


Appendices

Appendix A. Examples of Education and Outreach: WDNR TMDL Newsletters



Milwaukee River Basin

TMDL Implementation Newsletter

Milwaukee, Menomonee, Kinnickinnic Rivers
Milwaukee Harbor Estuary

2019

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Aug 6: Adopt-A-River Orientation

Aug 14: Milky Moonlight Milwaukee River Paddle

Aug 20: Kinnickinnic River Paddle & Pour

Aug 27: NRCS Regional Conservation Meeting - Mukwonago, WI

Sept 8: Milwaukee River Annual Boat Parade

Sep 18: NRCS Regional Conservation Meeting - Campbellsport, WI

Nov 10: Clean Rivers Clean Lakes Conference

Nov 29: Emerging Contaminants Sampling Event

TMDL Implementation Update

Milwaukee Basin Water Quality Improvement Plan (WQIP)


Implementation Team: June 14: Implementation Team members met at University of Milwaukee School of Freshwater Sciences to discuss progress on the nine-key element plans for Cedar, Pigeon, Ualo and Mole Creek watersheds. Good progress is being made on the 9KE plans and SWWT, County, and DNR staff will be finalizing content to complete these plans. Once draft plans are completed and available for public review, they will be shared via this newsletter.

June 19th: The Implementation Team met at SEWRPC to follow-up on the June 14th meeting and discuss progress on the WQIP and Monitoring Plan. Outreach meetings are being held with community partners to present the WQIP strategy. A follow-up meeting is tentatively planned for September.

Monitoring: Monitoring team members have had numerous meetings to work through logistics and develop framework and strategy for monitoring to support 9KE Plans and the WQIP. The basis for monitoring will be the Wisconsin Consolidated Assessment and Listing Methodology (WisCALM).

The Joint Science and Policy Team of Southeastern Wisconsin Watersheds Trust, Inc. met June 26th at UW-Milwaukee, School of Freshwater Sciences to share progress and updates on:

- MMSD 2050 Facilities Plan and 2035 Vision
- the WQIP
- outreach plans
- the Bacteria Team



TMDL Links

Milwaukee River Basin TMDL

TMDLs FAQ

What is a TMDL?

Impaired Waters

Milwaukee Estuary Area

If you would like info about the Joint Science and Policy Teams, caontact Chris Magruder.

If you would like more info on the WQIP, please visit the SWWT Water Quality Improvement Planning website, or contact Jake Fincher.



Milwaukee River Basin

TMDL Implementation Newsletter

Milwaukee, Menomonee, Kinnickinnic Rivers

Milwaukee Harbor Estuary

2019

Water - Water Leaders Summit

Jul 5: Citizen Lake Monitoring Training Workshop

July 16: Menomonee River Paddle & Pour

July 20: Emerging Contaminants Sampling Event

Jul 31: Green Infrastructure Grants

Aug 6: Adopt-A-River Orientation

TMDL Implementation Update

Milwaukee Basin Water Quality Improvement Plan (WQIP)

The Joint Science and Policy Team of Southeastern Wisconsin Watersheds Trust, Inc. met May 15th at UW-Milwaukee, School of Freshwater Sciences to receive updates on:

- the WQIP
- outreach plans
- the Bacteria Team

If you would like info about the Joint Science and Policy Teams, contact Chris Magruder.

If you would like more info on the WQIP, please visit the SWWT Water Quality Improvement Planning website, or contact Jake Fincher.

Appendix B. Compendium of Past Education and Outreach Activities



FARMER to FARMER
“Lunch & Learn” *BUS TOUR*

Wednesday, September 26, 2018 9:30am – 2:30pm

Meet by Al Schmidt - 11930 Pleasant Valley Rd. WE (Oz County)

Tour bus will leave farm by 10:30am

- Funding Opportunities: Cedar Creek Farmers
- Dig Deeper: The Power of Cover Crop Roots
- Cost Analysis: Conventional vs. No-Tilled Beans
- Economic Testimonials-Reducing Your Inputs
- No-Till Equipment, Beans into Cover Crops
- Soil Health System: Long Term No-Till & Cover Crops
- Farm Diversification: Rolled Rye/Fall Pumpkins
- Reduced Tillage/No-Till Transition Challenges with Manure

4 CEUs Approved

Catered lunch provided by Cedar Creek Farmers & Fund for Lake Michigan
ESVD by Sept 21: cedarcreekfarmers@gmail.com or Fay @ 262.335.4800

Cedar Creek Farmers: President Al Schmidt (262.483.0683), Ross Bishop (414.531.8531), Lee Kissinger (414.659.6284),
Producer-Led Group Terry Kohl (262.305.1952), Stan Miller (262.305.5331), Brian Peters (262.305.8680)



MINUTES
NATURAL RESOURCES COMMITTEE
REGULAR MEETING
THURSDAY, SEPTEMBER 6, 2018 – 8:30 AM
ADMINISTRATION CENTER - ROOM 118
121 W. MAIN STREET, PORT WASHINGTON, WI 53074

1. CALL TO ORDER

A regular meeting of the Natural Resources Committee was held in room 118 at the Administration Center.

Attendee Name	Title	Status	Arrived
J. Rothstein	Chairperson	Present	
B. Jobs	Vice-Chairperson	Present	
D. Gall	Supervisor District 16	Present	
R. Holyoke	Supervisor District 22	Present	
B. Ross	Supervisor District 19	Present	
Mark Hilgendorf	FSA Representative	Present	

Staff present: County Administrator Dzwiniel, Policy & Budget Analyst Wittek, UW Extension Director Sarkady, 4-H Youth Development Educator Butler, Community Development Educator Ward, Agriculture Educator Plaster, Land & Water Management Director Holschbach, Planning & Parks Director Struck, Assistant Finance Director Pezanoski, Land Information Coordinator Richards (8:35am), Budget Manager Balke (8:35am) and County Clerk Winkelhorst.

Others present: Supervisor Marchese, Ray and Mary Clausing (8:50am).

2. PROPER NOTICE/ADOPTION OF AGENDA

Chairperson Rothstein called the meeting to order at 8:30 AM. The meeting was properly noticed.

Motion made by Supervisor Ross, seconded by Supervisor Holyoke to adopt the agenda as presented. Motion carried. (6-0)

3. PUBLIC COMMENTS, CORRESPONDENCE, COMMUNICATIONS

Mr. Holschbach received correspondence from a landowner on Edgewater Drive, Grafton, who is not interested in selling their property and does not support the purchase of surrounding properties by the county.

8:35 AM Land Information Coordinator Richards and Budget Manager Balke joined the meeting.

4. APPROVAL OF MINUTES

a. Natural Resources Committee - Regular Meeting - Aug 2, 2018 8:30 AM

Motion to approve the August 2, 2018 minutes as submitted.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVE [UNANIMOUS]
MOVER: B. Jobs, Vice-Chairperson
SECONDER: B. Ross, Supervisor District 19
AYES: Rothstein, Jobs, Gall, Holyoke, Ross, Hilgendorf

5. LAND AND WATER MANAGEMENT DEPARTMENT

a. Action Items:

1. Submittal of Department of Agriculture, Trade and Consumer Protection 2019 Wisconsin Agricultural and Household Hazardous Waste Collection Clean Sweep Grant Application*
Motion to approve the submittal of a Department of Agriculture, Trade and Consumer Protection 2019 Wisconsin Agricultural and Household Hazardous Waste Collection Clean Sweep Grant application.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED [UNANIMOUS]
MOVER: B. Jobs, Vice-Chairperson
SECONDER: R. Holyoke, Supervisor District 22
AYES: Rothstein, Jobs, Gall, Holyoke, Ross, Hilgendorf

2. Utilization of Tree Fund Account to Support Farmer Attendance at the 27th Annual No-Tillage Conference January 8-11, 2019, Indianapolis, IN.*
Mr. Holschbach reviewed prior utilization of the tree fund account and funding sources.

Motion to approve the request to utilize tree account funds of \$5,600 to promote attendance of five farmers to the National No-tillage conference January 8-11 in Indianapolis, IN to cover the cost of registration, travel, lodging and meals.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED [UNANIMOUS]
MOVER: D. Gall, Supervisor District 16
SECONDER: B. Ross, Supervisor District 19
AYES: Rothstein, Jobs, Gall, Holyoke, Ross, Hilgendorf

b. Discussion Items:

1. Revisions to Land & Water Resource Management Plan*
8:50 AM Ray and Mary Clausing joined the meeting.

Mr. Holschbach explained that the Land & Water Resource Management Plan (LWRMP) requires updating for 2019-2028. The plan is scheduled for action by the State Land & Water Conservation Board in December.

Mr. Holschbach has concerns with the plan noting that Ulao, Pigeon and Cedar Creeks are in the process of having 9 Key Element Plans developed. Milwaukee

Metropolitan Sewerage District (MMSD) recently contracted to write plans for three more watersheds within Ozaukee County. Over a year ago, Mr. Holschbach contacted the Wisconsin Department of Agriculture, Trade and Consumer Protect (DATCP) to request an extension to write 9 Key Element Plans for the county. DATCP does not allow for extensions to counties as they have done in the past. DATCP suggested the 9 Key Element Plans that are being written, which are standalone plans, could be referenced in the LWRMP.

Information on the LWRMP and 9 Key Element Plans was distributed.

Supervisor Marchese would like the committee to consider formally requesting DATCP to extend the schedule. Mr. Marchese cited the following reasons: 1) waste of taxpayer dollars to have three studies that accomplish the same thing; 2) total duplication of effort to write 9 Key Element Plans and LWRMP; and 3) the producers are engaged and due to the Clean Farm Families efforts, the opportunity is now to make meaningful improvement in the water quality in the Upper Milwaukee River Watershed.

Discussion on the effectiveness of the LWRMP and the referencing of incomplete 9 Key Element Plans.

Mr. Holschbach noted that a delay of the LWRMP and moving forward with a more extensive 9 Key Element Plan for other watersheds would require additional staff. Mr. Holschbach would request support from the committee.

Discussion on delaying the plan and requesting an extension.

Direction from the committee was for Mr. Holschbach to move forward without the extension. Mr. Holschbach should give sufficient information to Mr. Dzwiniel to contact the County's Legislative Representatives, on behalf of the Natural Resources Committee, outlining how the county would benefit from an extension.

Supervisor Marchese offered to appear in front of the committee to take them through what is the foundation and basis for this whole problem. This could give the committee the knowledge to make an informed decision and ask the hard questions. The committee agreed that Supervisor Marchese could present at the next meeting.

c. Management/Financial/Informational Reports

1. Land & Water Management Reports*

SE Area Land & Water Conservation Tour to be held in Waukesha County on October 11.

Chairperson Rothstein requested that the committee review Land & Water Management budget and then move ahead to the last action item regarding the Menomonee River to accommodate people in attendance. There were no objections.

6. DISCUSSION ITEM

a. Natural Resource Committee - Departmental Budgets

Mr. Dzwiniel reviewed the budget highlights for the departments under the Natural

Resources Committee's oversight including:

2% wage increase assumption.

7.5% increase in 2019 health insurance premium assumption.

Land & Water Management

Removal of \$8,700 for survey equipment.

Vehicle purchase financed through the County's Capital Reserve Fund. The department will expense \$5,000 annually for six years.

Inquiry on the process through the budget should additional staff be needed for the LWRMP Plan.

Continuation of the Budget discussion

Register of Deeds

Removal of \$38,000 for cataloging digitally scanned records.

Impact of North American Datum (NAD) Conversion revenues increase of \$97,000.

Discussion on cataloging of scanned records.

10:33AM Supervisor Jobs excused.

University Extension

No departmental highlights.

Planning & Park

Capital deferrals in Planning & Parks Department: \$185,000 bathrooms at Covered Bridge Park; \$175,000 bathrooms at Lion's Den Gorge Nature Park; \$300,000 cold storage facility at Tendick Nature Park; \$40,000 playground equipment at Waubedonia Park; \$38,000 vehicle replacement; and \$150,000 Interurban Trail resurfacing.

Discussion on resurfacing of the Interurban Trail; Planning & Parks financials; Tendick Nature Park cold storage facility; and funding options for capital projects.

Break 11:23 AM

Reconvene 11:32 AM

7. REGISTER OF DEEDS/LAND INFORMATION

a. Management/Financial/Informational Reports

1. Register of Deeds Reports

Ms. Richards reviewed possible cost saving measures and efficiencies in the Land Information Office.

8. UNIVERSITY EXTENSION OFFICE

a. Management/Financial/Informational Reports

1. UW-Extension Agriculture Educator Presentation: Helping Farmers During Challenging Times

Ms. Plaster gave a brief presentation on UW Extension's role in helping farmers during challenging times.

11:45AM FSA Member Hilgendorf excused.

2. UW-Extension Reports

Ms. Ward provided an update on her work with other organizations.

Ms. Butler reported Ozaukee County has 650 registered 4-H individuals, which is the highest population in five years.

9. PLANNING AND PARKS DEPARTMENT

a. Action Items:

1. Grant Submittal and Acceptance of an American Transmission Company - Community Tree Planting Program Grant for Tree Planting Activities at Tendick County Nature Park

Motion to approve the submittal, acceptance and implementation of a grant by the Planning and Parks Department to the American Transmission Company Community Tree Planting Grant Program to support tree planting activities at Tendick Nature County Park.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED [UNANIMOUS]
MOVER: B. Ross, Supervisor District 19
SECONDER: D. Gall, Supervisor District 16
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

2. Grant Submittal and Acceptance of an American Transmission Company - Pollinator Planting Program Grant for Prairie Restoration Activities at Tendick County Nature Park

Motion to approve the submittal, acceptance and implementation of a grant by the Planning and Parks Department to the American Transmission Company Pollinator Planting Grant Program to support prairie/savannah restoration activities at Tendick Nature County Park

NATURAL RESOURCES COMMITTEE

RESULT: APPROVED [UNANIMOUS]
MOVER: B. Ross, Supervisor District 19
SECONDER: R. Holyoke, Supervisor District 22
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

3. Grant Submittal and Acceptance of a Grant to the Brookby Foundation for Habitat Enhancements at Virmond and Covered Bridge County Parks and Lion's Den Gorge Nature Preserve

Motion to approve the submittal and acceptance of a grant by the Planning and Parks Department to the Brookby Foundation for Habitat Enhancements in Virmond and Covered Bridge County Parks and Lion's Den Gorge Nature Preserve.

NATURAL RESOURCES COMMITTEE

RESULT: APPROVED [UNANIMOUS]
MOVER: D. Gall, Supervisor District 16
SECONDER: R. Holyoke, Supervisor District 22
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

4. Grant Submittal and Acceptance of a Natural Resource Foundation Besadny Conservation Grant for Habitat Enhancement Activities at Virmond County Park

Motion to approve the grant submittal and acceptance of a grant by the Planning and Parks Department to the Natural Resources Foundation Besadny Conservation Grant Program to support habitat enhancement activities at Virmond County Park in the City of Mequon.

NATURAL RESOURCES COMMITTEE

RESULT: APPROVED [UNANIMOUS]
MOVER: R. Holyoke, Supervisor District 22
SECONDER: B. Ross, Supervisor District 19
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

5. Resolution: Acceptance of a Wisconsin Department of Natural Resources County Conservation Aids Grant for Habitat Enhancement Activities at Virmond County Park

Motion to approve and recommend to the Ozaukee County Board of Supervisors the resolution for submittal and acceptance of a grant by the Planning and Parks Department to the Wisconsin Department of Natural Resources - County Conservation Aids Program to support habitat enhancement activities at Virmond County Park in the City of Mequon.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED [UNANIMOUS]
MOVER: R. Holyoke, Supervisor District 22
SECONDER: B. Ross, Supervisor District 19
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

6. Bid and Contract Negotiation for Tree Planting and Maintenance Services in the Ozaukee County Park System and Ulao Creek Habitat Restoration Area

Motion to accept the bid from Property Solutions Contracting LLC and approve negotiation of a contractual services contract with Property Solutions Contracting, for a not to exceed sum of \$91,889.60, which includes a 15% contingency to cover any potential change orders, for tree planting and maintenance in the Ozaukee County Park System and Ulao Creek Habitat Restoration Area.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED [UNANIMOUS]
MOVER: D. Gall, Supervisor District 16
SECONDER: R. Holyoke, Supervisor District 22
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

7. Budget Amendment for a National Fish and Wildlife Foundation - Sustain Our Great Lakes Grant for Mequon Thiensville Dam Fishway Enhancements

Motion to approve the increase of revenue budget amendment for the National Fish and Wildlife Foundation - Sustain Our Great Lakes grant to support enhancements at the Mequon Thiensville fishway.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED AND FORWARDED [UNANIMOUS] Next: 9/27/2018 8:30 AM
MOVER: R. Holyoke, Supervisor District 22
SECONDER: B. Ross, Supervisor District 19
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

8. Grant Submittal and Acceptance of a Grant to the Brookby Foundation for Habitat Enhancement Activities on Mole Creek

Motion to approve the submittal and acceptance of a grant by the Planning and Parks Department to the Brookby Foundation to support habitat enhancement activities on Mole Creek in the Village and Town of Saukville.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED [UNANIMOUS]
MOVER: D. Gall, Supervisor District 16
SECONDER: R. Holyoke, Supervisor District 22
AYES: Rothstein, Gall, Holyoke, Ross
EXCUSED: Jobs

9. Grant Submittal to the Fund For Lake Michigan to Support Stormwater Management, Fish and Wildlife Enhancement, and Wetland Habitat Restoration Activities adjacent to the Little Menomonee River

Mr. Clausen addressed the committee reporting on the rain elevations in the stream after the recent flooding.

Mr. Struck responded to questions regarding the timeline of the collection of onsite data, design and engineering process and anticipated meetings with landowners.

Mr. Hilgendorf distributed a copy of the Wisconsin State Statute that he believes pertains to his concerns addressed at the last meeting regarding the county's liability of damage if it occurs to the adjacent landowner's properties.

Mr. Dzwiniel stated that the statute referenced in the handout pertains to drainage districts and is not applicable to this project per Corporation Counsel. Mr. Struck has met with DATCP staff in Madison that work directly with this area of the statute. The information he has received will be shared with Corporation Counsel and staff will request an opinion.

Inquiries on use of matching funds; total amount of funding for the Little Menomonee River project; wetland restoration and stormwater retention; and timeline of the project.

Motion to approve the submittal of a grant application to the Fund for Lake Michigan to support stormwater management, fish and wildlife enhancement and wetland habitat construction activities near the Little Menomonee River in the City of Mequon.

Chairperson Rothstein reverted to the budget discussion.

NATURAL RESOURCES COMMITTEE
RESULT: APPROVED [UNANIMOUS]
MOVER: B. Ross, Supervisor District 19
SECONDER: R. Holyoke, Supervisor District 22
AYES: Rothstein, Jobs, Gall, Holyoke, Ross

b. Management/Financial/Informational Reports

1. Planning & Parks Reports

Mr. Struck reported on a tour he conducted for UW Sea Grant.

Damage assessment for the recent flooding to date operationally estimated at \$2,700. Anticipating future expenses for damage estimated at \$75,000.

Through grant funding and partnership with the Milwaukee Riverkeeper, signage to be placed in county and municipal parks identifying the Milwaukee Urban Water Trail.

10. NEXT MEETING DATE

TUESDAY, October 2, 2018

11. ADJOURNMENT

Motion made by Supervisor Ross, seconded by Supervisor Gall to adjourn. Motion carried. (4-0) Meeting adjourned at 12:14PM.

Julianne B. Winkelhorst, County Clerk

* FSA Representative Item

OTN Winter Conference 2019

OTN Winter Networking Conference

When: Thursday, March 7th Doors open 5:30, official start 6:00PM

Where: Mequon Nature Preserve

What: Pot Luck Dinner and Drinks Please bring a dish to pass or beverages to share. (We will provide plates, cups, flatware and napkins plus a few plates of food)

We have 3 lightning talks plus the usual shameless plugs, food and lots of opportunity for networking.

