



Transition From A Pilot To Full Scale Utility Led Ag-Based Adaptive Management Watershed Program

AWRA Conference

March 1, 2019

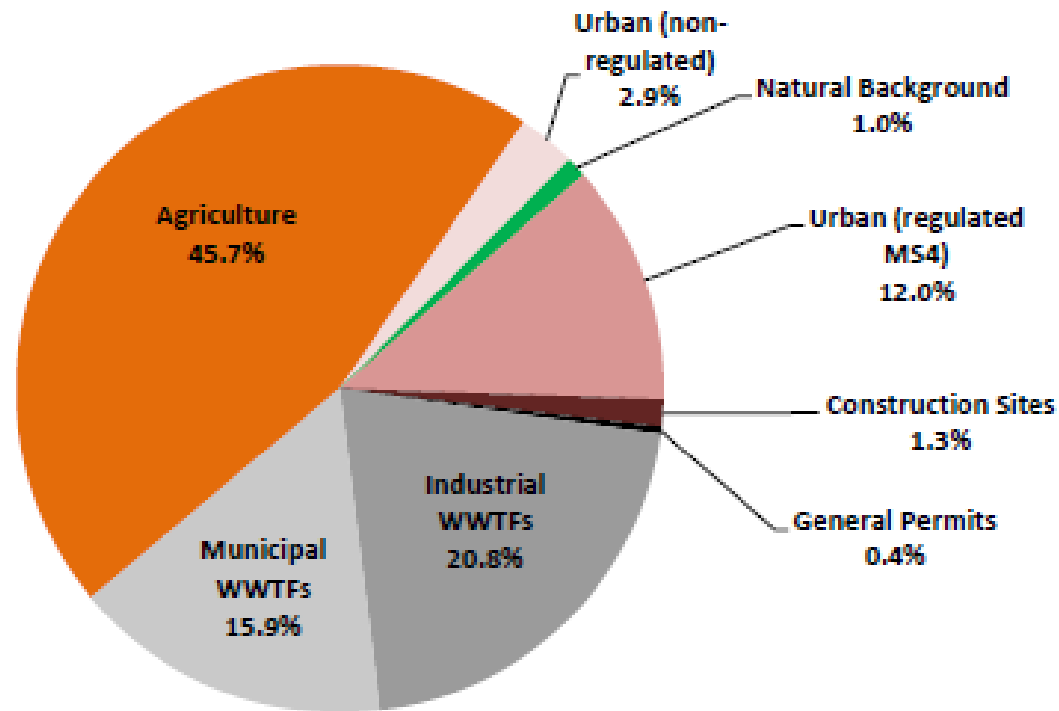
Jeff Smudde – NEW Water
Director of Environmental Programs

NEW Water: Green Bay Metropolitan Sewerage District

- Third largest wastewater treatment facility in Wisconsin
- Currently treat 38 million gallons a day
 - Two facilities
 - Green Bay Facility (30mgd)
 - De Pere Facility (8mgd)
 - 15 municipal customers
 - 219,000 residents
 - 285 square mile area
- Vision: **Protecting our most valuable resource, water.**
- 16 years continuous compliance at Green Bay facility.
- WPDES Permit, Issued July 1, 2014
 - Projected future TP and TSS limits



