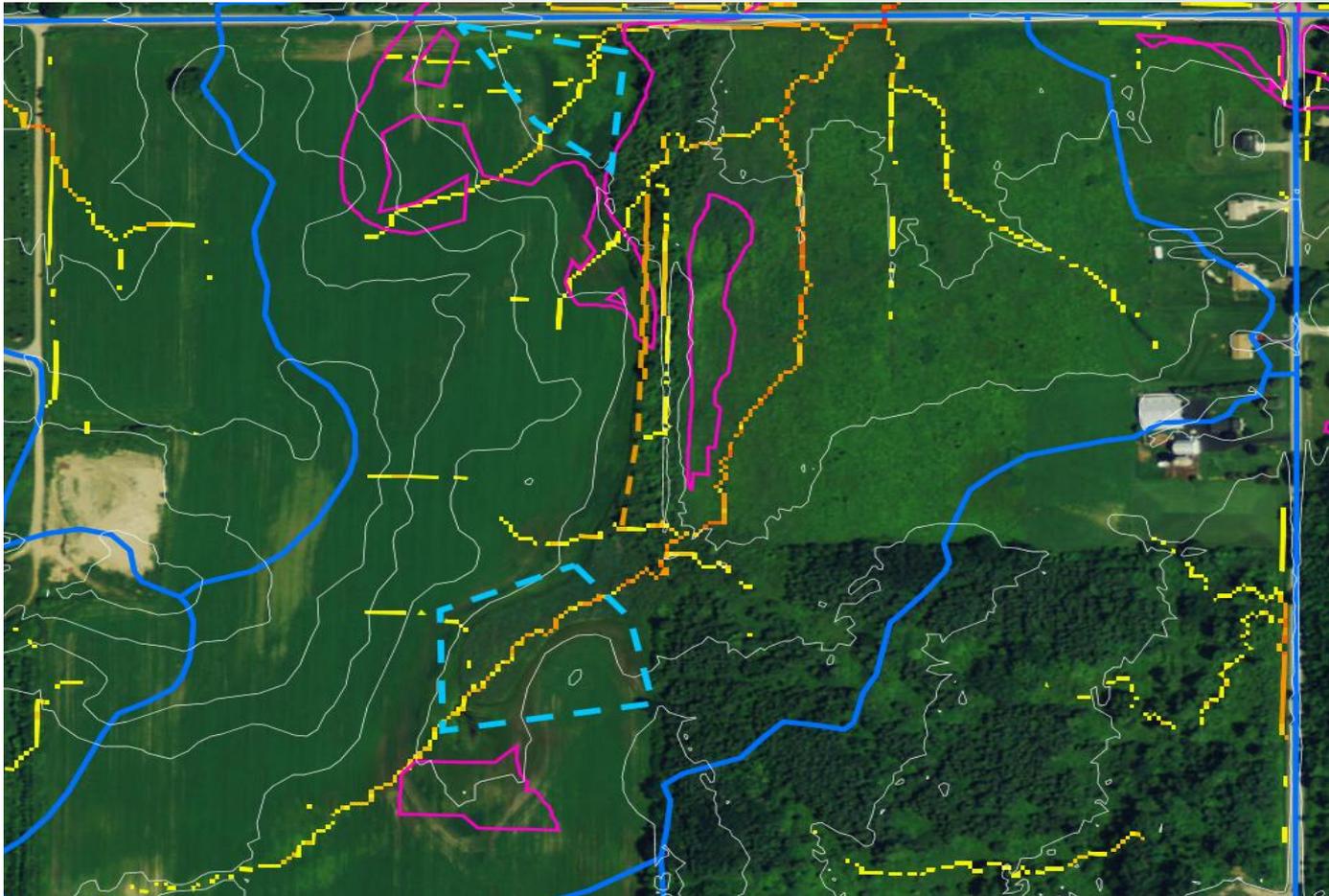


Vegetated Water Treatment System

- Matt Dornbush, UWGB
- Mike Troge, Oneida Tribe

TNC Wetland Project

- Mike Grimm and Nicole Van Helden

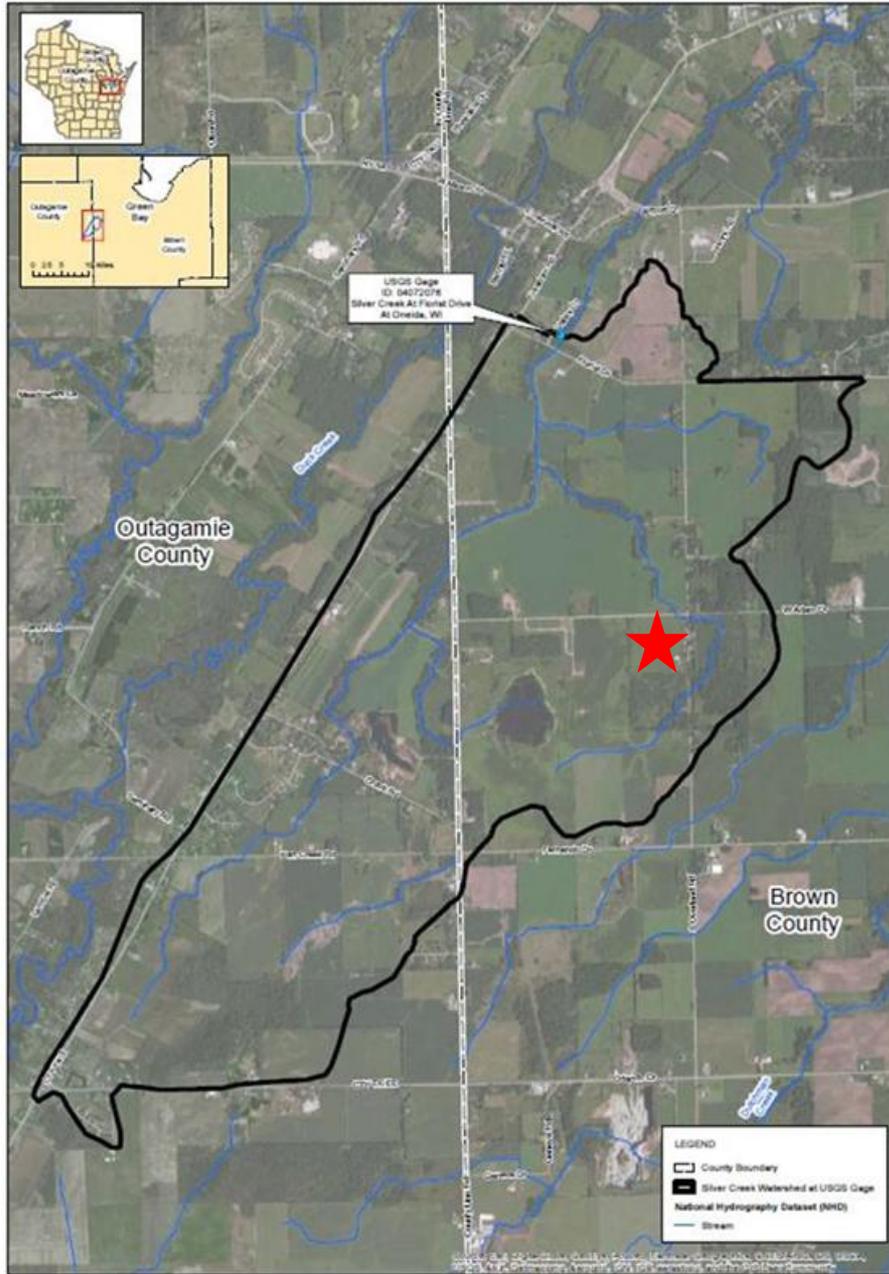


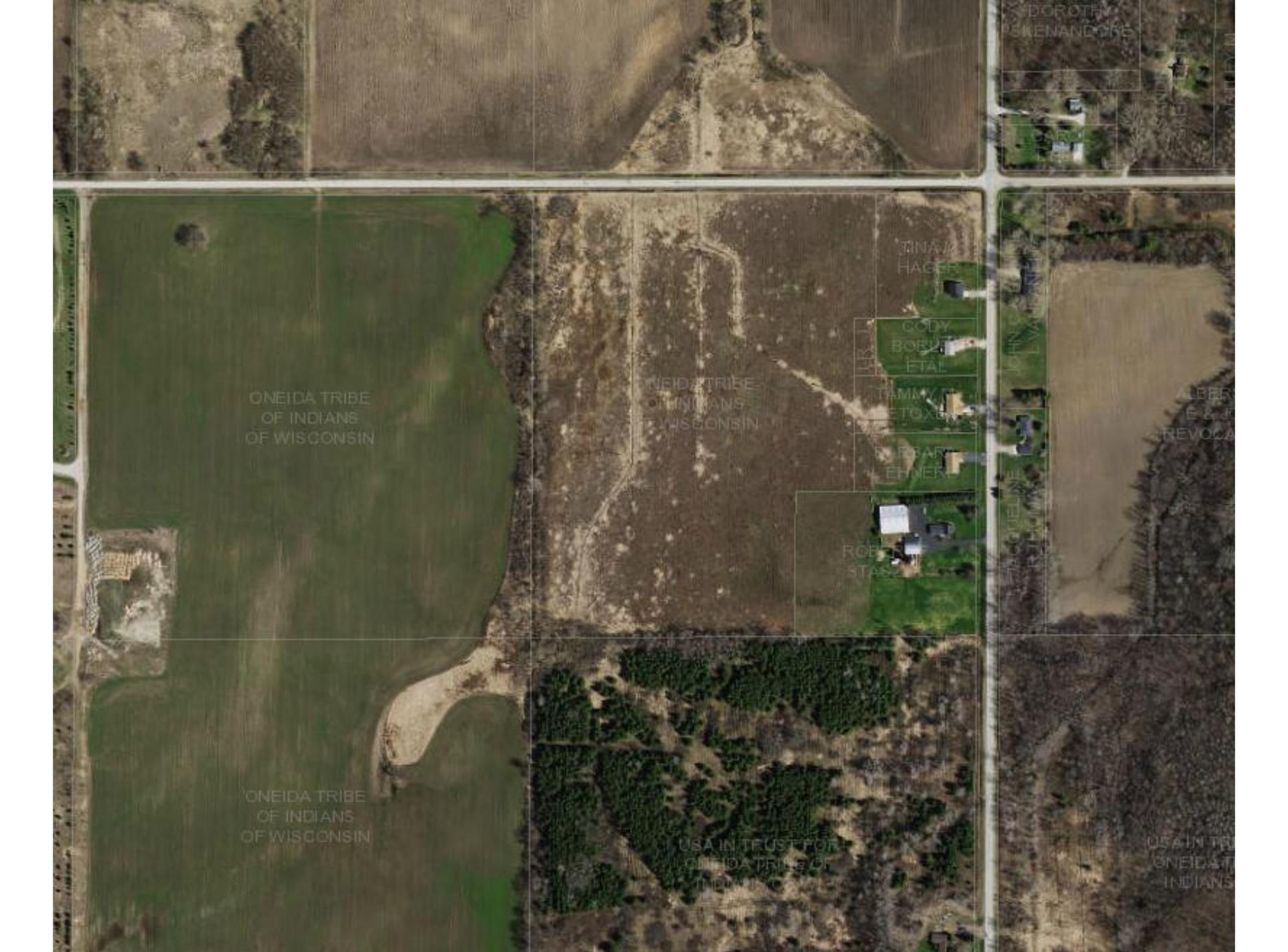
W. Adams Drive/S. Overland Restoration

1. Restoration
2. Monitoring
3. Outreach



Silver Creek Pilot Watershed Project





DOROTHY SKEEN AND CRE

ONEIDA TRIBE OF INDIANS OF WISCONSIN

ONEIDA TRIBE OF INDIANS OF WISCONSIN

JINAW HAGER

CODY BOBUE ETAL

TAMMY ETOXER

LEBAR EHRER

ROBERT STASS

LIBBER E & REVOLZA

ONEIDA TRIBE OF INDIANS OF WISCONSIN

USA IN TRUST FOR ONEIDA TRIBE OF INDIANS

USA IN TR ONEIDA T INDIANS

Overlap and Coordination with Conservation Planning

- Scheduling
- Information sharing
- Efficiencies in work planning, design, and construction
- Utilization of the GIS
- Consistency with overall project vision and goals