Lightning Talks:

1. *9KE plan for the Cedar, Pigeon, Ulao, and Mole Creek watersheds that Sweet Water has drafted with support from WDNR and MMSD.*
2. *Birding news including the Fiserv Forum and Motus Towers.*
3. *Update on the Krier Conservancy*

MidMoraine Water Quality Collective

10:00 Wednesday, December 6, 2017

Jackson Village Hall

Agenda

- Welcome / Introductions – Matt Bednarski (GRAEF)
 - Success Stories: WWTPs; Saukville and Cedarburg, Dave Amott (R/M), Eric Hackert (Cedarburg)
 - TMDL status update – WDNR Staff
 - TMDL Implementation sector team update – Mark Riedel (WDNR)
 - MS4 Permitting Update:
 - Electronic MS4 annual reports (revised form) Ben Benninghoff / Marissa Thalen (WDNR)
 - Menomonee River Watershed Permit update Ben Benninghoff / Marissa Thalen (WDNR)
 - MMWQC Watershed Permit update Maureen McBroom (R/M), Evan Nisbet (GRAEF)
 - Summarize permit reissuance process
 - Overview of MMWQC communities and TSS/P WLA requirements
 - Bacteria WLA compliance approaches so far
 - TMDL Modeling for MS4 Permits: Annual Percent Reduction Method Bryan Hartsook (WDNR)
- ~ Lunch ~
- 9 Key Element plans in the MKE watershed – Linda Reid, Will Kort (Sweet Water)
 - Leaf Collection Study/Guidance Update – Ben Benninghoff (WDNR), Maureen McBroom (R/M)
 - Respect our Waters campaign – Jake Fincher (Sweet Water)
 - DNR update – WDNR Staff
 - Web-site / Dropbox Demo – Dave Amott (R/M)
 - Update on Grants – Matt Bednarski (GRAEF)
 - 2018 MMWQC Planning - Matt Bednarski (GRAEF)
 - 2018 Meeting Schedule: 3/14; 6/13; 9/12; 12/12

Thank you to the Village of Jackson for hosting our meeting!





Milwaukee River Watershed Clean Farm Families Presents:

SOIL: IMPROVING SOIL HEALTH IN OUR FARMING COMMUNITIES

WITH RAY ARCHULETA
Nationally renowned soil health expert



Free Event

Friday, September 7th, 2018
10am - 3pm (Lunch Provided)

Meet at: Paulus Dairy Farm
W2828 Meadowlark Road Fredonia, WI 53021

- »Why is soil health important?
- »Reducing costs and increasing profitability using soil health principals
- »Discussion on soil health tests
- »How to read soil tests
- »Local efforts to improve soil health
- »How to achieve soil health objectives locally

Please RSVP by August 30th

Jim Melichar
(262) 206-1731
jpmelichar@gmail.com

Or

Mike Paulus
(414) 378-6453
cowsrus@paulusdairy.com

Or

Andy Holschbach
262-284-8271
aholschbach@co.ozaukee.wi.us



OTN Save the Date and call for lightning presentations G - H Inbox x



Marjie Tomter <coordinator@treasuresofoz.org>

Jan 29, 2019, 3:47 PM

Happy Winter 🌨️

Why Save the Date: OTN Winter Networking Conference

When: Thursday, March 7th Doors open 5:30, official start 6:00PM

Where: Mequon Nature Preserve

Pot Luck Dinner and Drinks (we will provide plates, cups, flatware and napkins plus a few plates of food)

What besides networking and eating? We will have our self introductions and shameless plugs AND we are hoping a few of you, who perhaps have not presented before or for awhile, might volunteer to do a 5 minute "lightning talk" on something your organization, or you, have on your front burner. We will have time for 3 or these, so **if you have an idea, please email me and let me know.** If we get more than 3 offers, we ill need to pick three of the group.

**A lightning talk is a very short presentation lasting only a few minutes, given at a conference or similar forum. Several lightning talks will usually be delivered by different speakers in a single session, sometimes called a data blitz.*

Appendix C. Clean Farm Families Meeting Agendas



Improving Soil Health and Water
Quality

CHAIRMAN:

Jim Melichar
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3990 Willow Lane
Port Washington, WI 53074
(262)206-1731
jpmelichar@gmail.com

BOARD MEMBERS:

Dave Brunnquell
Neal Maciejewski
Mike Paulus
Bob Roden
Joe Roden
Ken Falk
Marvin Kolbach

COLLABORATOR:

Andy Holschbach
aholschbach@co.ozaukee.wi.us
(262)284-8271
Ozaukee Co. LWMD
121 W. Main Street,
P.O. Box 994
Port Washington, WI 53074

MILWAUKEE RIVER WATERSHED CLEAN FARM FAMILIES

FARMER-LED WATERSHED COUNCIL MEETING

Tuesday, November 14, 2017, 6:30 P.M.

Melichar Broad Acres

Agenda

- 1) Call to Order
- 2) Approval of September 26, 2017 Meeting Minutes
- 3) Introduction – Karen Nenahlo, Project Manager, MMSD
- 4) MRWCP (Milwaukee River Watershed Conservation Partnership) December 11th mtg., Riveredge Nature Center
- 5) October 4th Cover Crop Conference Report
- 6) Soil Health Workshops Featuring Ray Archuleta, February 9th and August/September 2018
- 7) Expansion of Demonstration Site
- 8) Preparation For Winter Meeting with Wastewater Treatment Staff to Discuss Adaptive Management and Water Quality Trading
- 9) Incentive Payments & Participant Signage
- 10) Producer-Led Watershed Protection Grant Annual Workshop, December 13, 2017, WI Dells
- 11) Discussion Regarding Formation of County Demonstration Farm Network
- 12) Update on Potential Purchase of Low Disturbance Manure Applicator
- 13) Update on Conservation Programs and Cost-Share Available to Producers
- 14) **Producer Survey** - FOR 9 KEY ELEMENT PLAN
- 15) Other Business
- 16) Next Meeting Date
- 17) Adjournment



*Improving Soil Health and Water
Quality*

MILWAUKEE RIVER WATERSHED CLEAN FARM FAMILIES

FARMER-LED WATERSHED COUNCIL MEETING

Tuesday, October 16, 2018, 6:00 P.M.

Melichar Broad Acres

Agenda

CHAIRMAN:

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BOARD MEMBERS:

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- 1) Call to Order
- 2) Approval of September 5, 2018 Meeting Minutes
- 3) Conservation Incentives
- 4) Hwy 57 Demonstration & Other Demonstration Sites
- 5) Visit from Penn State Extension and Interseeder Technologies
- 6) Acquisition of Low Disturbance Manure Applicator
- 7) Update – Ozaukee County Demonstration Farm Network & Potential Field Day
- 8) National No-tillage Conference, January 8-11th, Indianapolis, Indiana
- 9) February 8th Soil Health Workshop – Steve Groff, PA Farmer and Cover Crop Specialist
- 10) Soil Health Academy, April 9-11th
- 11) Watershed Planning – 9 Key Element Planning Effort
- 12) Website
- 13) Update on Conservation Programs and Cost-Share Available to Producers, Mike Patin, USDA NRCS
- 14) Other Business
- 15) Next Meeting Date
- 16) Adjournment



To: Milwaukee River Watershed Clean Farm Families Board Members
From: Andy Holschbach
Date: 12/6/18
Re: Meeting Minutes - Melichar Broad Acres, October 16, 2018

Discussion Items:

Comments: In attendance were Jim Melichar, Dave Brunnuell, Andy Holschbach, Mike Patin, Mike Paulus, Bob Roden, Joe Roden, Marvin Kolbach, Ken Falk, Matt Winker and Brian Karrels.

- 1) Dave Brunnuell, V. Chair called the meeting to order at 6:22 P.M.
- 2) Approval of September 5, 2018 Minutes: Ken motioned to accept, second Marvin. Unanimous favor to approve.
- 3) Conservation Incentives/Budget
 - 10) Soil Health Academy , April 9-11th
 - a. Planned for April 9-11th at Roden Echo Valley Farm.
 - b. Tentative presenters – Gabe Brown, Ray Archuleta, David Brandt, Allen Williams
 - c. Minimum of 35 participants and max is 50.
 - d. Start locally with registration and then if room still available open it up statewide.
 - e. Cost is \$1,275 for 3 day academy.
 - 11) Watershed Planning – 9 Key Element Planning Effort
 - a. Watershed with completed 9 Key Element Plans become eligible to receive federal 319 funds.
 - b. 9 Key Element Plans presently being worked on are: Ulao, Mole, Pigeon and Cedar Creek, also recently initiated planning on Town of Fredonia- Milwaukee River, 14,125 acres, Milwaukee River North Branch, 14,132 acres and Village Newburg- Milwaukee River East, 18,671 acres
 - c. CFF is interested in being updated and learning more about water quality monitoring and 9 Key Element Planning.
 - d. It was decided to invite Karen Nenahlo with MMSD to December 11th meeting to provide information on water quality monitoring and 9 Key Element planning



Improving Soil Health and Water
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MILWAUKEE RIVER WATERSHED CLEAN FARM FAMILIES

FARMER-LED WATERSHED COUNCIL MEETING

Tuesday, December 11, 2018, 11:00 A.M.

Melichar Broad Acres

Agenda

- 1) Call to Order
- 2) Approval of October 16, 2018 Meeting Minutes
- 3) Budget/Conservation Incentives/Grants
- 4) Hwy 57 Demonstration Site
- 5) Acquisition of Low Disturbance Manure Applicator
- 6) National No-tillage Conference, January 8-11th, Indianapolis, Indiana
- 7) February 8th Soil Health Workshop – Steve Groff, PA Farmer and Cover Crop Specialist, Ozaukee County Fairgrounds
- 8) Soil Health Academy, April 9-11th, Tony Pierick's Dairy Farm, Watertown
- 9) **Watershed Monitoring & 9 Key Element Planning – Karen Nenahlo, MMSD**
- 10) Producer-Led Annual Meeting – February 19th and WI Cover Crop Conference-February 20th, Stevens Point
- 11) Tile Phosphorus Removal & Recovery Unit
- 12) Update on USDA Demonstration Farms Network
- 13) Conservation Programs and Cost-Share Available to Producers, Mike Patin, USDA NRCS
- 14) Other Business
- 15) Next Meeting Date
- 16) Adjournment



To: Milwaukee River Watershed Clean Farm Families Board Members
From: Andy Holschbach
Date: 1/21/19
Re: **Meeting Minutes - Melichar Broad Acres, December 11, 2018**

Discussion Items:

Comments: In attendance were Jim Melichar, Dave Brunnuell, Andy Holschbach, Mike Paulus, Bob Roden, Marvin Kolbach, Ken Falk, Matt Winker, Neal Maciejewski, Brian Karrels, Mike Patin, Angie Doucette & Karen Nenahlo.

- 1) Jim Melichar, Chair called the meeting to order at 11:15 A.M.
- 2) Approval of October 16, 2018 Minutes: Mike motioned to accept, second Marvin. Unanimous favor to approve.
- 3) Conservation Incentives/Budget
 - a. Andy reviewed budget and funds expended.
 - b. \$40,000 of DATCP Producer-led Watershed Protection Grant funds awarded to CFF for 2019, maximum award amount
- 4) Hwy 57 Demonstration Site
- 9) Watershed Monitoring & 9 Key Element Planning, Karen Nenahlo, MMSD
 - a. USGS gauging station on Pioneer Rd – expensive, data intensive
 - b. Temp monitoring plan – 2 years surface water sampling
 - i. SEWRPC determined geography where there's gaps in data
 - ii. Baseline data at these locations, continually grabs samples at these same locations
 - iii. Gauges at 25 sites collecting 30 days of flow data from stream, also collect grab sample at gauge location
 - iv. MMSD produces lab results
 - c. Karen Nenahlo provides trend charts at various monitoring locations
 - i. 6 months of data average – Sept – Nov 2017; March – May 2018

Appendix D. Gap Analysis

	Identifier of Issue	Gap Description	Objective	Solution	Essential Elements Already in Place to Build Upon	Challenges to Implementing Initiative
1	DNR, SWWT, Washington & Ozaukee County LCDs, MS4s	Consistent communication regarding the TMDL is needed within the watershed and stakeholders are limited in resources to provide it.	Build and maintain momentum within the watershed regarding TMDL implementation.	Develop a communication plan re: the TMDL which could be implemented basin-wide if needed.	SWWT communication staff; DNR and stakeholder support; MMSD's current publications; KICs	Coordinating information from all watersheds; part-time SWWT staff; Coordination with DNR's communications.
2	DNR, LCDs, MS4s	Additional funding is needed for nonpoint source BMPs; grant funding available for BMPs is not being fully utilized; monies offered for BMPs are less than the monies earned from farmers harvesting those lands.	Secure additional EPA , 319, EQUIP and DATCP funding in addition to private monies for BMPs.	Integrate 9 key elements into TMDL implementation plan; work to designate Milwaukee River Watershed (or basin) as a National Water Quality Initiative Site.	Stakeholder support; SWWT staff on-hand to complete these activities.	LCD and County Board cooperation; labor to construct BMPs; long-term operation and management costs; farmer willingness to participate.
				Help LCD's write large-scale TRIM grants and hire 'someone' to implement work.	Unused money available; DNR support; SWWT staff to write grants; SWWT contract with Sand County Foundation	
				Facilitate the process of and provide support for point sources wanting to participate in adaptive management; explore funding possibilities for BMPs at the Global Water Center and with large local companies.	Many businesses have sustainability departments; there is a need for the Global Water Center to invest locally in improved water quality.	
3	Engineers, LCDs, MMSD, DNR, MS4s, farmers	LCD's need more information regarding adaptive management policies; AM facilitation is needed between urban MS4 permit holders and possible BMPs in rural areas.	Facilitate urban/rural cooperation in meeting TMDL reductions.	Provide guidance and education regarding AM process; Connect farmers, LCDs, and MS4s having available green space with MS4s in built-up areas needing to reduce pollutant loads.	MRWCP's Clean Family Farms initiative, SWWT contract with Sand County Foundation, KICs, collaborative MS4s sharing common engineers (Northshore and Mid-Morraine Collective)	Securing grant funding; finding a trusted individual to work with farmers and LCDs; MMSD's Milwaukee River Conservation Partnership (MRWCP)
		Farmers without NMPs need to be identified and NMPs developed, but LCD staff are working at full capacity.	Encourage additional participation in the NMP program to reduce rural run off.	Hire additional staff to work with farmers who don't have NMPs.		
4	SWWT, Engineers, LCDs	Substantial long-term revenue, in addition to private/grant funding, is necessary for TMDL reductions; Voluntary, compartmentalized efforts impede watershed-wide progress towards reaching TMDL reductions.	Create a funding mechanism and formal structure to assist TMDL implementation.	Lay the foundation towards establishing a watershed district which includes researching policy, determining steps, and identifying partners.	SWWT Policy Committee; support from engineers who work directly with MS4 permit holders; Brico Report/Public Policy Group	Pushback from MS4s and legislature; Government structure
5	SWWT	90% of fecal coliform in the watershed is from unknown nonpoint sources, which may include leaky laterals and failing septic.	Reduce fecal pollutant loading from failing septic and leaky laterals.	Determine the degree to which failing septic and leaky laterals contribute to the fecal loading and develop a plan for correction.	County and health departments have programs in place; accountability in MS4s plans; Sandra McClennan's work	Resource intensive initiative; Support in rural communities

6	DNR, SWWT, LCD's, MS4s	Water quality testing programs are lacking in the upper reaches of the watershed and modeling is not an accurate tool to measure load reductions.	Determine the effectiveness of our efforts in reducing pollutants.	Coordinate water quality monitoring programs in upper reaches of watershed where programs do not currently exist.	Riverkeeper has a strong presence in the lower reaches; there are potential partners in the upper reaches; DNR Monitoring Sector	Funding; long-term sustainability; Sharing of information collected
7	DNR, LCDs, farmers, and industry professionals	Improper manure spreading and excess nutrients are being applied to farms with NMPs.	Determine the degree to which NMPs are being properly developed and followed.	Develop a program to work with agronomists and manure haulers regarding soil testing and manure application. (PARM program in Ohio?)	Strong relationships between LCDs and farmers with NMPs.	Cooperation with industry professionals and farmers
8	DNR, citizens concerned about water quality and improper manure spreading	DNR keeps its farm-land spreading history in paper documents within file folders which can be unorganized and unruly dependent on the staff person.	Develop an organized method to maintain a farm-land spreading history so the DNR can effectively respond to farm-land spreading issues in the watershed.	Create a GIS map for farm-land spreading history in the watershed.	GIS Graduate programs; DNR and County Data	Access to information
9	LCD, DNR, Farmers, MMSD	There is a lack of knowledge regarding farming techniques that could be used to reduce runoff.	Encourage farming conservation practices amongst farmers in the watershed.	Support and help coordinate additional farmer-led initiatives.	Ozaukee and Washington Counties; Glacial Lands Grazing program ?; Sand County Foundation; Funds available thru DATCP; County Farm Bureaus	MRWCP's Clean Family Farms pilot program; is this our role?
10	Engineers, MS4s, DNR, SWWT	There is a lack of resources and general knowledge of how to create effective stormwater education programs.	Create consistent and effective stormwater outreach and education programs which satisfy MS4 permit requirements and reduce pollutant loading.	Work with MS4s and engineers to create and implement effective outreach and education programs.	SWWT's ROW campaign; Clean Ways for Water Ways; MMSD's Outreach materials; MS4 support	Financial and staff resources.
11	SWWT	GI is an underutilized tool to help meet water quality needs in the upper watershed.	Utilize GI in rural areas to help reduce stormwater runoff.	Work with Ezra to expand GI strategies north of the MMSD service region.	Current SWWT and MMSD work re: GI; Mid-Morraine Collective and Northshore support;	Long-term maintenance of GI; funding; cooperation from munis and their boards; local ordinances.
12	RRF/City and County of Milwaukee	Unlike the Milwaukee River, there is no protection from the detrimental impacts of development along Milwaukee's two other major urban rivers.	Protect green space and view-shed along Milwaukee's rivers; improve water quality; establish clean water as a public, priority value.	Investigate feasibility and tools for protecting riparian corridors along the Milwaukee, KK and Menomonee Rivers.	The Milwaukee River Greenway; this initiative is listed as a priority in the ReFresh Milwaukee Plan; MMSD's easements; SWWT Policy Committee	Building support amongst partners; identifying and articulating urgency; a lot of county-owned land in Menomonee River and development on KK.
13	SWWT, RRF, Ozaukee County Land Trust	There are two land trusts working independently of each other along the Milwaukee River.	Strategically protect land along the Milwaukee River in both urban and rural areas to help meet TMDL reductions.	Explore the possibility of creating one large-landscape vision for land protection along the Milwaukee River.	Successful history of working together; strong, impactful land trusts	New ED for OWCLT; board support

Appendix E. Education Matrix

TABLE 41 – EDUCATION ACTIVITIES, ORGANIZATIONS, AND MILESTONES

Education Action	Target Audience	Communications Vehicles	Lead (supporting) Organizations	Schedule	Measurable Indicators/ Milestones	Outcomes, Behavior Change	Estimated Cost*
Adopt-A-River	Community Groups, private owners & public facilities	Media blitz, word of mouth	Milwaukee Riverkeeper (Riveredge Nature Center)	Ongoing	# of River segments adopted, # annual events, attendance, types of participation	Create awareness, activism, and ownership regarding streams and tributaries and their health in the Milwaukee River Watershed.	TBD
Tour of Watershed	Elected officials and residents	Social Media, Local Newsletters, Websites	Riveredge Nature Center (TBD)	TBD	# of stops, # of participants, # of connections generated during and/or after tours	create awareness, inspire action	TBD
Watershed Award	Active volunteers, all stakeholders	Watershed Champion Awards ceremony, social media, annual recognition	Sweet Water	Annually	# of nominations and submissions, # of attendees at annual Clean Rivers Clean Lake Conference	Create awareness of various programs in the watershed, recognizing good to promote good	\$500 annually
Educational Seminars (examples: GI workshops, Certified Wildlife Habitat, Rain garden Workshops)	residents, homeowners, landowners	Seminar or presentations on programs available to residents and owners.	Riveredge Nature Center CRP (Milwaukee Riverkeeper, Sweet Water)	Annually	# of GI workshops, # rain garden workshops, # rain gardens installed, Rain barrels installed	Create Awareness/ Engage residents	\$150-300/ program
Adventure Programs (examples: Kayaking, Fishing, Tubing)	Residents	Newsletters, websites, social media	Riveredge Nature Center (Milwaukee Riverkeeper)	Seasonally	# of kayakers, # fishermen, # tubers	Create Awareness/ Engage residents	\$150-300/ program