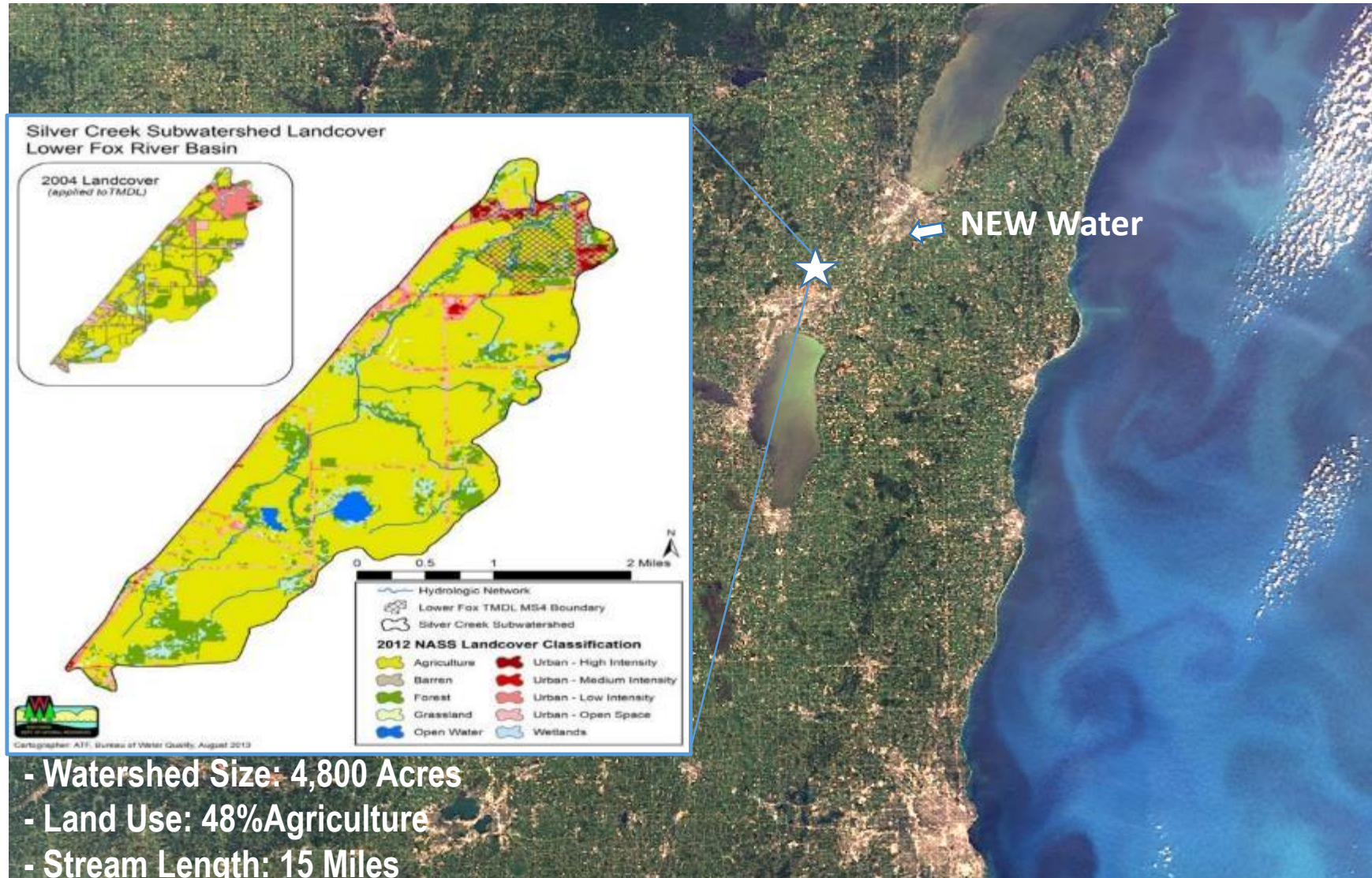
Sources of Phosphorus in Lower Fox River (LFR) Basin



Fox River contributes 1/3 nutrients to Lake Michigan

(Data Source: Total Maximum Daily Load - **TMDL**
Watershed Plan for Lower Fox River March 2012)