Lunch

- Presentation by Casey Eggleston from The Fund for Lake Michigan



Managed Grazing Update

- Adam Abel, NRCS



Silver Creek Watershed SWAT Model

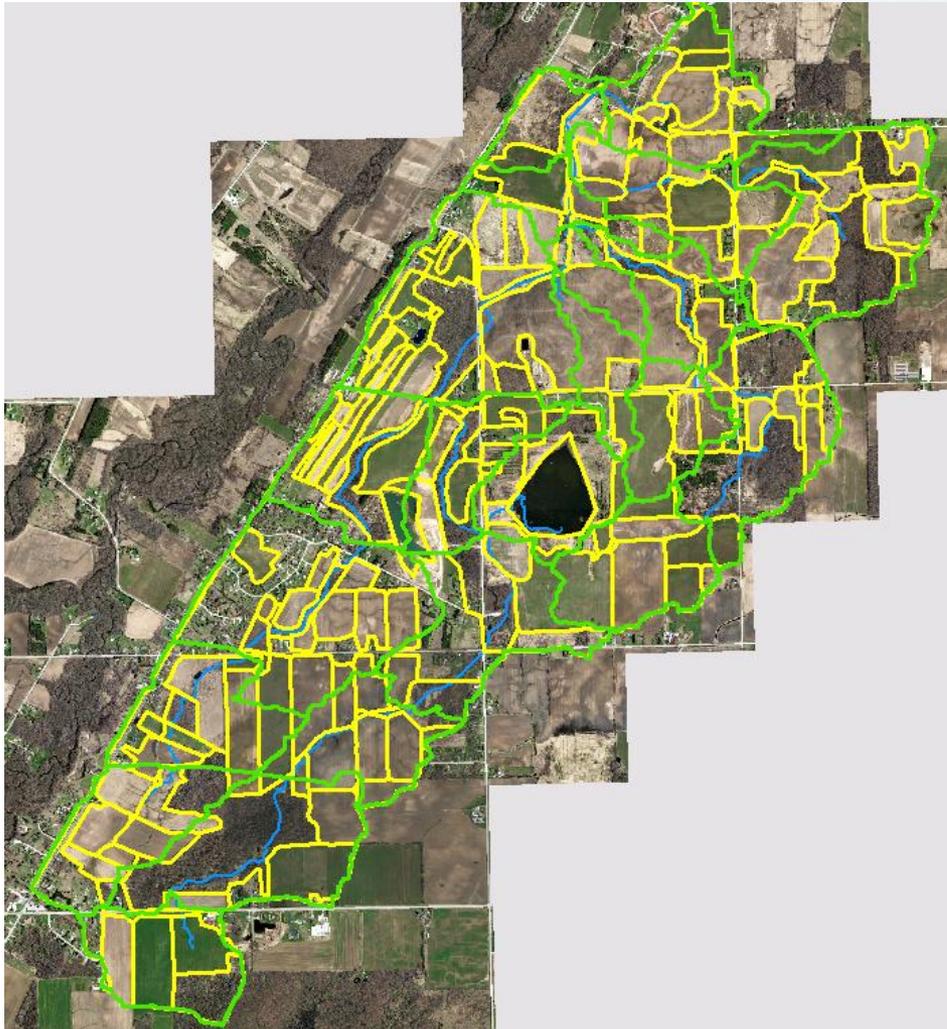
- Watershed divided into Subbasins

- Based on the digital elevation model and overland flow paths

- HRUs

- Smallest spatial unit of the model
- Joins similar land uses, soils and slopes within a subbasin based on user-defined thresholds
- Attempting to define HRUs by field boundaries (field-based practices become more relevant)
- Easier to update new field practices when HRU boundaries are defined by farm fields

Silver Creek Watershed SWAT Model



Watershed divided into Subbasins

- Green outline
- SWAT Reaches match Creek lines from NHD using ~28 Ha threshold

HRUs

- Yellow outline
- Field boundaries were original polygon
- Made polygons of remaining open space
- Will assign land use from crops in the field, WDNR Land use shapefile and Orthophoto
- Create unique HRU's by creating a new soil type for every field

Silver Creek Watershed SWAT Model

■ Data for model

- USGS Phosphorus and TSS instream measurements
- USGS Rainfall, temperature, and wind data
- Soil Phosphorus testing done for pilot
- Current/future crops
- BMPs recommended/implemented
- ‘Soft’ practices (crop rotation, cover crops, fall vs. spring tillage, etc.)

■ Output desired

- Amount of surface runoff generated
 - Water, sediment and P yield from HRUs by day, month or year
- Instream water quality
 - Calibration and testing implementation scenarios
 - Likely P and TSS reduction by scenario

Fox Wolf Watershed Update

- Jessica Schultz, Fox Wolf Watershed Alliance



Grower and Owner Update

- Develop a 2 page project update flyer
 - Describe the project
 - Project timeline
 - Next steps
- Distribute during “kitchen table discussions”
- Send via mail to others
- Continue to leverage communication through trusted sources

Feedback and Other Topics?

- General feedback regarding today's meeting
- Suggestions for future meetings?
- Other topics/ideas?

Next Steps

- Cover crop and tillage coordination for fall harvest
- Refine Conservation Plans and Enhanced Nutrient Management Plans
- “Kitchen table” meetings with growers and owners
- SWAT Modeling
- Coordination with habitat and wetlands teams
- Implementation in 2015
- Planning for 2016 implementation
- Project summary

- Thank you!
- Tentative next meeting date: March 23, 2016