Outreach Events	residents, homeowners, landowners	face to face, printed materials, social media	Riveredge Nature Center CRP (Milwaukee Riverkeeper, Sweet Water)	Seasonally		Create Awareness	TBD
Landscape Consultations about green practices for healthy watershed	landowners, homeowners, and businesses	website, Social media, word-of-mouth	Riveredge Nature Center	Ongoing	# of consultations, # of installations	Improvements in property landscapes, increase in implementing BMP to benefit water quality	\$75/hr
Provide NOSD & St. John's (Newburg) with information about the Upper Milwaukee River Watershed as a means to support outdoor curriculum within the watershed's green infrastructure	schools, students, teachers	Support and expand reach of water education program to help integrate basic watershed planning and education into existing elementary, middle and high school science curriculum. (Testing the Waters, Determining Water Quality school programs)	Riveredge Nature Center	Annually	# of student engagements, # of teacher training discussions	Students in NOSD & WBSD watershed will understand their environment, realize the importance of maintaining a healthy place for people and nature, and understand actions they and their families can take to protect water quality. Learning will be pass on to future generations.	TBD based on hours
Educate Farmland owners & renters about the plan and recommend actions. Encourage and support farmland owners and renters to implement recommended	Agricultural landowners & farmers	Meetings of farmland owners & renters. Share available funding for projects, purchase of development rights, buffers and the impacts on water quality and role of wetlands.	Washington & Ozaukee Counties (Clean Farm Families), UW Extension,	TBD	County Land and Water Management Plans reference the Fredonia Newburg Plan	Increase awareness of agricultural projects within the watershed that use cover crops and sustainable BMPs. (improve soil health) Increase level of participation in such programs & initiatives.	TBD based on hours

actions within the watershed plan.							
Host soil health and water quality presentations geared at improving water quality, reducing soil erosion	Agricultural landowners & farmers	Hold seminar on appropriate NRCS programs, potential funding, and types of project that should be implemented in the watershed.	NRCS (Washington County, Ozaukee County, & Clean Farm Families)	TBD	# of attendees, # of draft designs completed, # of projects completed	Increase level of awareness of NRCS programs and how they relate to land management projects in the watershed and increase level of participation in implementing agriculture projects recommendations.	TBD
Adopt-Your-Drain	Residents, municipalities, general public	Television commercials featured news stories, community events, more	Sweet Water	Ongoing	# of drains adopted, # of events held,	Mapping good behavior, education through various media efforts, "social pressure" via yard signs and word of mouth	\$24,000 annually
Respect Our Waters	General Public, municipal staff, contractors, educators, businesses	Television commercials featured news stories, community events, more	Sweet Water	Ongoing	# of impressions, # of events, # of municipal partners engaged	Continuous education for a positive behavioral change regarding stormwater pollution preventions. This is a regional effort that includes ~30 municipalities	\$24,000 annually
Treasures of Oz	General Public, municipal staff, contractors, educators, businesses		Ozaukee County	Ongoing	# of attendees, # of education vendors	awareness and attendance at event to raise awareness about the county's valued natural resource assets	\$7,500 annually

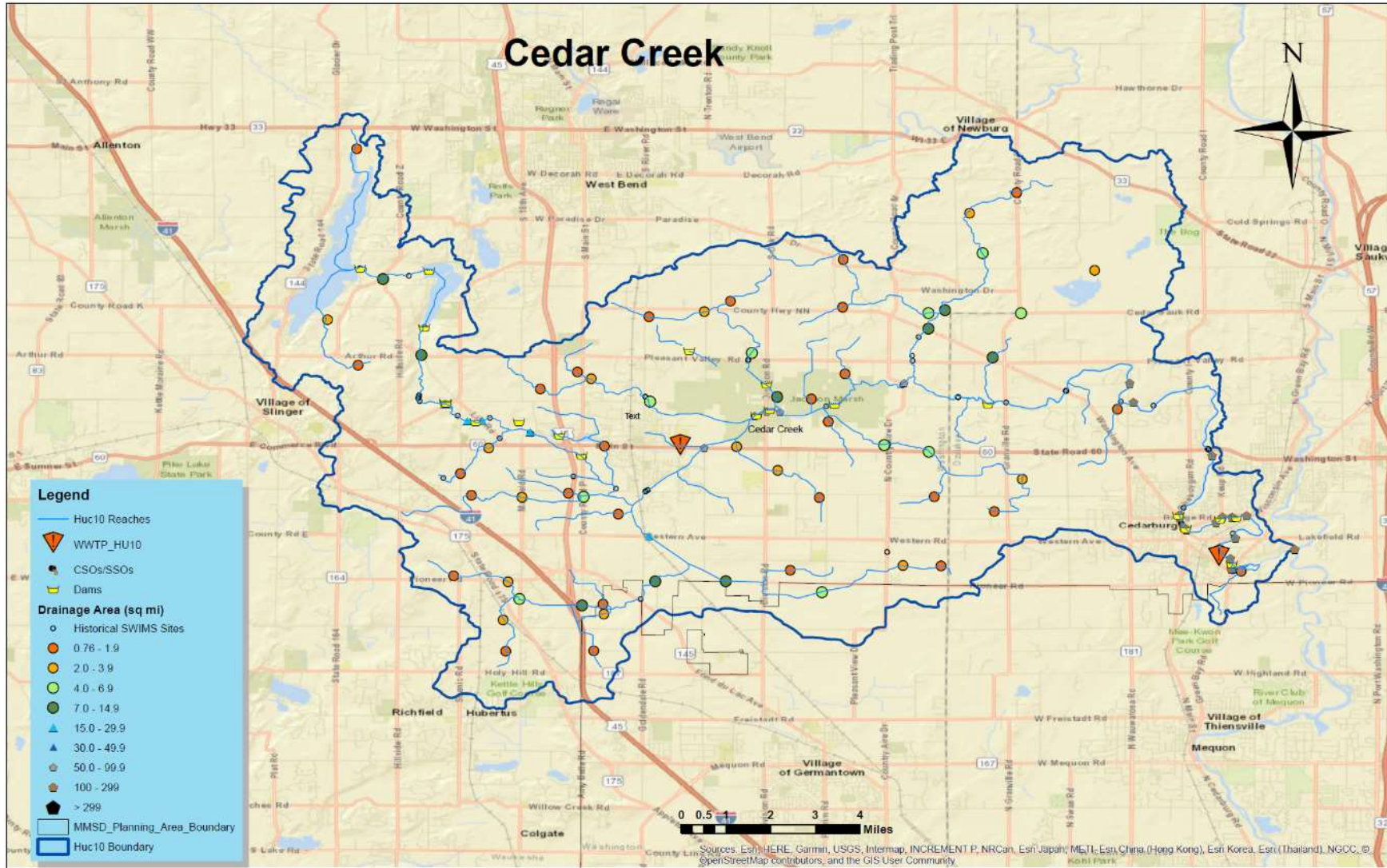
Mini-Grant Program	Small to medium-sized community organizations, grassroots initiatives, concerned citizens, landowners, schools	Sweet Water website and annual conference, word of mouth, e-newsletters	Sweet Water	Ongoing	# of projects identified for funding, # of applications submitted, # of grants awarded, # of people assisting with grant applications	Practitioner awareness about the program and continue to support grassroots efforts to prevent stormwater pollution through various GI and BMP efforts	\$10,000/ year
Inform producers in Cedar Creek watershed about Ag BMPs and soil health	Producers in Cedar Creek watershed	Meetings of farmland owners & renters. Share available funding for projects, purchase of development rights, buffers, the impacts on water quality and role of wetlands.	Cedar Creek Farmer-led group, Washington County Land and Water Conservation	Current to 2021, expected to continue pending funding	# of producers who adopt practices	Producers are knowledgeable about BMPs and issues related to adoption Greater number of producers adopt practices	\$5,000/ Year funded through 2021
Inform producers in Ozaukee County portion of Milwaukee River Watershed about Ag BMPs and soil health	Producers in Ozaukee county portions of targeted watershed	Meetings of farmland owners & renters. Share available funding for projects, purchase of development rights, buffers, the impacts on water quality and role of wetlands.	Milwaukee River Clean Farm Families, Technical support from Ozaukee County Land and Water Mgmt. Dept.	Current to 2021, expected to continue pending funding	# of producers who adopt practices	Producers are knowledgeable about BMPs and issues related to adoption Greater number of producers adopt practices	\$5,000/ Year funded through 2021
Targeted outreach to farms not participating	Producers not enrolled in conservation practices	Meetings of farmland owners & renters. Share available funding for projects, purchase of development rights, buffers, the impacts on water quality and role of wetlands, word of mouth	Producer led farmer groups (see above)	Ongoing	# of producers approached	Producers not participating will be approached	Covered in above work

Targeted survey of non-operator farm landlords	Non-operator farm landlords	survey	Sweet Water - consultants	2019-2022	% of leased farms enrolled in conservation practices	25% of leased farms enrolled in conservation practices	\$5,000
Regular implementation update meetings	Nonprofit community, residents, producers	meetings	Sweet Water to hold meetings	2018-2028		Nonprofit community, public, and producers are aware of progress	\$2000/ year
Engage EL programs in schools on restoration efforts	5-12 th grade, school districts		Sweet Water or consultants to act as facilitator	2019-2023		EL programs in 1 school district engaged in watershed restoration efforts	\$3,500 / year transport, materials, staff time
Total Cost of Education Activities across HUC10 0404000303, HUC12 040400030603, and HUC12 040400030604 for 10 years: \$865,000							

*These costs should be updated as more annual program costs are determined. This milestone should be accomplished within 3 years of plan approval.

Appendix F. Supplemental Water Quality Information

FIGURE 59 - MAP OF INTENSIVE POLLUTION SURVEY AND GEOMETRIC SITES IN CEDAR CREEK HUC 10 WATERSHED



A challenge that presents itself to improving water quality within agricultural dominated watersheds is legacy phosphorus in the cropland soils and stream channels. In recent years, scientists and watershed managers are finding that water quality is not responding as well as expected to implemented conservation practices (Sharpley et al 2013). They are attributing this slower and smaller response to legacy phosphorus, primarily from cropland soils. Legacy phosphorus is used to describe the accumulated phosphorus that can serve as a long-term source of P to surface waters. Legacy phosphorus in a soil occurs when phosphorus in soils builds up much more rapidly than the decline due to crop uptake. In stream channels, legacy phosphorus can result from upland sediment erosion followed by sediment deposition of particulate phosphorus, sorption of dissolved phosphorus onto riverbed sediments or suspended sediments, or by incorporation into the water column (Sharpley et al 2013). Therefore, water quality may not improve/respond to implementation of conservation practices in a watershed as quickly as expected due to remobilization of legacy phosphorus hot spots. Legacy phosphorus is a factor that will be considered when water quality monitoring is completed to assess plan implementation.

TABLE 42 -- WATER QUALITY MONITORING INDICATORS FOR SUCCESS AT EXISTING SITES, TOTAL PHOSPHORUS

Monitoring Site Recommendation		Indicators	Monitored Median Values mg/L 2018-2019	Target Values or Goal mg/L	Short Term (3 yrs) mg/L	Medium Term (5 yrs)	Long Term (10+ yrs)	Implementation	Funding
HUC 040400030603		Stream reaches MI 16 Town of Saukville, MI-17 Town of Grafton							
RDC_01	Riverside Dr. Creek @Evergreen Ln.	Annual median Total P (mg/L)	0.18	0.075 mg/L or below	0.1	0.09	0.075	DNR, Volunteers, River-keeper, Ozaukee County	TBD
MLR_01	Milwaukee River Downstream of Riverside Dr. @ Evergreen Ln.		0.089		0.085	0.080	0.075		TBD
MLR_02	Milwaukee River downstream of Saukville WWTP		0.084		0.08	0.075	0.075		TBD
MOC_02	Mole Creek		0.056		0.075	0.075	0.075		TBD
MLR_03d	Milwaukee River @ Hwy T		0.104		0.095	0.085	0.075		TBD
HUC 040400030606			Stream reach MI-26 Milwaukee River mainstem south						
MLR_06			0.093	0.10 mg/L	0.093 mg/L	0.092 mg/L	0.091 mg/L	TBD	TBD
HUC 040400030604		Stream reaches MI-25 Ulao Creek and Milwaukee mainstem; MI-26 Pigeon Creek							
RI-01S	Milwaukee River mainstem @ Pioneer Rd, Cedarburg	Annual median Total P (mg/L)	0.10	0.075 mg/L or below	0.095	0.085	0.075	MMSD grab sample	MMSD
ULC_01	Ulao Creek at STH 60 east of I-43		0.094		0.095	0.085	0.075	Ozaukee Co, Volunteers, DNR	TBD
ULC_02	Ulao Creek at Bonniwell Road		0.12		0.095	0.085	0.075		TBD
PGC_01c	Pigeon Creek at footbridge Upstream of Green Bay Rd.		0.041		0.075	0.075	0.075		TBD
HUC 040400030301		Stream reach M-21 Town of Jackson							
LCC_01	Little Cedar Creek at Western Avenue	Annual median Total P (mg/L)	0.098	0.075 mg/L or below	0.095	0.085	0.075	DNR, Volunteers, Village Jackson, Washington Co.	TBD
LCC_02	Little Cedar Creek at Pioneer Road near Intersection with Rocky Lane		0.05		0.075	0.075	0.075		TBD
KRB_01	Kressin Branch at Maple Road		0.13		0.095	0.085	0.075		TBD
HUC 040400030302		Stream reaches MI-18 Big Cedar Lake, MI 19							
CDC_01b	Cedar Creek at CTH NN	Annual median Total P (mg/L)	0.089	0.075 mg/L or below	0.075 mg/L	0.075 mg/L	0.075 mg/L	Village Jackson, Washington County	TBD
LEC_01	Lehner Creek Upstream from STH 60		0.023						TBD
CDC_03	Cedar Creek Downstream of Mayfield Road		0.022						TBD
JKC_01	Jackson Creek Downstream of STH 60		0.063						TBD
PSC_01	Polk Springs Creek at CTH P		0.064						TBD

Monitoring Site Recommendation		Indicators	Monitored Values mg/L	Target Values or Goal mg/L	Short Term (3 yrs) mg/L	Medium Term (5 yrs)	Long Term (10+ yrs)	Implementation	Funding
HUC 040400030303		Stream reaches MI-22 Cedar Creek, Cedarburg Creek, MI-23 Evergreen Creek, M-24 North Branch Cedar Creek							
CBC_01	Cedarburg Creek Downstream of CTH M (North Country Aire Drive)	Annual median	0.089	0.075 mg/L or below	0.095	0.085	0.075	Washington County, Munis, volunteers, DNR	TBD
EVC_01	Evergreen Creek Downstream of Pleasant Valley Drive	Total P (mg/L)	0.090		0.095	0.085	0.075		TBD
CDC_04	Cedar Creek at S. Church Road		0.110		0.095	0.085	0.075		TBD
CDC_05	Cedar Creek at CTH M (Hickory Road)		0.14		0.095	0.085	0.075		TBD
NCC_01	North Branch of Cedar Creek Upstream of CTH NN		0.090		0.085	0.080	0.075		TBD
HUC 040400030304		Stream reaches M-24 Mud Creek, Cedar Creek east							
CC-01S	Cedar Creek @ Covered Bridge Rd.	Annual median	0.11	0.075 mg/L	0.085 mg/L	0.075 mg/L	0.075 mg/L	MMSD	MMSD
MDC_01	Mud Creek South of Cedar Sauk Rd	Total P (mg/L)	0.019						Washington Co, DNR, Munis, Volunteer, MRK
CDC_08c	Cedar Creek at County Hwy T	Annual median Total P (mg/L)	0.093	0.075 mg/L	0.08 mg/L	0.078 mg/L	0.075 mg/L		TBD

TABLE 43 -- WATER QUALITY MONITORING INDICATORS FOR SUCCESS AT EXISTING SITES, TOTAL SUSPENDED SOLIDS

Monitoring Site Recommendation		Indicators	Monitored Values mg/L	Target Values or Goal	Short Term (3 yrs)	Medium Term (5 yrs)	Long Term (10 yrs)	Implementation	Funding
HUC 040400030603		Stream reaches MI 16 Town of Saukville, MI-17 Town of Grafton							
RDC_01	Riverside Dr. Creek @Evergreen Ln.	Annual median	6.5	12 mg/L or below	12 mg/L	12 mg/L	12 mg/L	DNR, Volunteers, River-keeper, Ozaukee County	DNR
MLR_01	Milwaukee River Downstream of Riverside Dr. @ Evergreen Ln.	Total	9.1		12 mg/L	12 mg/L	12 mg/L		TBD
MLR_02	Milwaukee River downstream of Saukville WWTP	Suspend ed Solids (mg/L)	10		12 mg/L	12 mg/L	12 mg/L		TBD
MOC_02	Mole Creek		3.5		12 mg/L	12 mg/L	12 mg/L		TBD
MLR_03d	Milwaukee River @ Hwy T		6.8		12 mg/L	12 mg/L	12 mg/L		TBD
HUC 040400030606		Stream reach MI-26 Milwaukee River mainstem south							

MLR_06			12	12 mg/L or below	TBD	TBD	TBD	TBD	TBD
HUC 040400030604	Stream reaches MI-25 Ulao Creek and Milwaukee mainstem; MI-26 Pigeon Creek								
RI-01S	Milwaukee River mainstem @ Pioneer Rd, Cedarburg	Annual median		12 mg/L or below	TBD	TBD	TBD	MMSD grab sample	MMSD
ULC_01	Ulao Creek at STH 60 east of I-43	Total Suspend ed Solids (mg/L)	7.5		TBD	TBD	TBD	Ozaukee Co, Volunteers, DNR	TBD
ULC_02	Ulao Creek at Bonniwell Road		12		TBD	TBD	TBD		TBD
PGC_01	Pigeon Creek at footbridge Upstream of Green Bay Rd.		3.5		12 mg/L	12 mg/L	12 mg/L		TBD
HUC 040400030301	Stream reach M-21 Town of Jackson								
LCC_01	Little Cedar Creek at Western Avenue	Annual median	20	12 mg/L or below	TBD	TBD	TBD	DNR, Volunteers, Village Jackson, Washington Co.	TBD
LCC_02	Little Cedar Creek at Pioneer Road near Intersection with Rocky Lane	Total	11		12 mg/L	12 mg/L	12 mg/L		TBD
KRB_01	Kressin Branch at Maple Road	Suspend ed Solids (mg/L)	6.5		12 mg/L	12 mg/L	12 mg/L		TBD
HUC 040400030302	Stream reaches MI-18 Big Cedar Lake, MI 19								
CDC_01	Cedar Creek at CTH NN	Annual median	1.2	12 mg/L or below	12 mg/L	12 mg/L	12 mg/L	Village Jackson, Washington County	TBD
LEC_01	Lehner Creek Upstream from STH 60		10		12 mg/L	12 mg/L	12 mg/L		TBD
CDC_03	Cedar Creek Downstream of Mayfield Road	Total Suspend ed Solids (mg/L)	4.4		12 mg/L	12 mg/L	12 mg/L		TBD
JKC_01	Jackson Creek Downstream of STH 60		4.9		12 mg/L	12 mg/L	12 mg/L		TBD
PSC_01	Polk Springs Creek at CTH P		8.3		12 mg/L	12 mg/L	12 mg/L		TBD
Monitoring Site Recommendation		Indicators	Monitored Values	Target Values or Goal	Short Term (3 yrs)	Medium Term (5 yrs)	Long Term (10 yrs)	Implementation	Funding
			mg/L	mg/L	mg/L				
HUC 040400030303	Stream reaches MI-22 Cedar Creek, Cedarburg Creek, MI-23 Evergreen Creek, M-24 North Branch Cedar Creek								
CBC_01	Cedarburg Creek Downstream of CTH M (North Country Aire Drive)	Annual median	3.1	12 mg/L or below	12 mg/L	12 mg/L	12 mg/L	Washington County, Munis, volunteers, DNR	TBD
EVC_01	Evergreen Creek Downstream of Pleasant Valley Drive	Total Suspend ed Solids (mg/L)	6.2		12 mg/L	12 mg/L	12 mg/L		TBD
CDC_04	Cedar Creek at S. Church Road		8.9		12 mg/L	12 mg/L	12 mg/L		TBD
CDC_05	Cedar Creek at CTH M (Hickory Road)		12		TBD	TBD	TBD		TBD
NCC_01	North Branch of Cedar Creek Upstream of CTH NN		4.9		12 mg/L	12 mg/L	12 mg/L		TBD
HUC 040400030304	Stream reaches M-24 Mud Creek, Cedar Creek east								
CC-01S	Cedar Creek @ Covered Bridge Rd.	Annual median		12 mg/L	TBD	TBD	TBD	MMSD	MMSD