Silver Creek Pilot Project



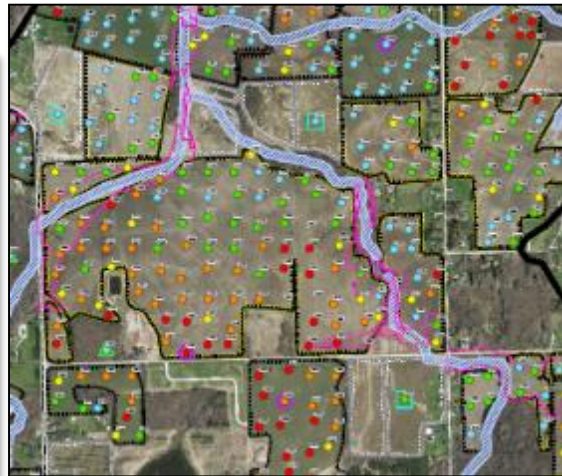
Partnerships in the Silver Creek Pilot Project



Silver Creek Pilot Project – From the Beginning

2014 – Project Kickoff

- Developed project partners
- Water quality sampling
- Soil sampling
- Stream surveys

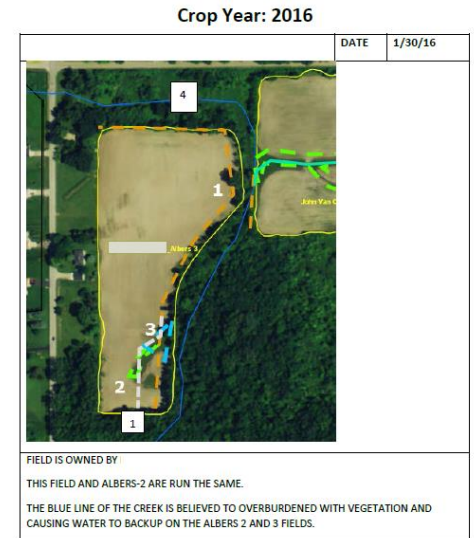


2015 – Watershed Inventory

- Comprehensive field evaluations
- Arc GIS tablet application
- Conservation planning meetings
- Developed conservation and enhanced nutrient mgmt. plans



CONSERVATION & ENHANCED NUTRIENT MANAGEMENT PLAN



Silver Creek Pilot Project – 2016, 2017, & 2018



- Water quality monitoring
- Field planning
- Cost share agreements
- Best Management Practices (BMPs) installation
 - Filter strips (buffers)
 - Critical area plantings
 - Grassed waterways
 - Cover Crops
 - Residue Management
 - Low Disturbance Manure Application
 - Etc.
- Verification of installed BMPs
- Coordination, coordination, coordination....

2018 By The Numbers

- Conservation and Enhanced Nutrient Management Plans
 - Over 1500 acres
- Cost Share Agreements
 - 9 Operational BMP Contracts
- 89% of cropland was not tilled in 2018
 - 78% of cropland used no-till
 - 11% of cropland in alfalfa, pasture, wetland, CRP or other

- Winter Cover in Fields
 - 82% of cropland covered by either alfalfa, cover crops, winter wheat, forage, pasture, or grass
 - 2017 – 85%
 - 2016 – 70%
 - 2015 – 30%

2018 Cover Summary	Acres
Cover Crops	300
Alfalfa	598
Winter wheat	147
Grass	188
TOTAL COVER	1233
TOTAL CROPPED ACRES:	1506

Cover Crops

- 2015 – 30% winter cover
- 2016 – 70% winter cover
- 2017 – 85% winter cover
- 2018 – 82% winter cover



Grassed Waterways



Dec 1, 2017



July 30, 2018

Filter Strips Projects



June 5, 2018

Water and Sediment Control Basins (WASCOB)



June 5, 2018

Wetland Restoration Efforts



7 Wetland Basins

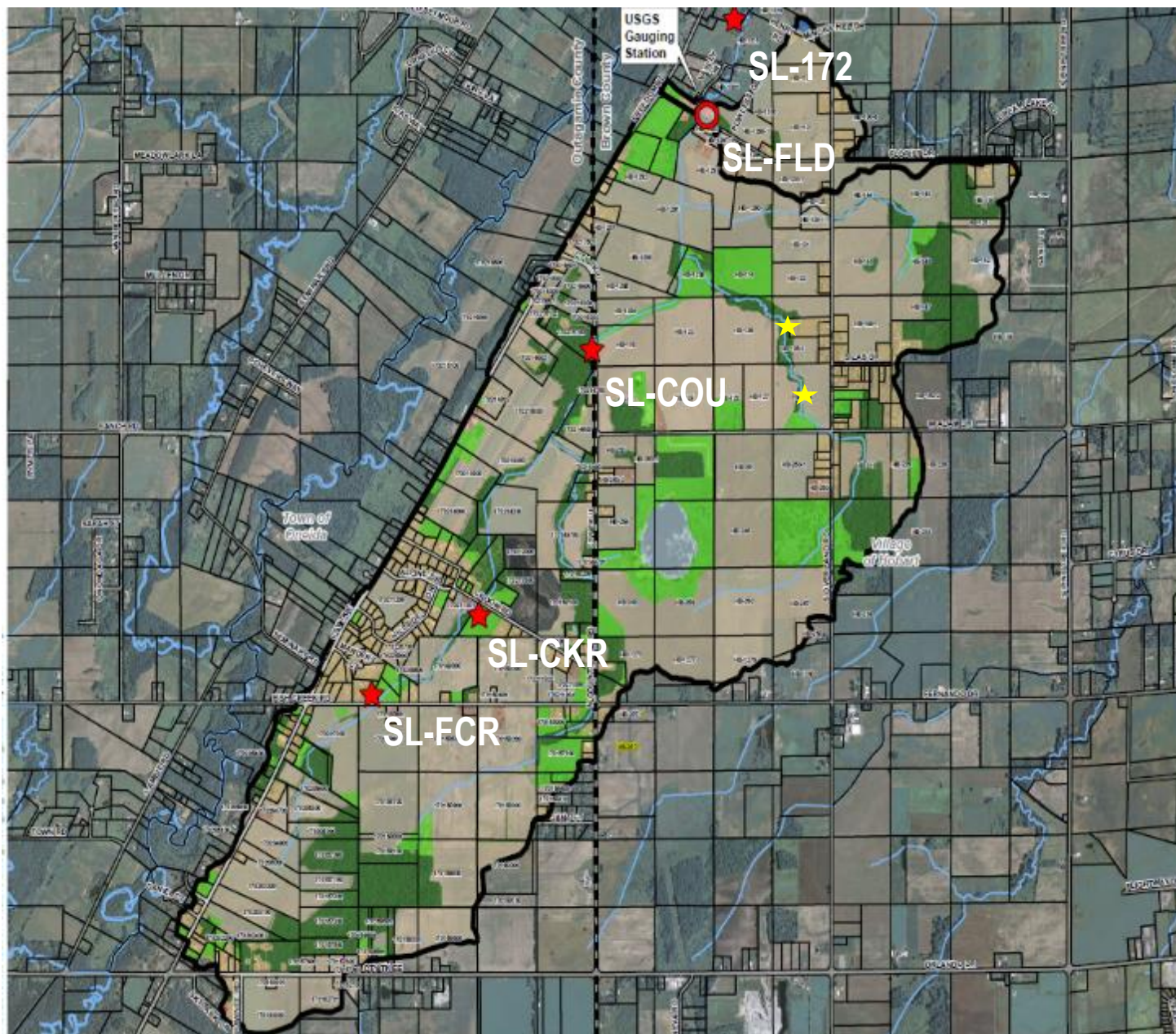
45 Wetland Acres

150 Acre Wetland Complex

650 Acre Drainage Area

Managed Grazing Operation





Stream Sediment and Drain Tile Sampling



Next Steps In Silver Creek



- Update conservation plans
- Planning for 2019 growing season
- Continue installation of operational BMPs 2019
- GLRI grant funding thru 2019 (possibly 2020?)
- Continue water quality monitoring beyond 2020
- Considering funding BMPs beyond 2019