MDC_01	Mud Creek South of Cedar Sauk Rd	Total Suspend ed Solids (mg/L)	0.016		12 mg/L	12 mg/L	12 mg/L	Washington Co, DNR, Munis, Volunteer, MRK	TBD
CDC_08	Cedar Creek at County Hwy T		3.9		12 mg/L	12 mg/L	12 mg/L		TBD

TABLE 44 -- WATER QUALITY MONITORING INDICATORS FOR SUCCESS AT EXISTING SITES, FECAL COLIFORM

	Indicators	Monitored Values CFU/100mL	Target Values or Goal CFU/100mL	Short Term (3 yrs) CFU/100mL	Medium Term (5 yrs) CFU/100mL	Long Term (10 yrs) CFU/100mL	Implementation	Funding	
HUC 040400030603	Stream reaches MI 16 Town of Saukville, MI-17 Town of Grafton								
RDC_01	Riverside Dr. Creek @Evergreen Ln.	Annual median	200 CFU/100mL or below	TBD	TBD	TBD	DNR, Volunteers, River-keeper, Ozaukee County	DNR	
MLR_01	Milwaukee River Downstream of Riverside Dr. @ Evergreen Ln.	Fecal Coliform (CFU/mL)		160	TBD	TBD		TBD	TBD
MLR_02	Milwaukee River downstream of Saukville WWTP			150	TBD	TBD		TBD	TBD
MOC_02	Mole Creek			350	TBD	TBD		TBD	TBD
MLR_03d	Milwaukee River @ Hwy T			170	TBD	TBD		TBD	TBD
HUC 040400030606	Stream reach MI-26 Milwaukee River mainstem south								
MLR_06			190	200 CFU/100 mL or below	TBD	TBD	TBD	TBD	
HUC 040400030604	Stream reaches MI-25 Ulao Creek and Milwaukee mainstem; MI-26 Pigeon Creek								
RI-01S	Milwaukee River mainstem @ Pioneer Rd, Cedarburg	Annual median	200 CFU/100 mL or below	TBD	TBD	TBD	MMSD grab sample	MMSD	
ULC_01	Ulao Creek at STH 60 east of I-43	Fecal Coliform (CFU/mL)		260	TBD	TBD	TBD	Ozaukee Co, Volunteers, DNR	TBD
ULC_02	Ulao Creek at Bonniwell Road			480	TBD	TBD	TBD		TBD
PGC_01	Pigeon Creek at footbridge Upstream of Green Bay Rd.			175	TBD	TBD	TBD		TBD
HUC 040400030301	Stream reach M-21 Town of Jackson								
LCC_01	Little Cedar Creek at Western Avenue	Annual median	200 CFU/100 mL or below	TBD	TBD	TBD	DNR, Volunteers, Village Jackson, Washington Co.	TBD	
LCC_02	Little Cedar Creek at Pioneer Road near Intersection with Rocky Lane	Fecal Coliform (CFU/mL)		340	TBD	TBD		TBD	TBD
KRB_01	Kressin Branch at Maple Road			230	TBD	TBD		TBD	TBD
HUC 040400030302	Stream reaches MI-18 Big Cedar Lake, MI 19								

CDC_01	Cedar Creek at CTH NN	Annual median Fecal Coliform (CFU/mL)	61	200 CFU/100 mL or below	200	200	200	Village Jackson, Washington County	TBD	
LEC_01	Lehner Creek Upstream from STH 60		160		200	200	200		TBD	
CDC_03	Cedar Creek Downstream of Mayfield Road		230		TBD	TBD	TBD		TBD	
JKC_01	Jackson Creek Downstream of STH 60		380		TBD	TBD	TBD		TBD	
PSC_01	Polk Springs Creek at CTH P		580		TBD	TBD	TBD		TBD	
Monitoring Site Recommendation		Indicators	Monitored Values	Target Values or Goal	Short Term (3 yrs)	Medium Term (5 yrs)	Long Term (10 yrs)	Implementation	Funding	
			mg/L	mg/L	mg/L					
HUC 040400030303	Stream reaches MI-22 Cedar Creek, Cedarburg Creek, MI-23 Evergreen Creek, M-24 North Branch Cedar Creek									
CBC_01	Cedarburg Creek Downstream of CTH M (North Country Aire Drive)	Annual median Fecal Coliform (CFU/mL)	420	200 CFU/100 mL or below	TBD	TBD	TBD	Washington County, Munis, volunteers, DNR	TBD	
EVC_01	Evergreen Creek Downstream of Pleasant Valley Drive		535		TBD	TBD	TBD		TBD	
CDC_04	Cedar Creek at S. Church Road		365		TBD	TBD	TBD		TBD	
CDC_05	Cedar Creek at CTH M (Hickory Road)		300		TBD	TBD	TBD		TBD	
NCC_01	North Branch of Cedar Creek Upstream of CTH NN		350		TBD	TBD	TBD		TBD	
HUC 040400030304	Stream reaches M-24 Mud Creek, Cedar Creek east									
CC-01S	Cedar Creek @ Covered Bridge Rd.	Annual median Fecal Coliform (CFU/mL)		200 CFU/100 mL or below	TBD	TBD	TBD	MMSD	MMSD	
MDC_01	Mud Creek South of Cedar Sauk Rd		87		200	200	200		Washington Co, DNR, Munis, Volunteer, MRK	TBD
CDC_08	Cedar Creek at County Hwy T		160		TBD	TBD	TBD			TBD

TABLE 45 -- WATER QUALITY MONITORING INDICATORS FOR SUCCESS AT EXISTING SITES, MACROINVERTEBRATE & IBI

Monitoring Site Recommendation		Indicators	2017 Values mg/L	Target Values or Goal mg/L	Short Term (3 yrs) mg/L	Medium Term (5 yrs)	Long Term (10 yrs)	Implementation	Funding
Cedar Creek HUC 10 0404000303, & Pigeon and Ulao Creek Mole Creek HUC12s: 040400030603, 040400030604									
Macroinvertebrate monitoring at sites paired w/ chemical monitoring locations	Cedar Creek HUC 10	Macro-invertebrate Index of Biological Integrity (IBI)	Fair*	Good	Fair	Fair	Good	DNR, MRK, Counties, MMSD	DNR
	Pigeon and Ulao Creek Mole Creek HUC12s		Fair*	Good	Fair	Fair	Good		DNR
*IBI condition estimates were taken from Milwaukee Riverkeeper 2017 Report Card									

Appendix G. Baseline Water Quality Monitoring Site Locations

FIGURE 6oA -- EXISTING WATER QUALITY MONITORING SAMPLE SITE LOCATIONS, MULTIPLE ORGANIZATIONS

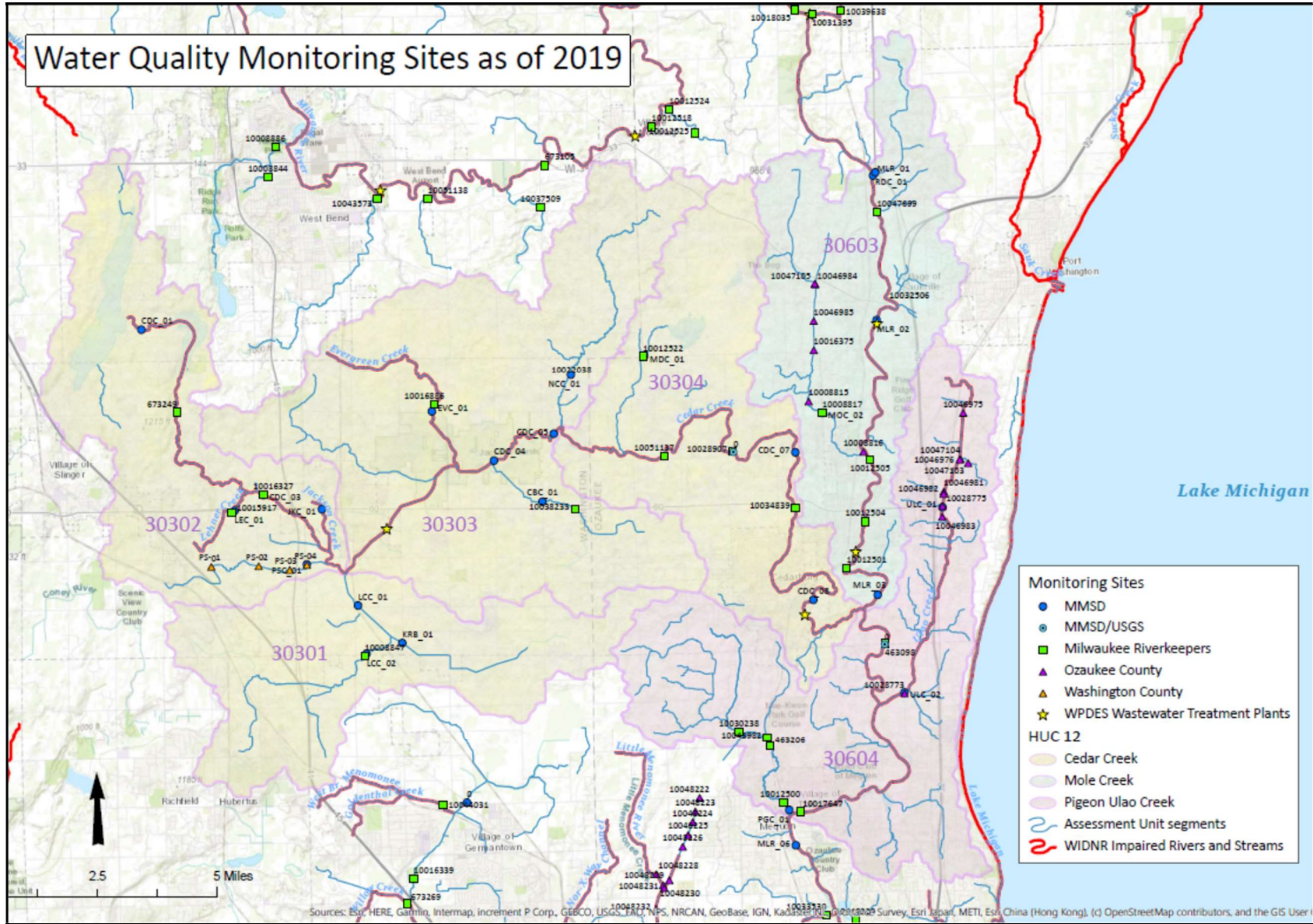


FIGURE 6oB -- EXISTING WATER QUALITY MONITORING SAMPLE SITE LOCATIONS, MULTIPLE ORGANIZATIONS

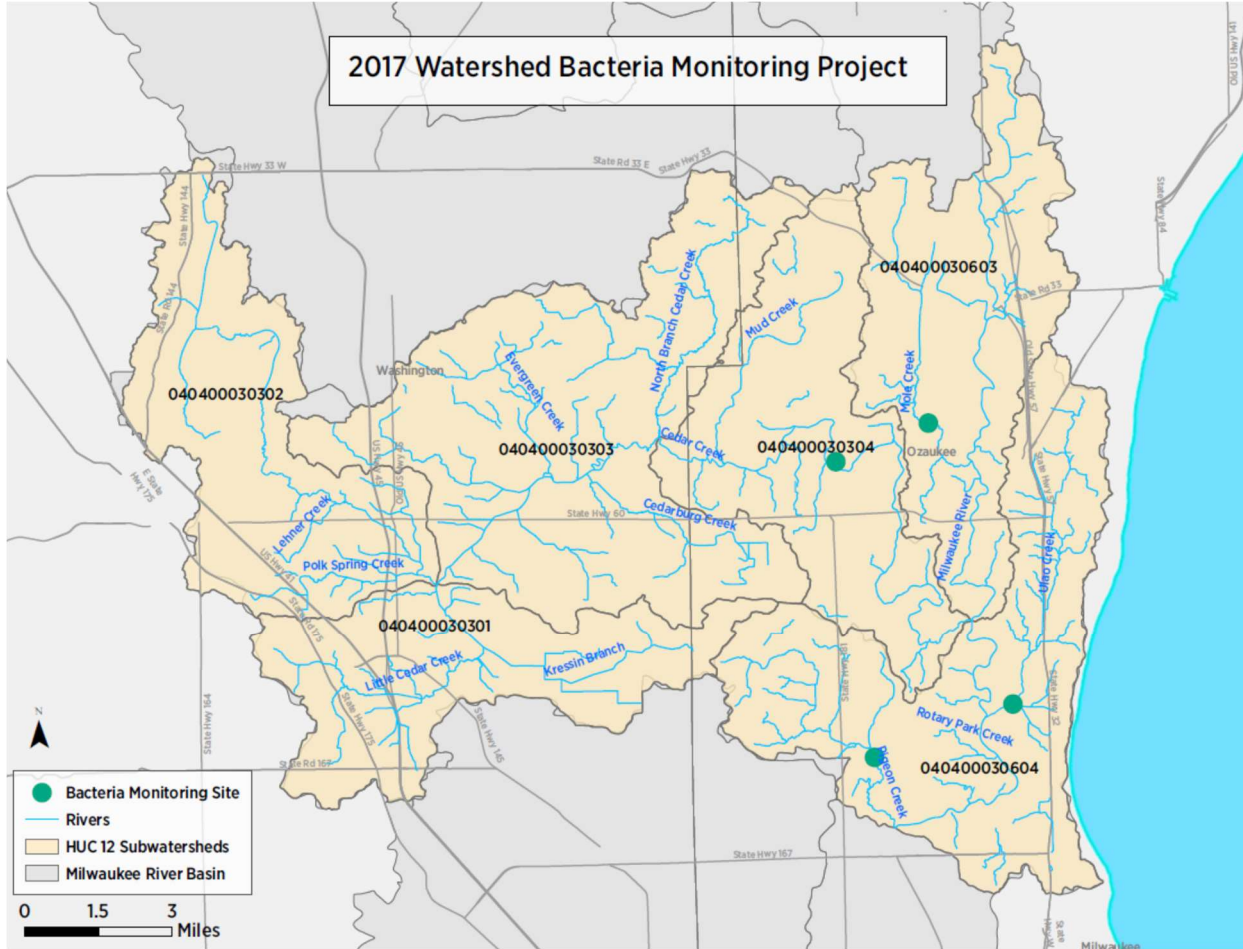


FIGURE 61 -- PLANNED MONITORING FOR 2020 AND BEYOND

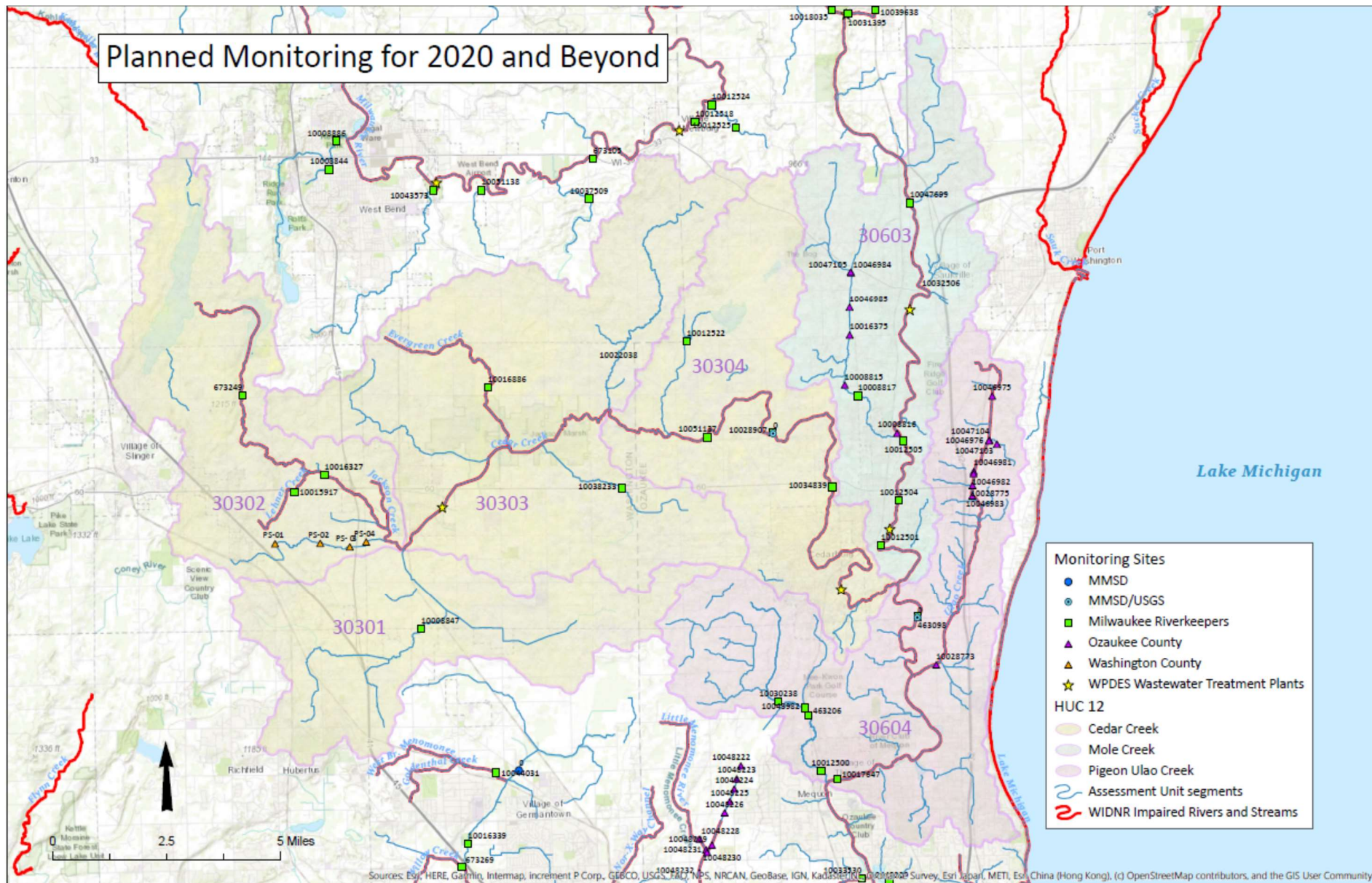


FIGURE 62 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND

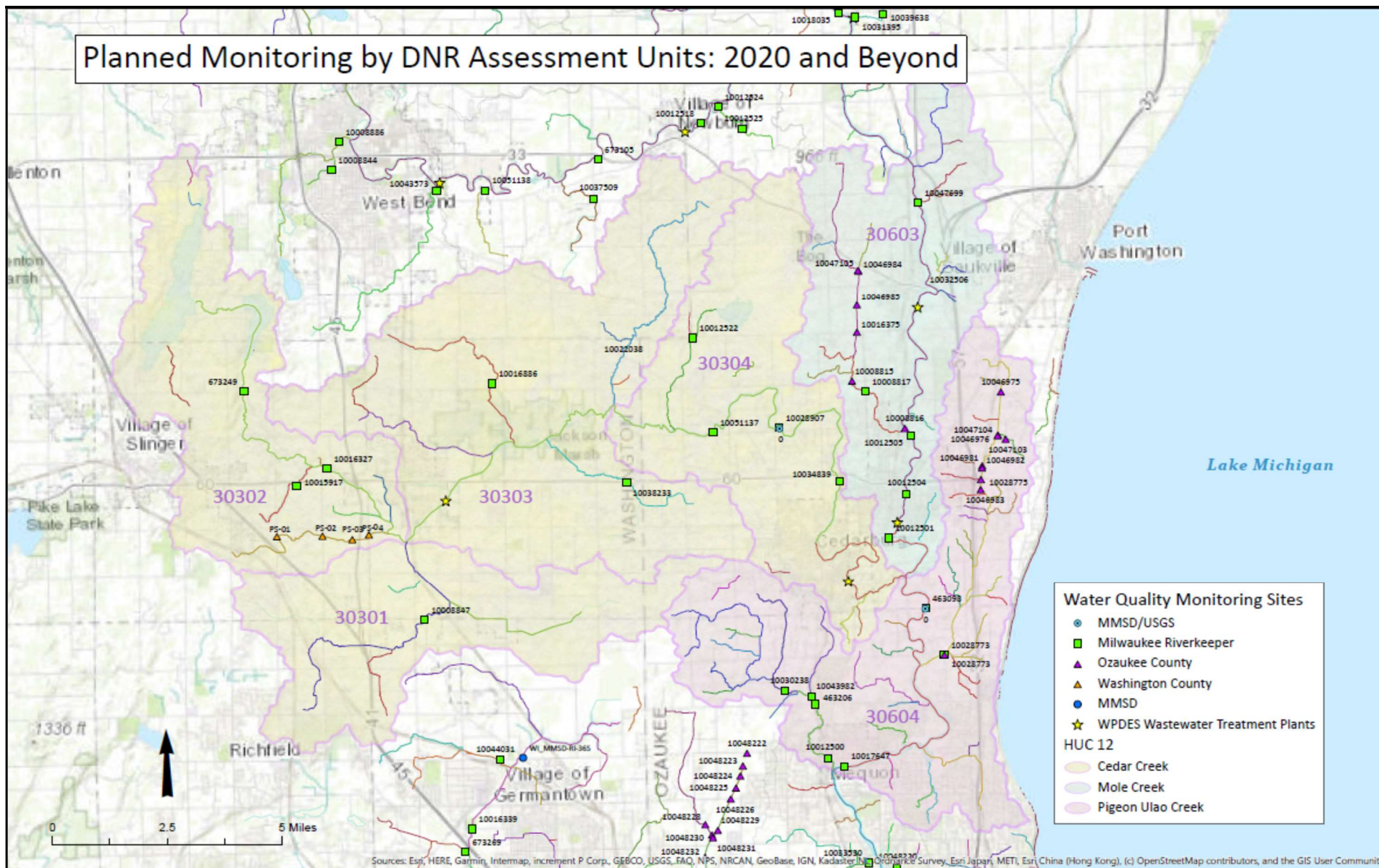


FIGURE 63 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND
 HUC 040400030603