Future Watershed Program Efforts

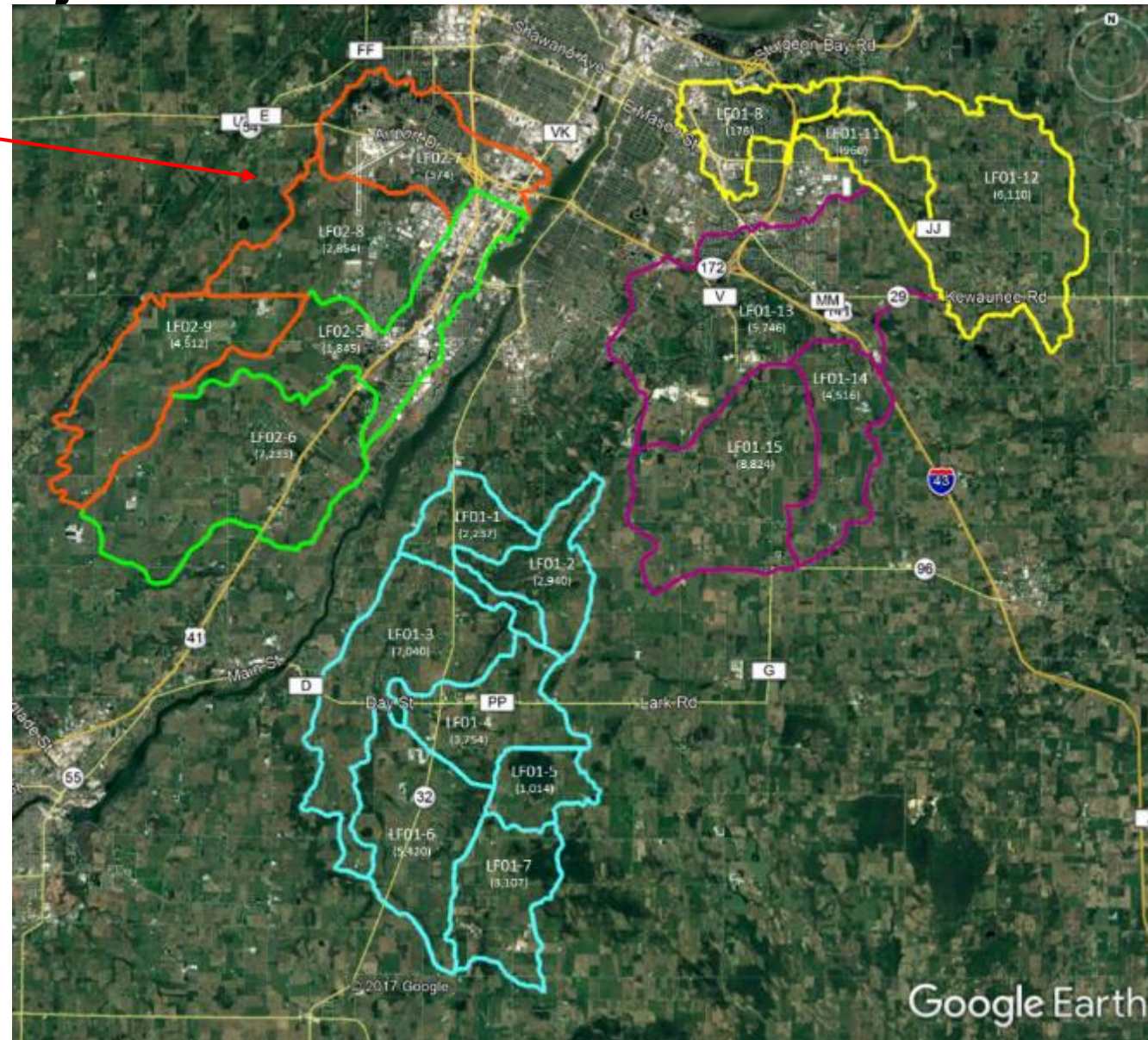


Evaluation of Pilot to Inform Decision for Full Scale






- Reflecting on Pilot Project Results
 - Successful in forming partnerships in the watershed
 - Successful in working with landowners and growers to install practices on ag land
 - Water quality response is slow but looking optimistic
- Economics of a Watershed Project vs Treatment Plant Construction
 - Cost analysis based on actual costs of the pilot
 - Evaluated watershed costs on a 30 YR net present value to compare to treatment plant construction
 - Adaptive Management - \$59-\$79 Million
 - Treatment Upgrades - \$93-\$108 Million
- Community-Wide Benefits of a Watershed Project

Opportunities in Adjacent Watersheds

Silver Creek



Legend

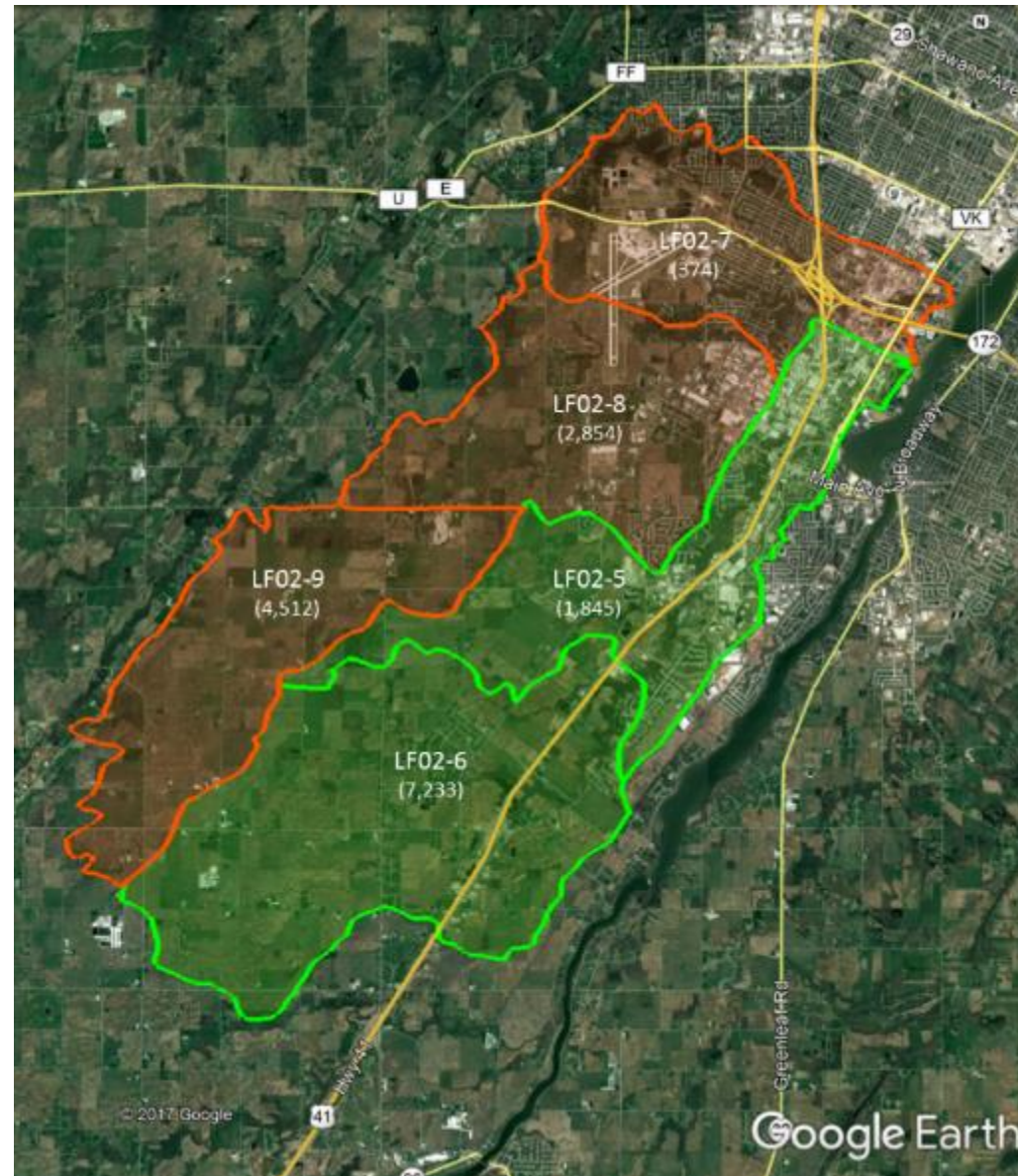
-  Dutchman Creek
-  Ashwaubenon Creek
-  Upper East River
-  Bower Creek
-  Baird Creek