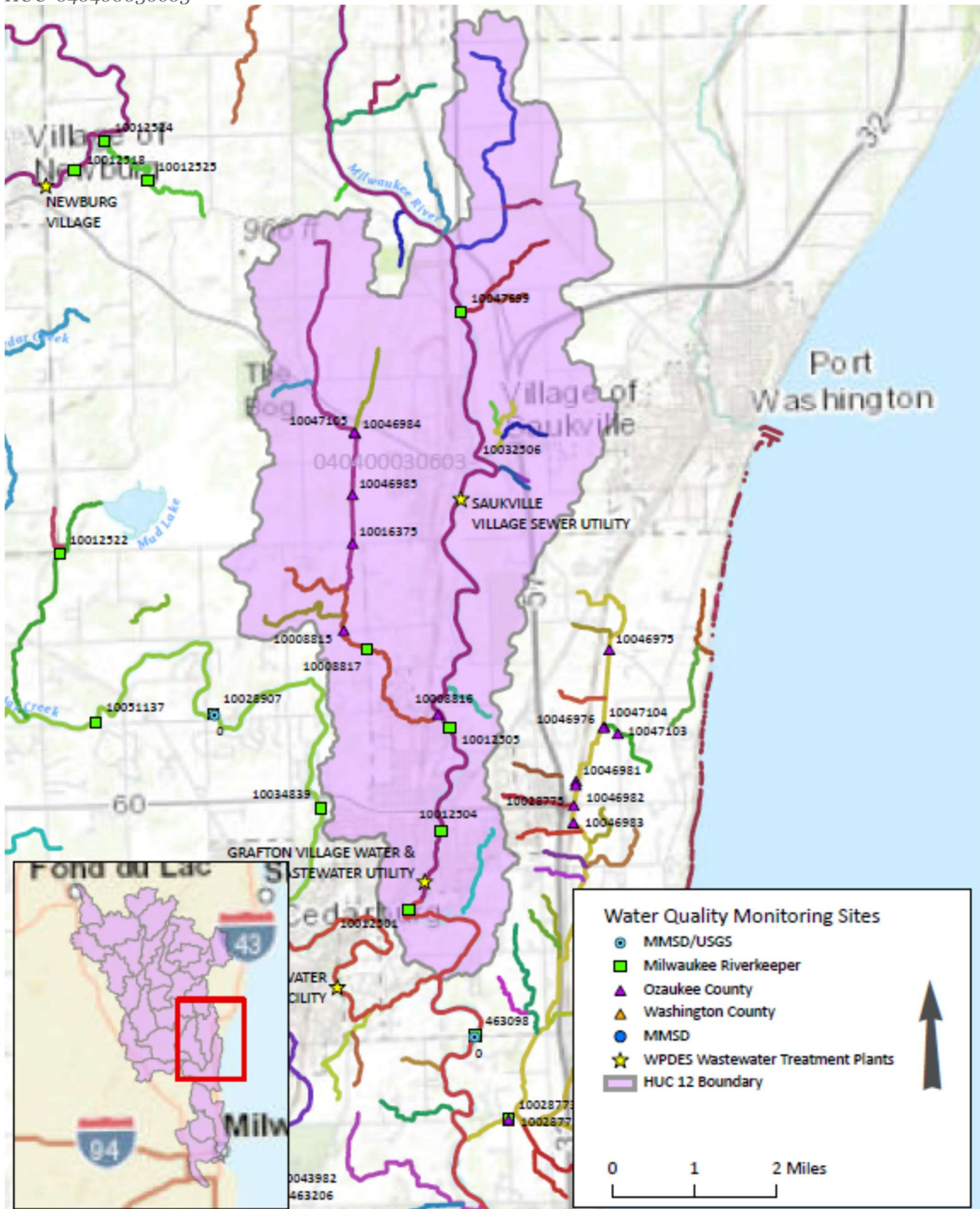


FIGURE 64 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND
 HUC 040400030603

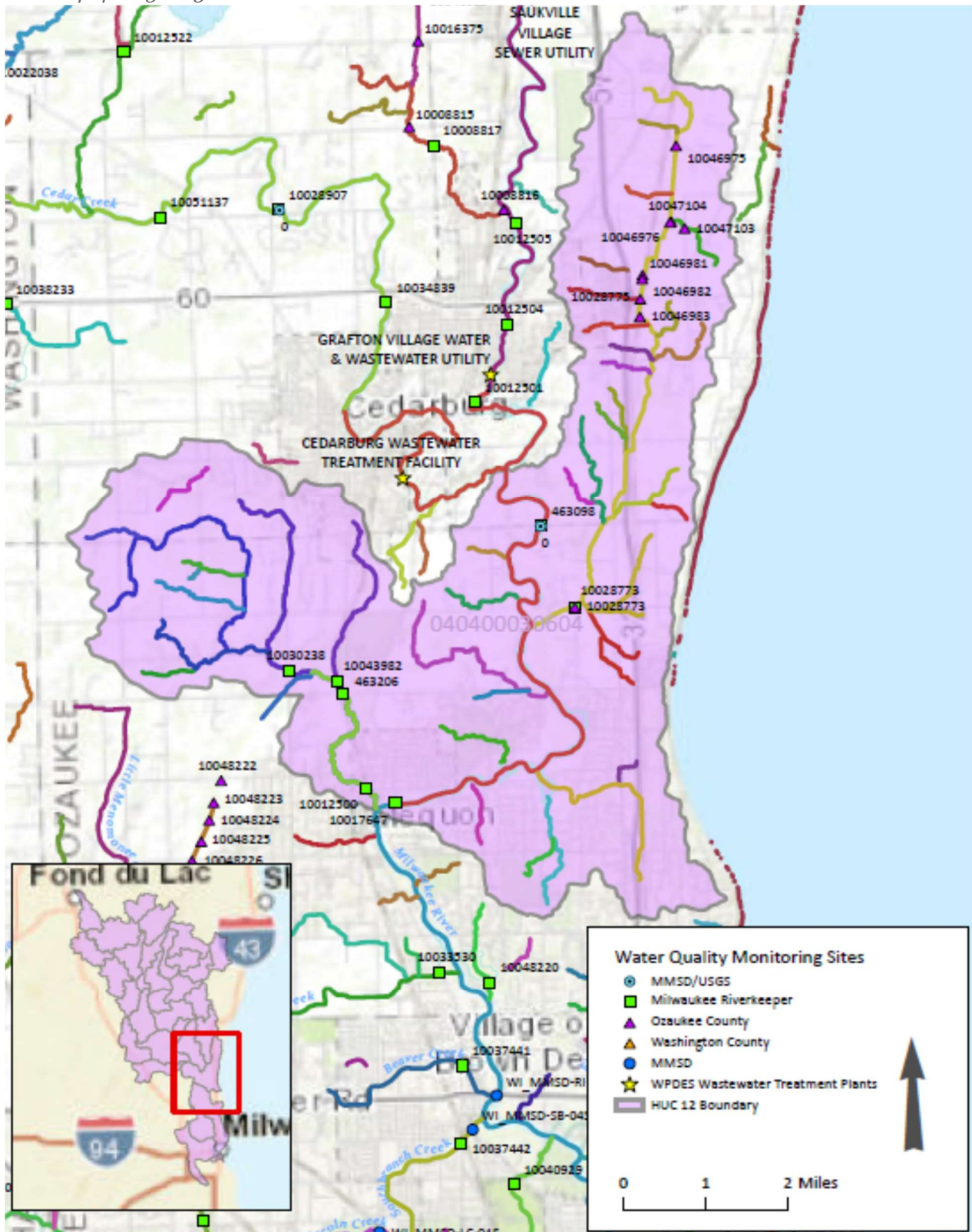


FIGURE 65 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND

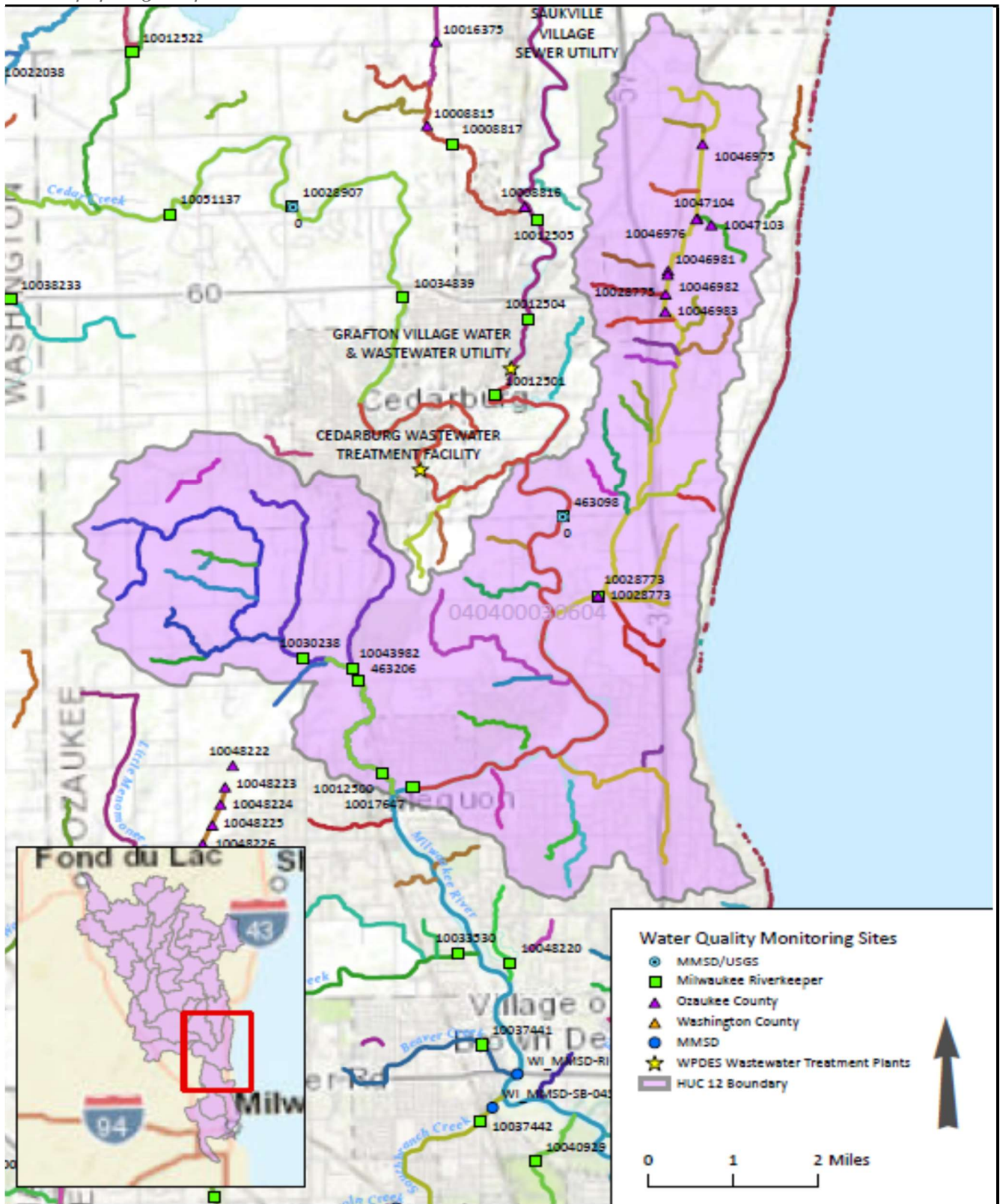


FIGURE 66 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND
 HUC 040400030301

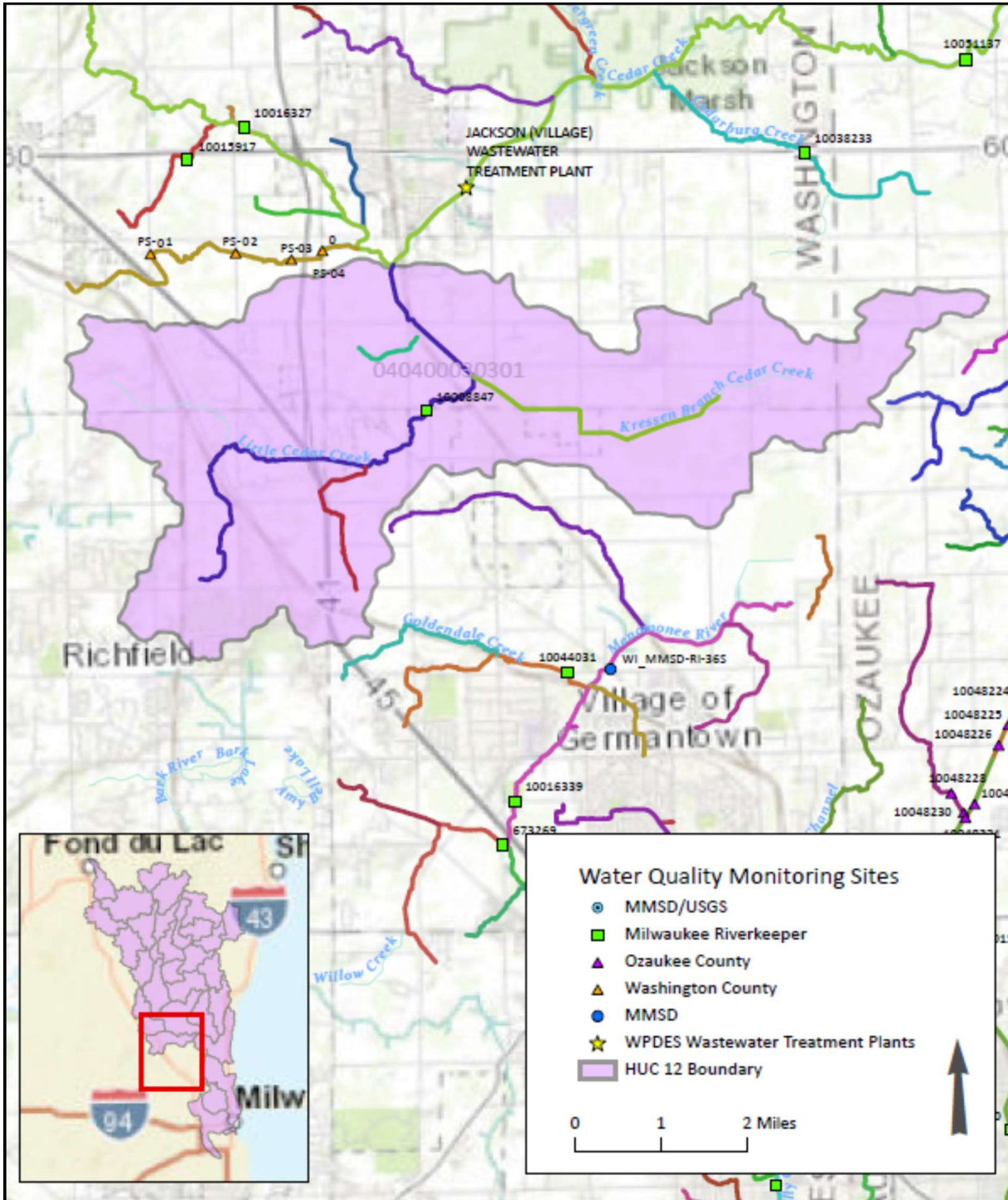


FIGURE 67 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND
 HUC 040400030302

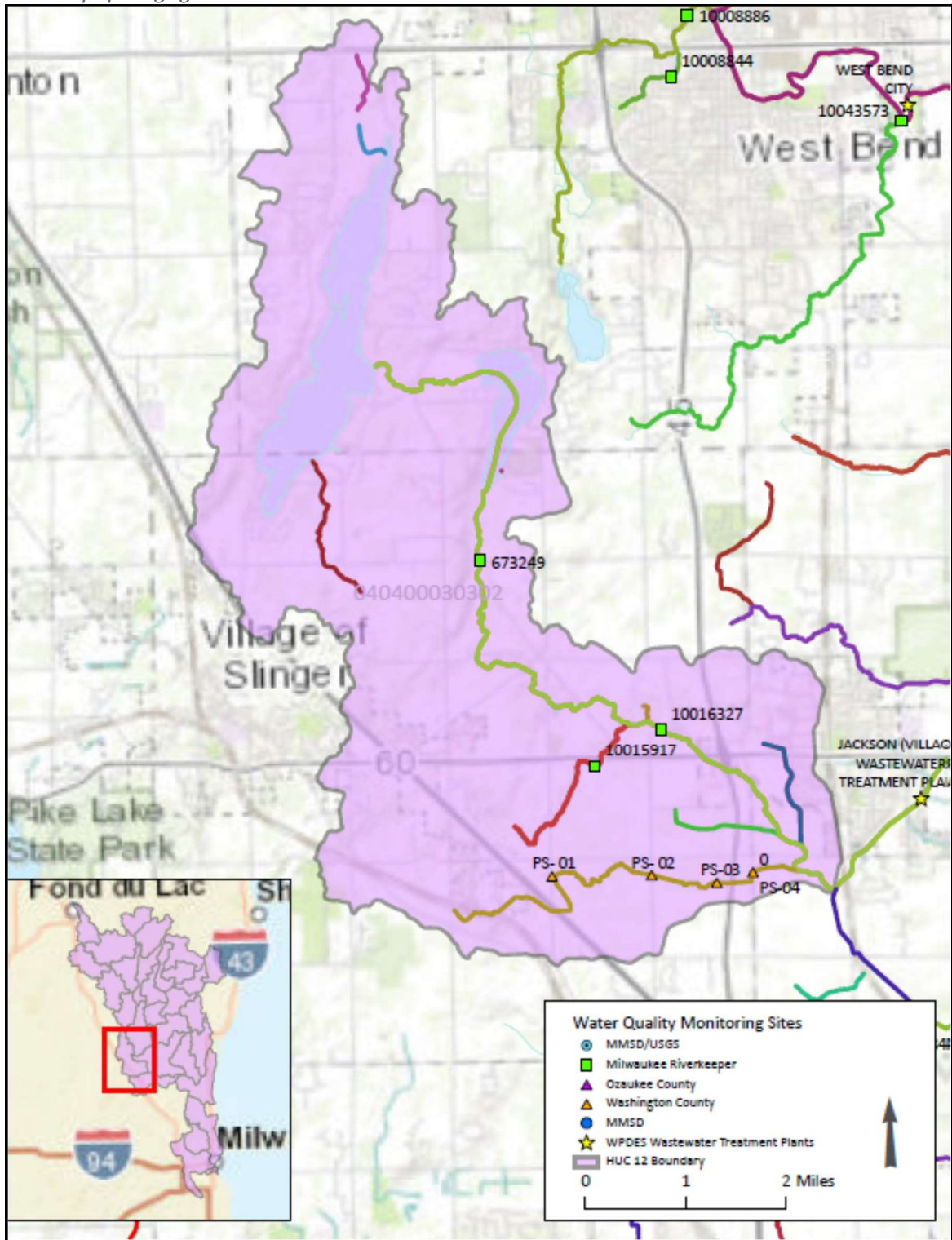


FIGURE 68 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND
 HUC 040400030303

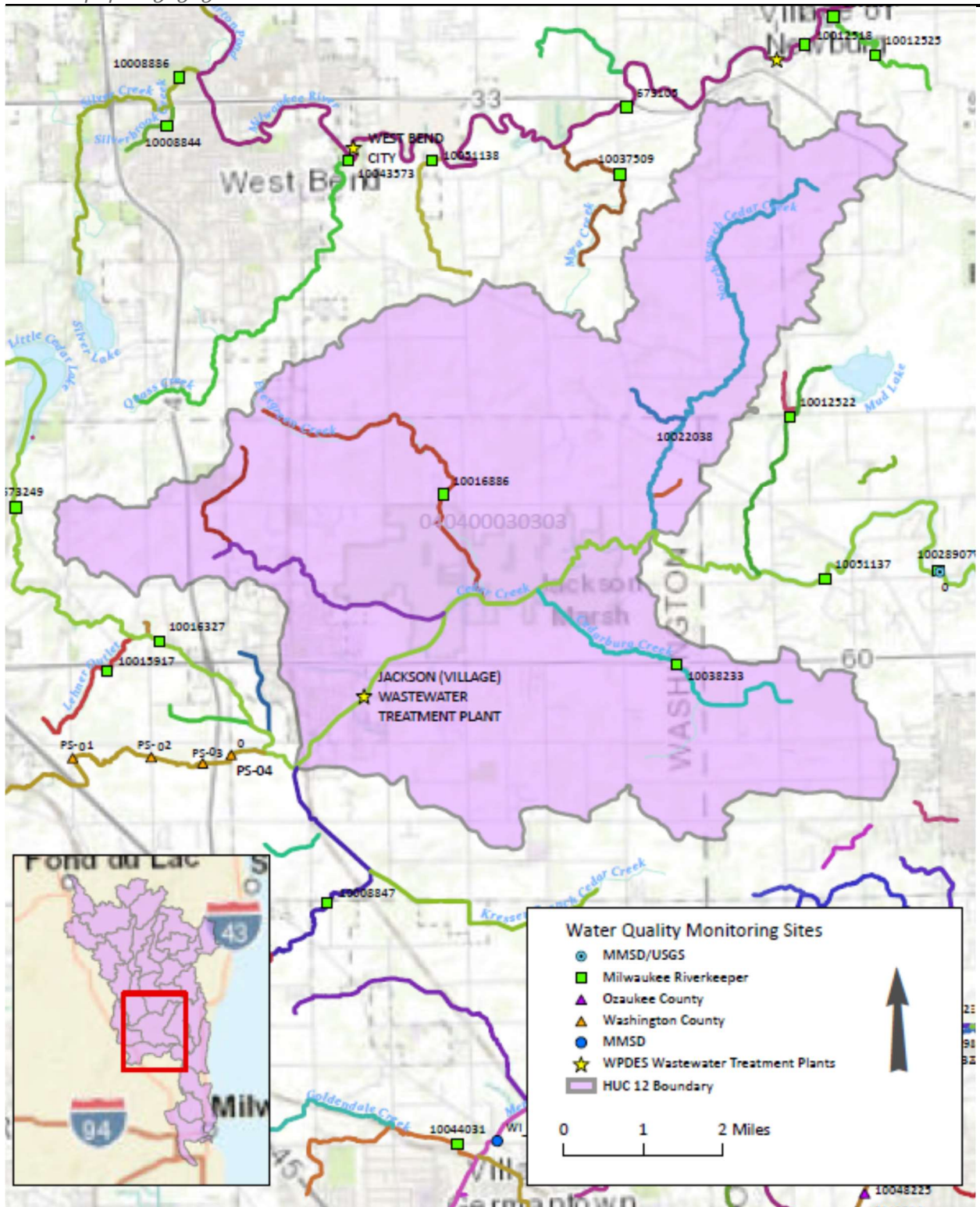
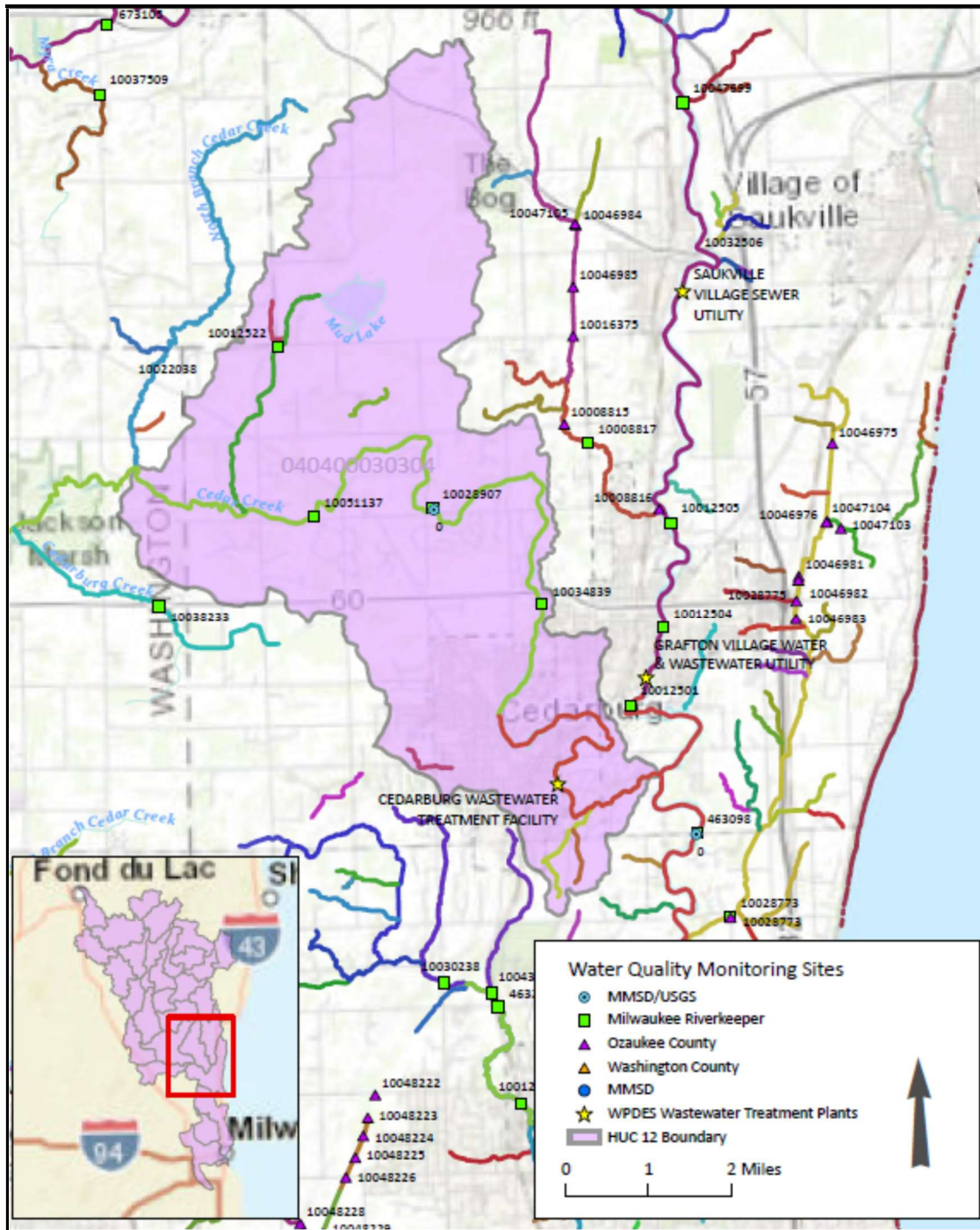


FIGURE 69 -- PLANNED MONITORING BY DNR ASSESSMENT UNITS: 2020 AND BEYOND) HUC 040400030304



Appendix H: Water Quality Monitoring Site Tables, By Organization

TABLE 46 – BASELINE WATER QUALITY SAMPLING LOCATIONS, MMSD P-2721

CBC01	Cedarburg Creek Downstream of CTH M (North Country Aire Drive)	43.3246694034	-88.0828690258	
CDC01b	Cedar Creek at CTH NN	43.3784431562	-88.2481676144	
CDC03	Cedar Creek Downstream of Mayfield Road	43.3285128896	-88.1987857604	Wet Weather Station
CDC04b	Cedar Creek at S. Church Road	43.3371575817	-88.1026567688	
CDC05	Cedar Creek at CTH M (Hickory Road)	43.3446929497	-88.0775377523	Wet Weather Station
CDC07b	Cedar Creek at Cedar Creek Road West of Stone Ridge Lane	43.3374087064	-87.9772429620	
CDC08c	Cedar Creek at County Hwy T	43.2936165270	-87.9715355675	
EVC01	Evergreen Creek Downstream of Pleasant Valley Drive	43.3521474193	-88.1280176264	
JKC01	Jackson Creek Downstream of STH 60	43.3239165359	-88.1746251586	Barologger
KRB01b	Kressin Branch at Maple Road	43.2838031325	-88.1424292709	
LCC01	Little Cedar Creek at Western Avenue	43.2952159695	-88.1604846224	Wet Weather Station
LCC02	Little Cedar Creek at Pioneer Road near Intersection with Rocky Lane	43.2809147375	-88.1573528897	
LEC01b	Lehner Creek Upstream from STH 60	43.3240852889	-88.2109299592	
MDC01	Mud Creek South of Cedar Sauk Road	43.3671364586	-88.0392297321	
MLR01	Milwaukee River Downstream of Riverside Drive at Evergreen Lane	43.4188868070	-87.9421896714	
MLR02	Milwaukee River downstream of Saukville WWTP	43.3761920291	-87.9421475453	
MLR03d	Milwaukee River at Hwy T	43.2945539174	-87.9444890589	Back up wet weather station
MLR06b	Milwaukee River at STH 167	43.2210999685	-87.9808978966	Wet Weather Station
MOC02	Mole Creek at Maple Road	43.3489151587	-87.9656211012	
NCC01b	North Branch of Cedar Creek Upstream of CTH NN	43.3620926213	-88.0698425418	
PGC01c	Pigeon Creek at Pedestrian footbridge Upstream of Green Bay Rd.	43.2315501764	-87.9832243088	
PSC01	Polk Springs Creek at CTH P	43.3077146687	-88.1812882838	
RDC01	Riverside Drive Creek at Evergreen Lane	43.4198743184	-87.9410778005	Barologger
ULC01	Ulao Creek at STH 60 east of I-43	43.3201420041	-87.9166107800	
ULC02	Ulao Creek at Bonniwell Road	43.2656151873	-87.9339929736	Barologger

FIGURE 70 - MILWAUKEE RIVERKEEPER VOLUNTEER CITIZEN BASED WATER QUALITY MONITORING SITES

Milwaukee Riverkeeper 2017 Baseline Water Monitoring Sites (With DNR SWIMs Database Codes)

Pigeon Creek:

- Mee-Kwon Creek US confluence with Pigeon Creek 10043982
- Pigeon Creek at Highland Road Near Thiensville WI 463206*
- Tributary to Pigeon Creek DS from Wauwatosa Rd 10030238
- Pigeon Creek at Williamsburg Drive at Thiensville WI 10012500

Ulao Creek:

- Ulao Creek at Bonniwell Rd at Oriole Lane 10028773*
- Ulao Creek at Hwy 60 East of Hwy 43 10028775

Mole Creek:

- Un Cr (Mole Creek) Station #1 at Maple Road 10008817*

Cedar Creek:

- Cedar Cr. Br. - 200 Yds Upstream Hwy 60 10015917
- Cedar Creek - 25 Feet downstream Of Mayfield Rd. Just West of Town of Mayfield 10016327
- Cedar Creek - 800 Ft. Upstream of Pleasant Valley Rd 10016886
- Cedar Creek ~700ft S of Hwy 60 off Keup Rd 10034839
- Cedar Creek at Covered Bridge Road 10028907*
- Cedar Creek at CTH M 3m (Bi Sur) 673108
- Cedar Creek US STH 60 10038233
- Little Cedar Creek Upstream of Shadow Lane 10014145
- Mud Creek South of Cedar Sauk Rd 10012522
- North Branch Cedar Creek - upstream of CTHY NN 10022038

Milwaukee River Sites:

- Milwaukee River at CTH C (Pioneer Rd) 463098
- Milwaukee River at Cedar Sauk Rd 10028877
- Milwaukee River Grafton - South End of Grafton Mill Complex 10012504
- Milwaukee River Grafton at Interurban Trail Bridge 10012505
- Milwaukee River US CTH T 10037908

* Riverkeeper has genetic data on entire bacteria community

Riverkeeper has freshwater mussel data from the following locations:

https://www.google.com/maps/d/viewer?mid=1CZPwj9Si2sDKM_TvdfIHKZec5agU96w3&ll=43.27159471638019%2C-88.04246899999998&z=10

FIGURE 71 - OZAUKEE COUNTY 2017 MONITORING SITES

Mole Creek:

- Mole Creek – Headwaters 10047105
- Mole Creek - Below Confluence S. of HWY 33 10046984
- Mole Creek - South of Hillcrest 10046985
- Mole Creek - Upstream of Cedar Sauk 10016375
- Mole Creek - Pleasant Valley Rd. 10008815
- Mole Creek - Co. Hwy. O 10008816

Ulao Creek:

- Ulao Creek - Headwaters 10046975
- Kaul Creek – Headwaters 10047103
- Kaul Creek - Above Ulao Confluence 10047104
- Ulao Creek - Below Kaul Creek Confluence 10046976
- Ulao Creek - Above Helms Creek 10046981
- Ulao Creek - Below Helms Creek 10046982
- Ulao Creek - Hwy 60 10028775
- Ulao Creek – Gateway 10046983
- Ulao Creek - Bonniwell Rd 10028773

Appendix I: Baseline Water Quality Monitoring, MMSD P-2721

TABLE 47: SITES EXCEEDING WATER QUALITY CRITERION BY POLLUTANT TYPE, BASELINE WATER QUALITY MONITORING PHASE 1 2018-2019 RESULTS

Watershed Drainage area name, HUC 12	Water Quality Monitoring Site Name	TP 0.075 mg/L	TSS 12 mg/L	<i>E. coli</i> 126 CFU/100mL	FC 200 CFU/100mL
Median monthly sample concentration					
Cedar Creek HUC 10 watershed includes four HUC12s ending in: 301, 302, 303, 304					
Town of Richfield- Cedar Creek 040400030301	LCC_01	0.098	20	435	500
	LCC_02	0.050	11	410	340
	KRB_01	0.13	6.5	200	230
Cedar Lake-Cedar Creek 040400030302	LEC_01	0.023	10	145	160
	JKC_1	0.063	4.9	340	380
	PSC_01	0.064	8.3	535	580
	CDC_01b	0.011	1.2	50	61
	CDC_03	0.022	4.4	230	230
Jackson Marsh State Wildlife area- Cedar Creek 040400030303	CBC_01	0.089	3.1	490	420
	EVC_01	0.090	6.2	585	535
	NCC_01b	0.093	4.9	260	350
	CDC_04b	0.110	8.9	390	365
	CDC_05	0.140	12	260	300
Cedar Creek- East 040400030304	MDC_01	0.016	1.5	101	87
	CDC_07b	0.098	4	145	180
	CDC_08c	0.093	3.9	125	160
Village of Grafton- Milwaukee River 040400030603	MOC_02	0.56	3.5	225	350
	RCD_01	0.180	6.3	260	220
	MLR_01	0.089	9.1	170	160
	MLR_02	0.084	10	150	150
	MLR_03c	0.059	4.6	390	300
	MLR_03d	0.104	6.8	120	170
Pigeon Creek- Milwaukee River 040400030604	PGC_01c	0.041	3.5	140	175
	ULC_01	0.094	7.5	320	260
	ULC_02	0.120	12	465	480
	MLR_06b	0.093*	12	210	190

FIGURE 72. TP TRENDS: TOWN OF RICHFIELD, CEDAR CREEK, HUC 040400030301

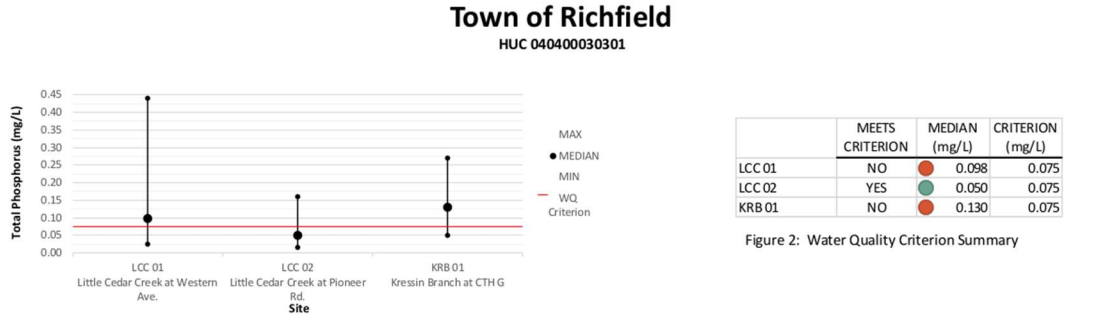


Figure 1: Summary of Pollutant Concentration by Site

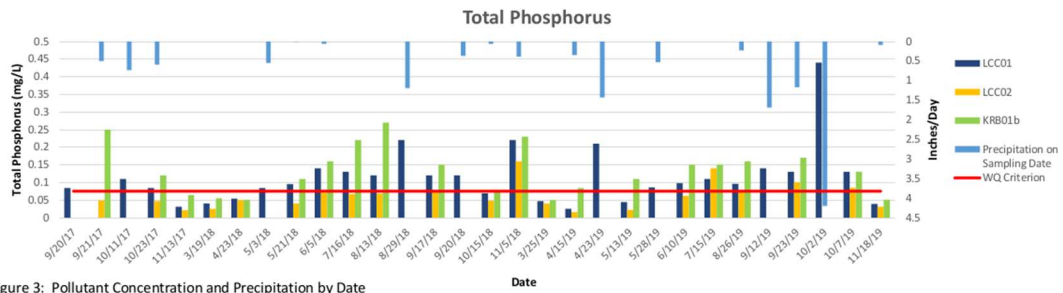


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 73. TSS TRENDS: TOWN OF RICHFIELD, CEDAR CREEK, HUC 040400030301

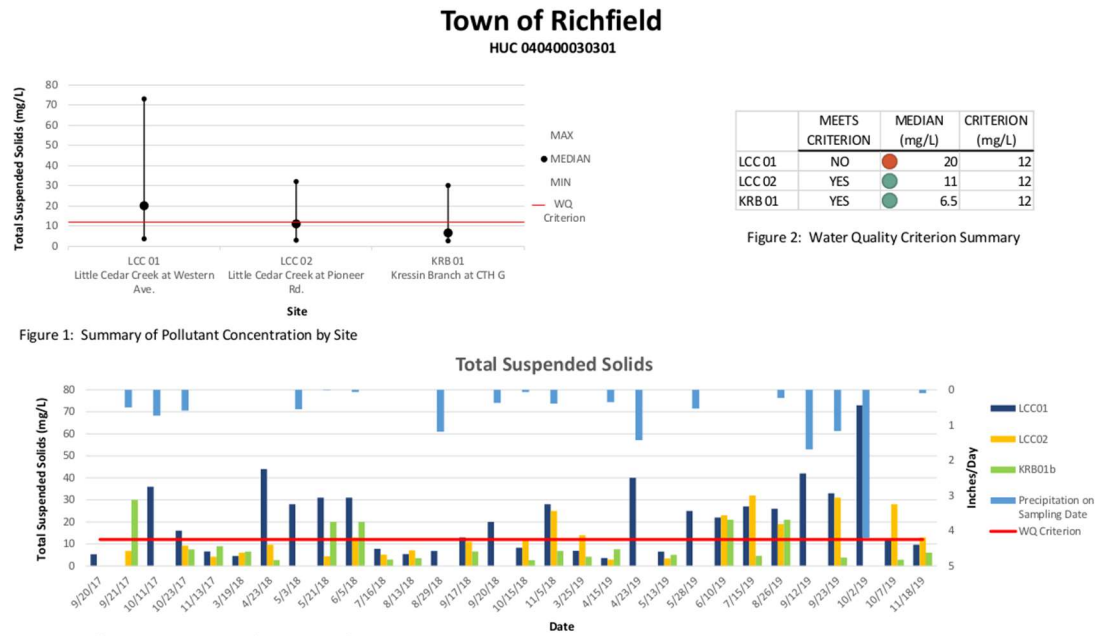


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 74. E. COLI TRENDS: TOWN OF RICHFIELD, CEDAR CREEK, HUC 040400030301