Watershed Evaluation Criteria

1. Sub-watershed Size
2. Sub-watershed Land Use and Agricultural Contribution
3. Geographic Location
4. Nine-Key Element Plan Status
5. Potential Load Partners
6. Flow and Water Quality Data
7. Ongoing Agricultural Watershed Projects
8. Severity of Perceived Issues
9. Technical Resources

Ashwaubenon/Dutchman Creeks

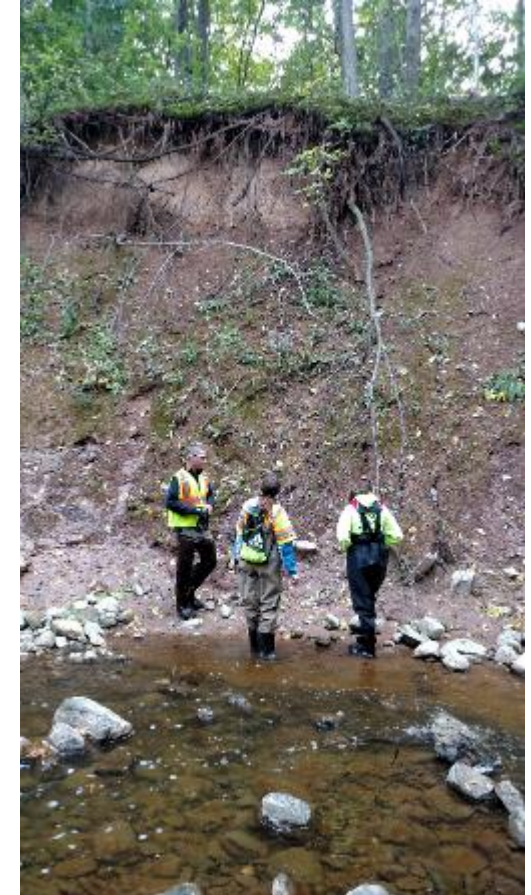
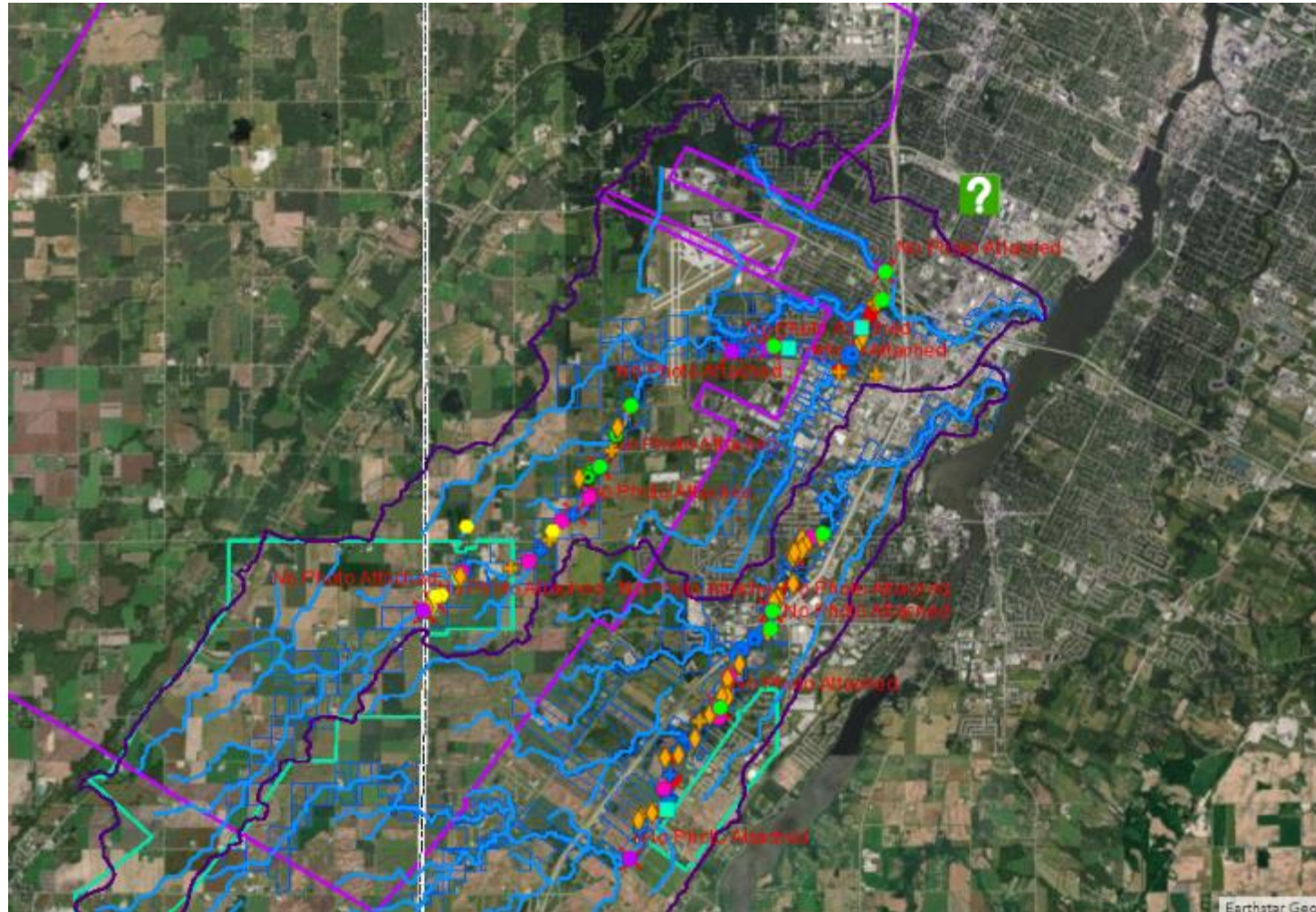


Full Scale Watershed Management Program Efforts

- Watershed team began planning efforts in 2018
 - Position NEW Water to advance AM as part of the phosphorus and TSS compliance strategy
- MOU with DNR signed Jan 11, 2018
- Similar starting tasks as the Pilot
 - Work plan timeline established
 - Stream corridor inventory
 - Workgroups and partnership agreements
 - Water quality monitoring
 - Flow monitoring
 - Biological monitoring



Stream Corridor Inventory



New Program Name and Logo



Next Steps in Full Scale Watershed Program

- 2019 – a Year of Planning and Inventory
 - Water quality monitoring
 - Desktop field evaluation
 - Develop a method of prioritization
 - Develop advisory committee
 - Kickoff of the program
- 2020
 - Begin fields walks
 - Implementation of practices
- 20 Years of watershed efforts



Questions?



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