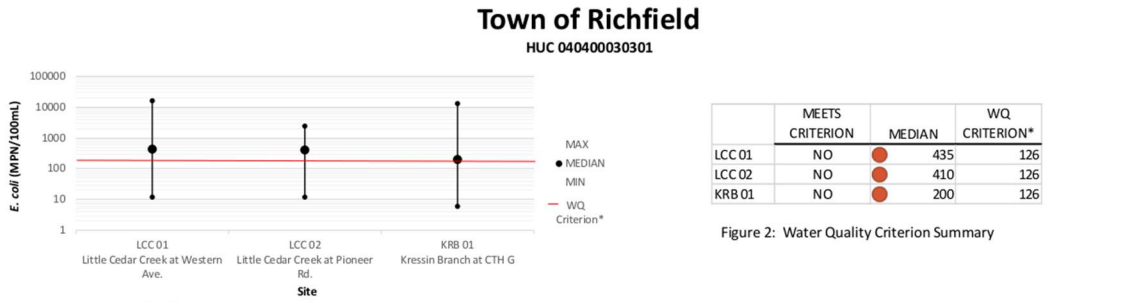


Figure 1: Summary of Pollutant Concentration by Site

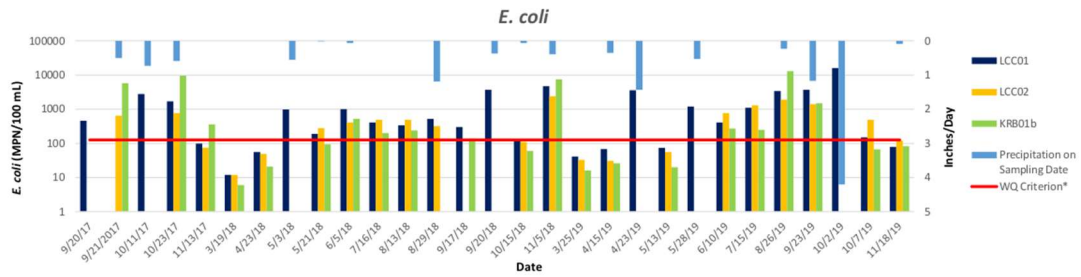


Figure 3: Pollutant Concentration and Precipitation by Date

*The WQ Criterion for E. coli is 126 CFU/100 mL. MMSD results are in MPN/100 mL.

FIGURE 75. E. COLI TRENDS: TOWN OF RICHFIELD, CEDAR CREEK, HUC 040400030301

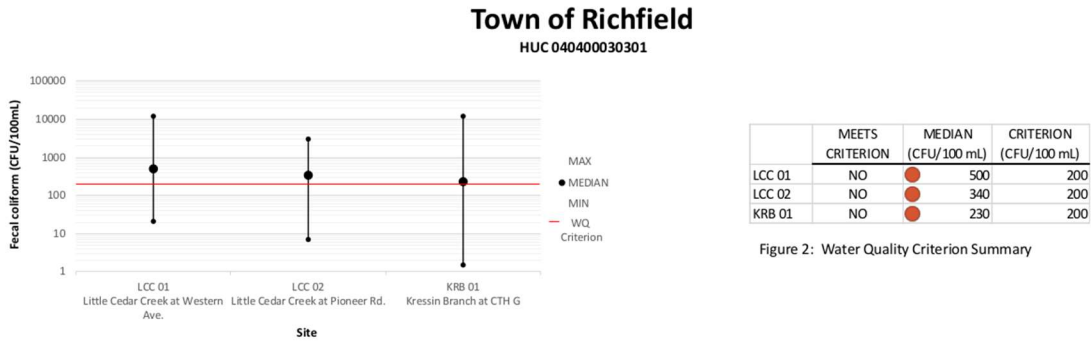


Figure 1: Summary of Pollutant Concentration by Site

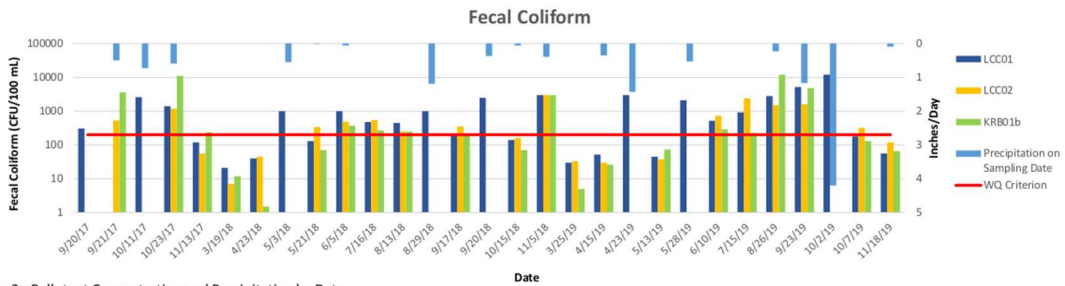


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 76. TP TRENDS: CEDAR LAKE, CEDAR CREEK, HUC 040400030302

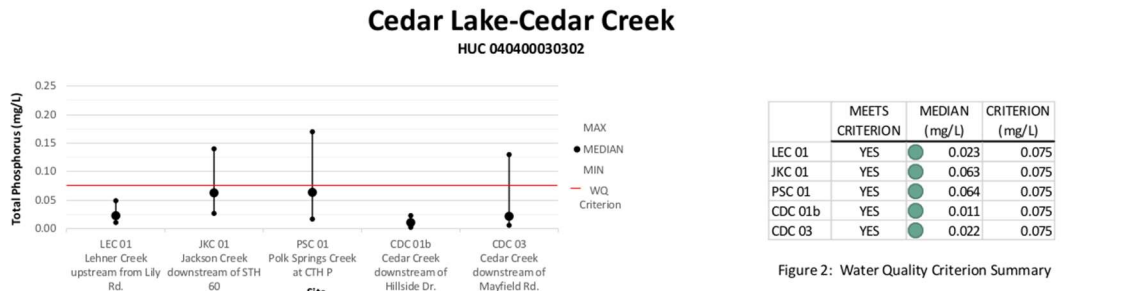


Figure 2: Water Quality Criterion Summary

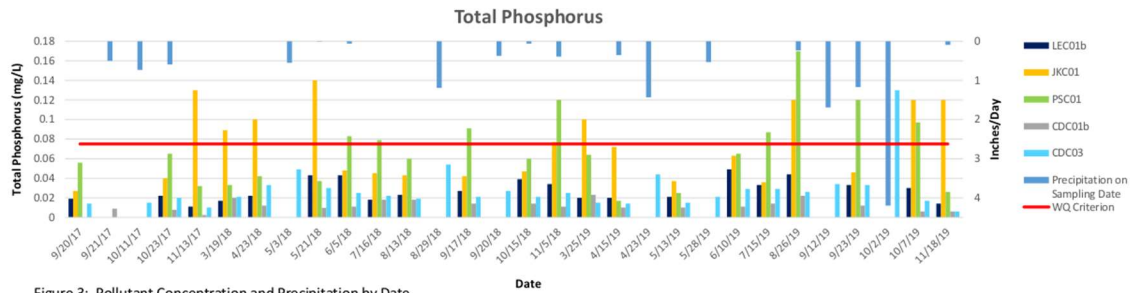


FIGURE 77. TSS TRENDS: CEDAR LAKE, CEDAR CREEK, HUC 040400030302

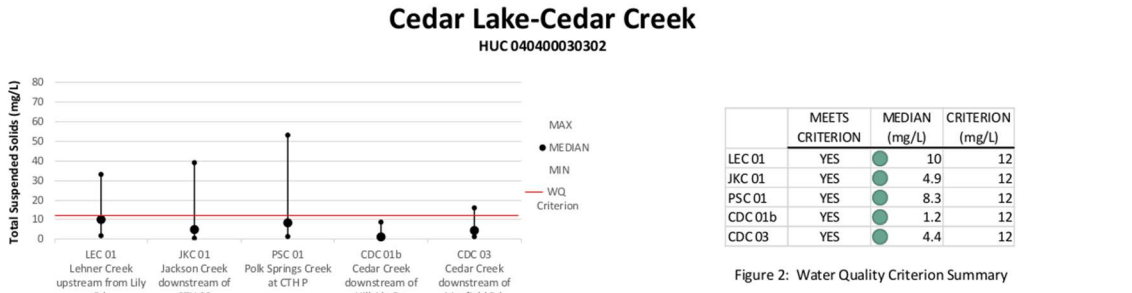


Figure 2: Water Quality Criterion Summary

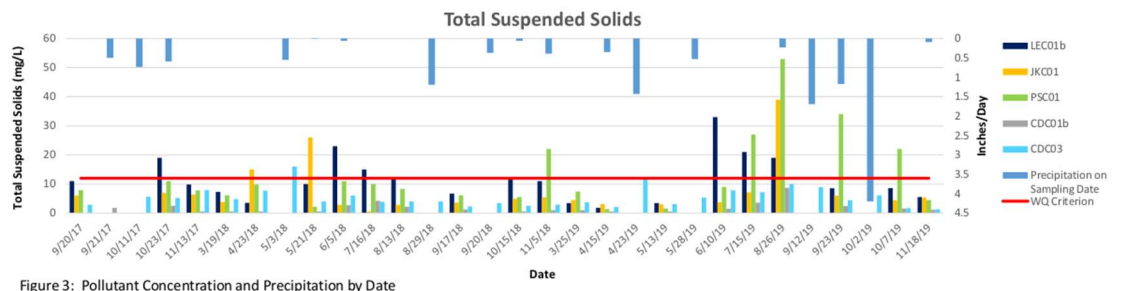


FIGURE 78. E. COLI TRENDS: CEDAR LAKE, CEDAR CREEK, HUC 040400030302

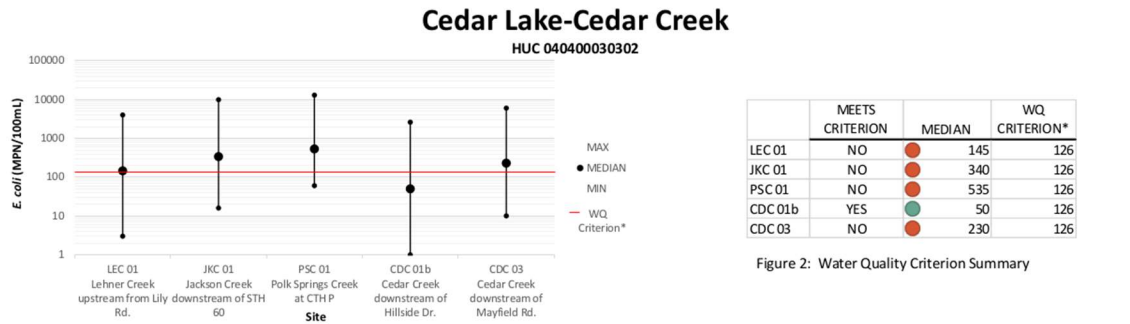


Figure 1: Summary of Pollutant Concentration by Site

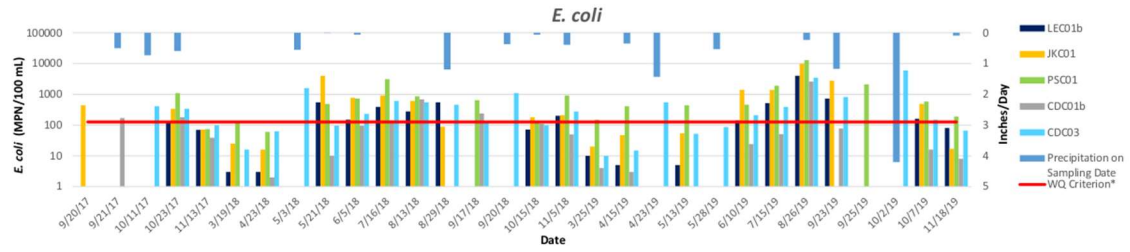


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 79. FECAL COLIFORM TRENDS: CEDAR LAKE, CEDAR CREEK, HUC 040400030302

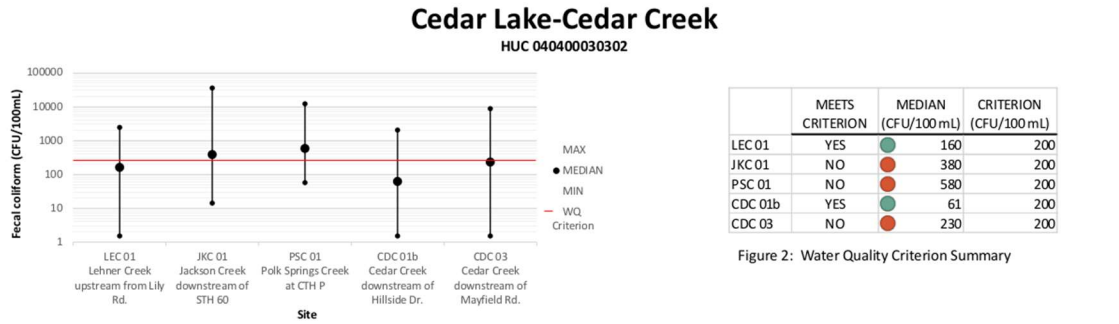


Figure 1: Summary of Pollutant Concentration by Site

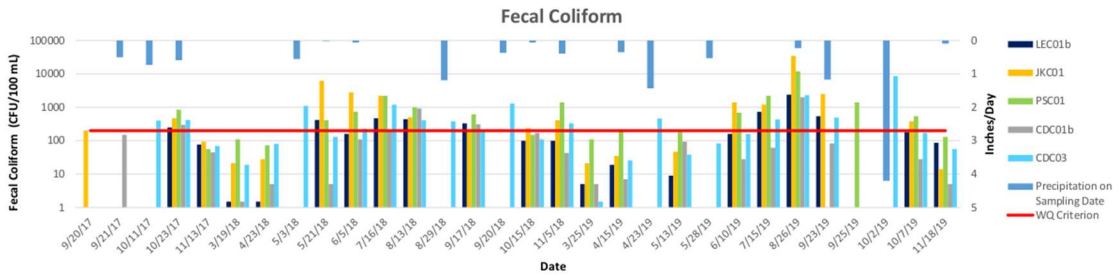


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 80. TP TRENDS: JACKSON MARSH STATE WILDLIFE AREA: CEDAR CREEK, HUC 040400030303

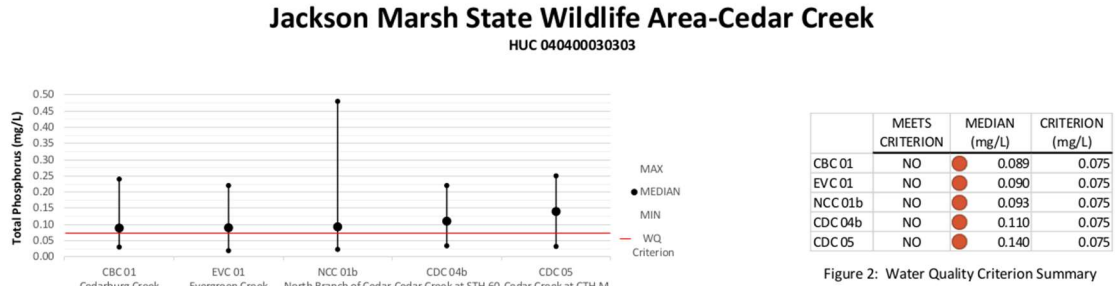


Figure 1: Summary of Pollutant Concentration by Site

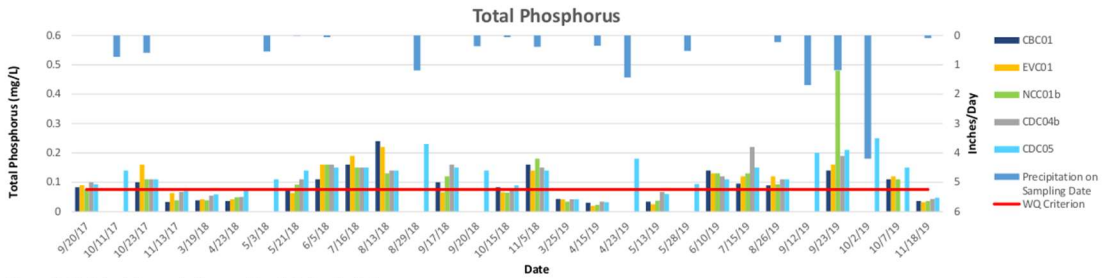


FIGURE 81. TSS TRENDS: JACKSON MARSH STATE WILDLIFE AREA: CEDAR CREEK, HUC 040400030303

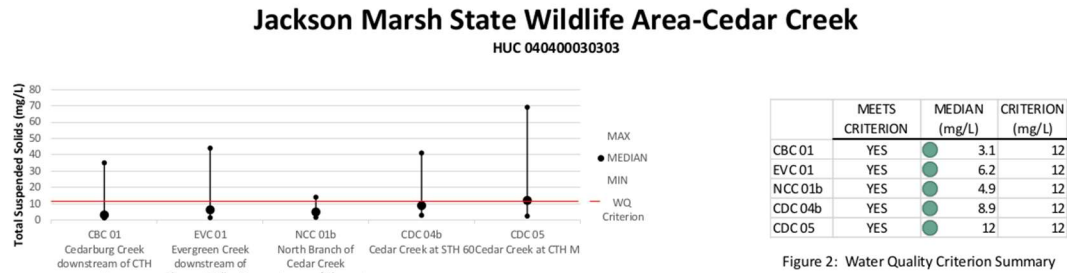


Figure 1: Summary of Pollutant Concentration by Site

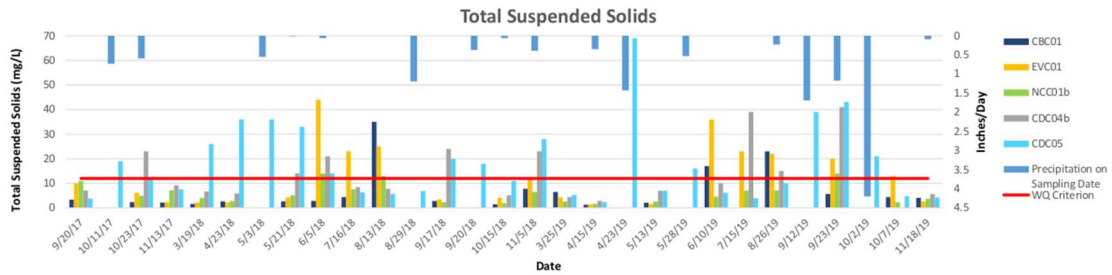


FIGURE 82. E. COLI TRENDS: JACKSON MARSH STATE WILDLIFE AREA: CEDAR CREEK, HUC 040400030303

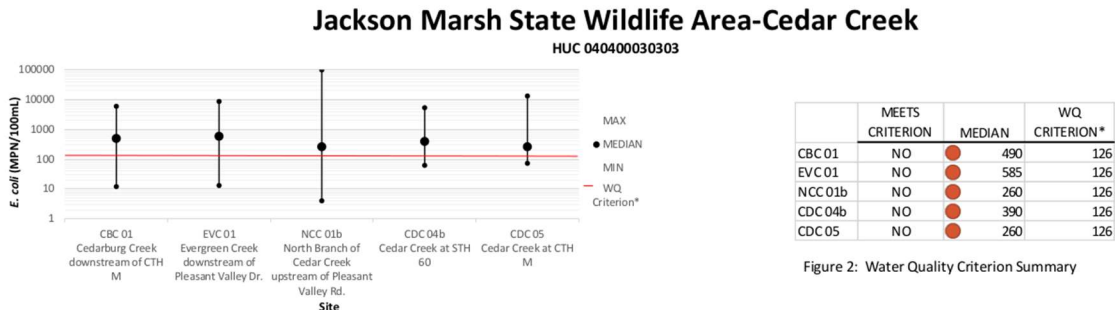


Figure 1: Summary of Pollutant Concentration by Site

Figure 2: Water Quality Criterion Summary

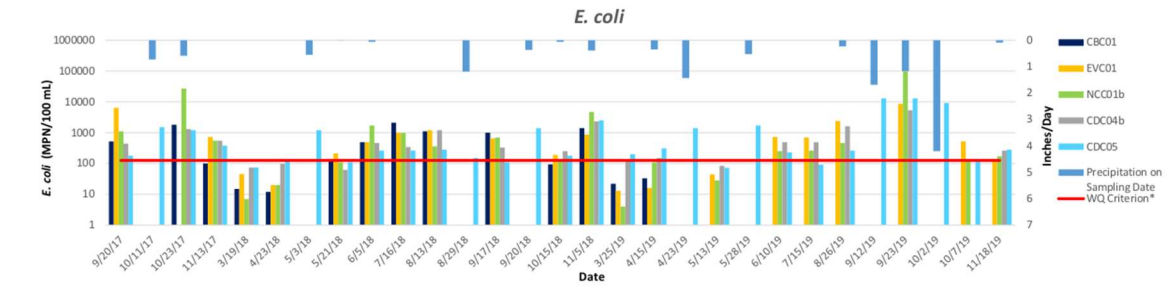


Figure 3: Pollutant Concentration and Precipitation by Date

*The WQ Criterion for E. coli is 126 CFU/100 mL. MMSD results are in MPN/100 mL.

FIGURE 83. FECAL COLIFORM: JACKSON MARSH STATE WILDLIFE AREA: CEDAR CREEK, HUC 040400030303

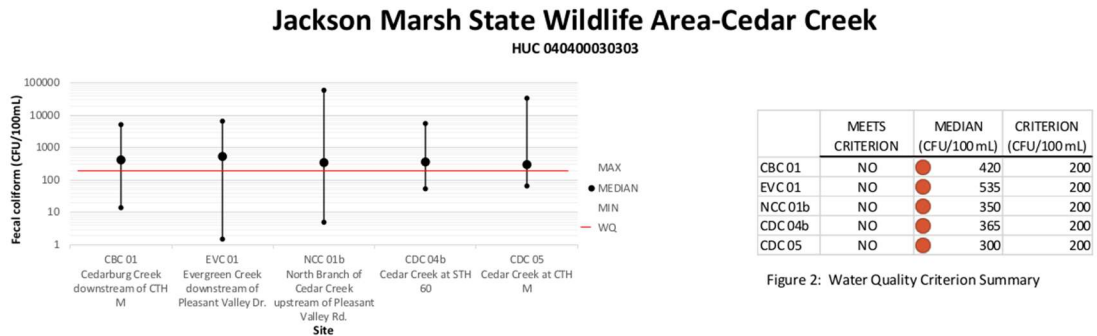


Figure 2: Water Quality Criterion Summary

Figure 1: Summary of Pollutant Concentration by Site

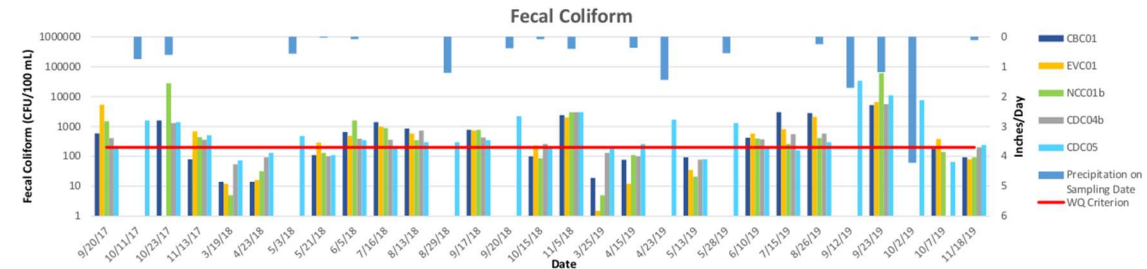


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 84. TP TRENDS: CEDAR CREEK, HUC 040400030304

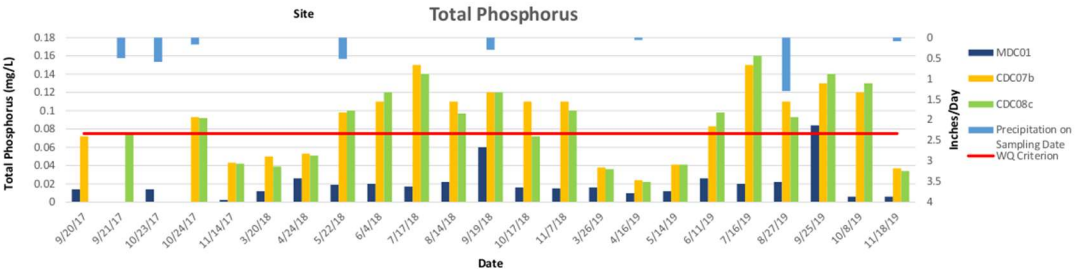
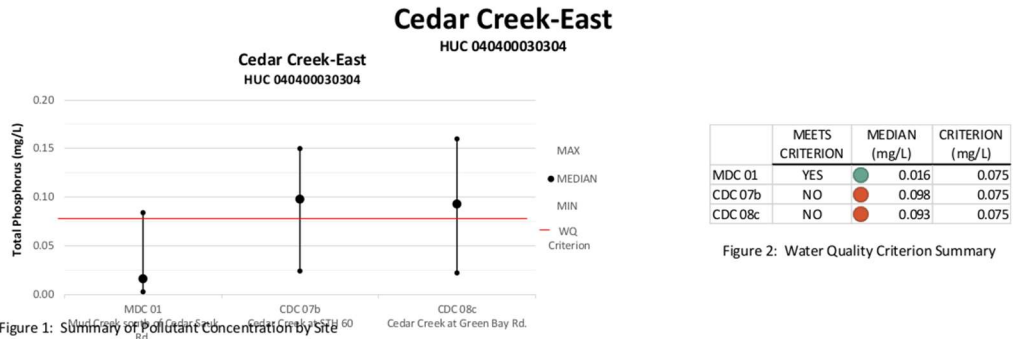


FIGURE 85. TSS TRENDS: CEDAR CREEK, HUC 040400030304

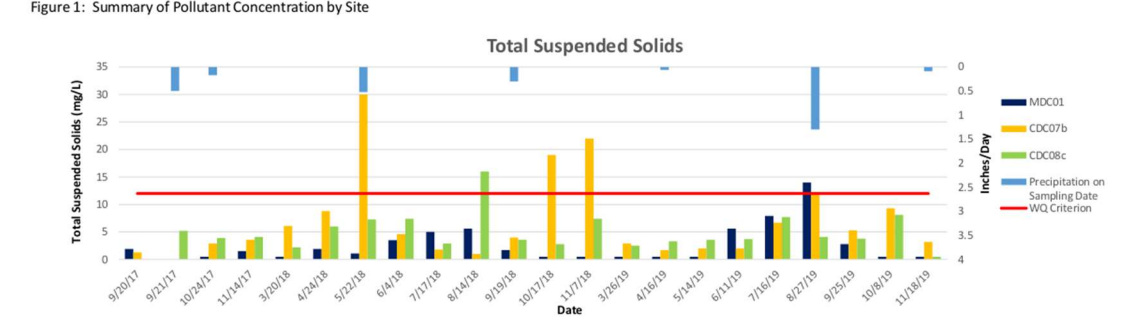
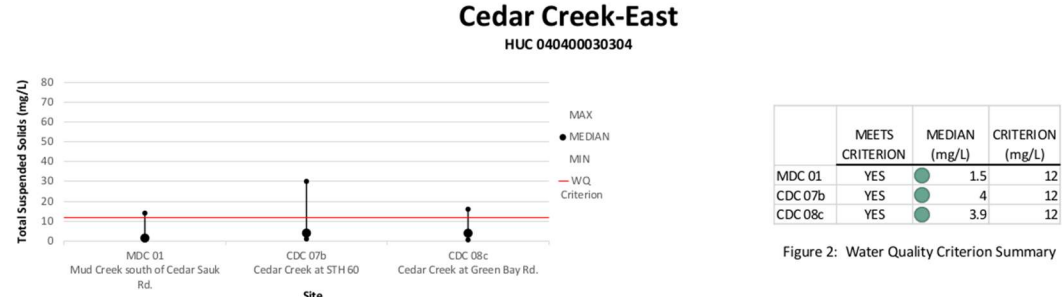


FIGURE 86. E. COLI TRENDS: CEDAR CREEK, HUC 040400030304

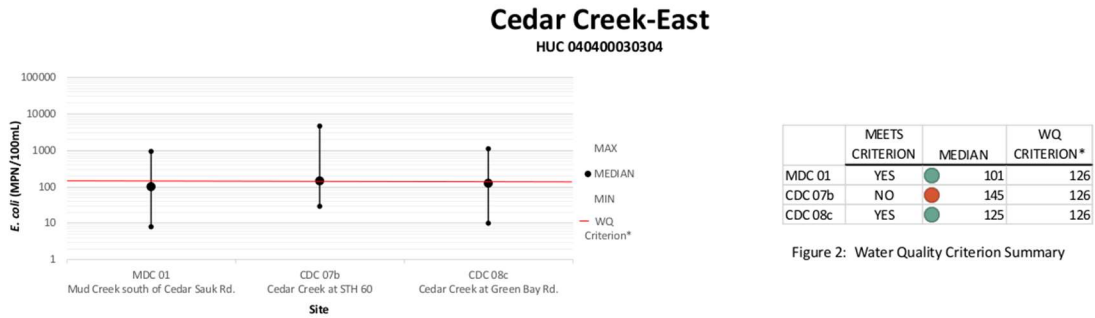


Figure 1: Summary of Pollutant Concentration by Site

Figure 2: Water Quality Criterion Summary

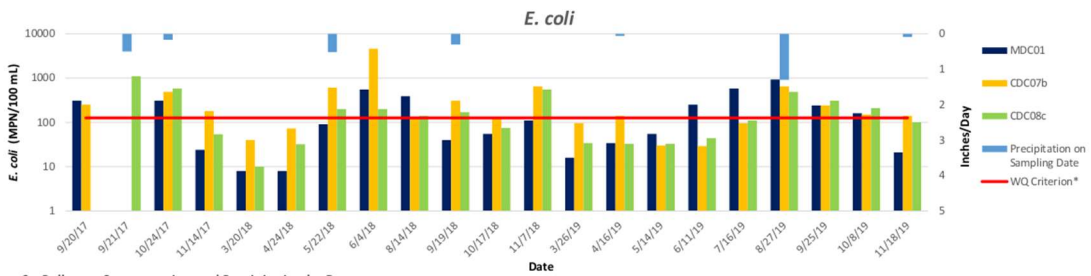


Figure 3: Pollutant Concentration and Precipitation by Date

*The WQ Criterion for E. coli is 126 CFU/100 mL. MMSD results are in MPN/100 mL.

FIGURE 87. FECAL COLIFORM: CEDAR CREEK, HUC 040400030304

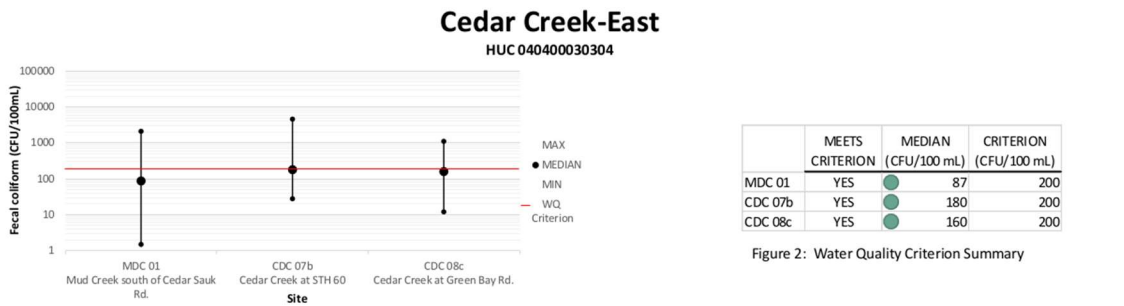


Figure 1: Summary of Pollutant Concentration by Site

Figure 2: Water Quality Criterion Summary

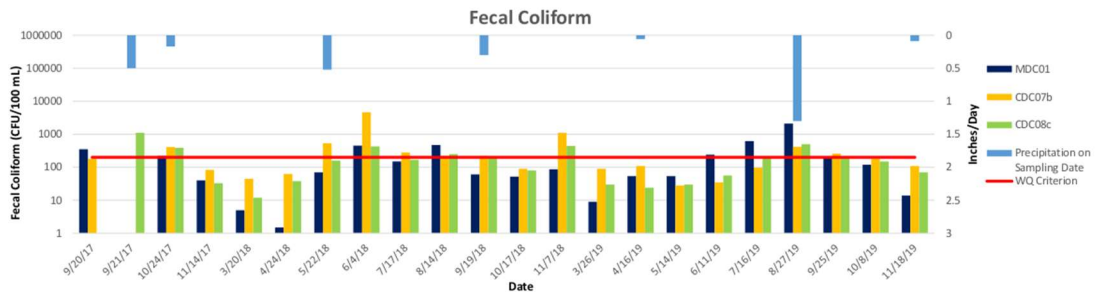


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 87. TP TRENDS: MOLE CREEK: MILWAUKEE RIVER, HUC 04040003030603

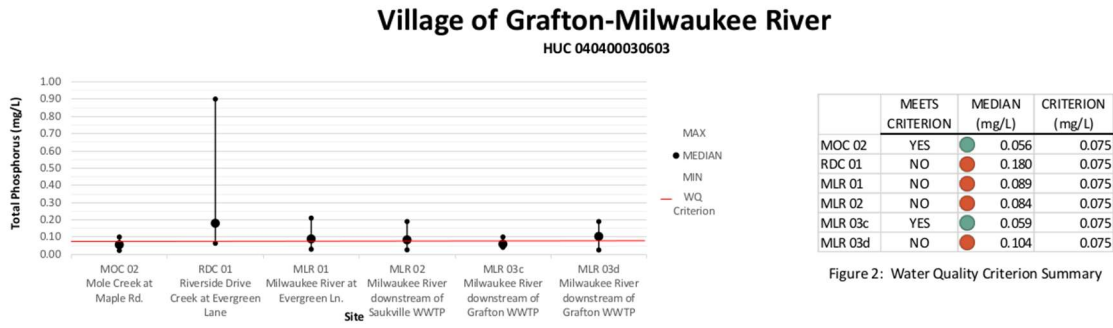


Figure 1: Summary of Pollutant Concentration by Site

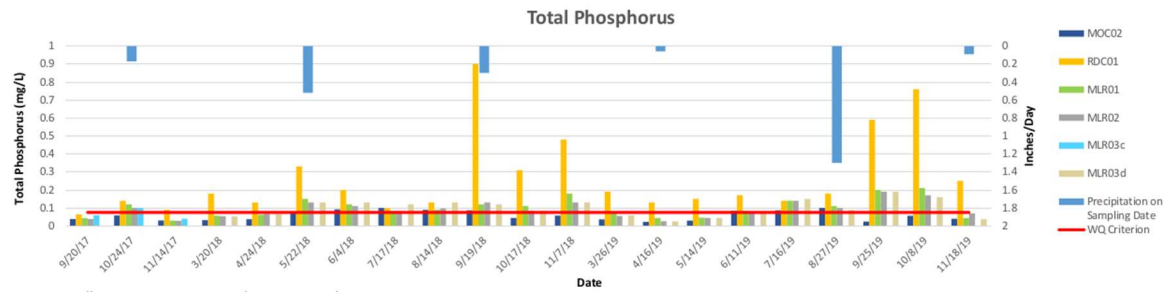


FIGURE 88. TSS TRENDS: MOLE CREEK: MILWAUKEE RIVER, HUC 040400030603

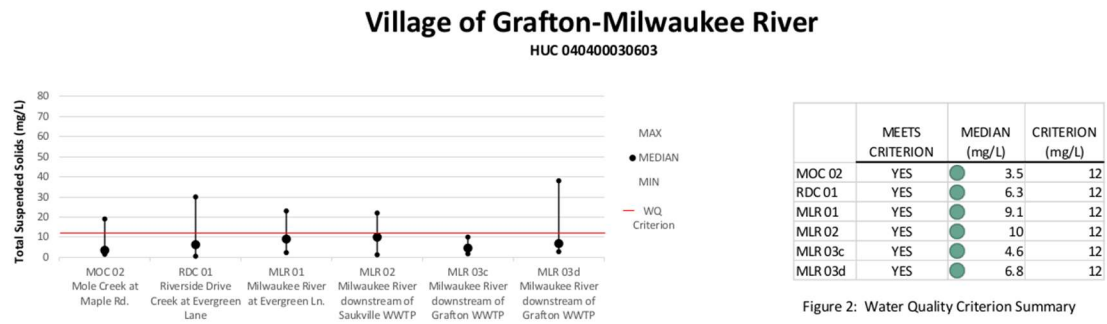


Figure 1: Summary of Pollutant Concentration by Site

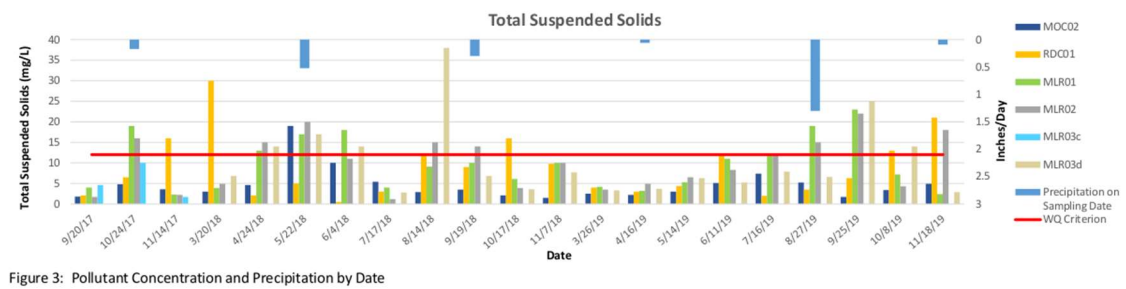
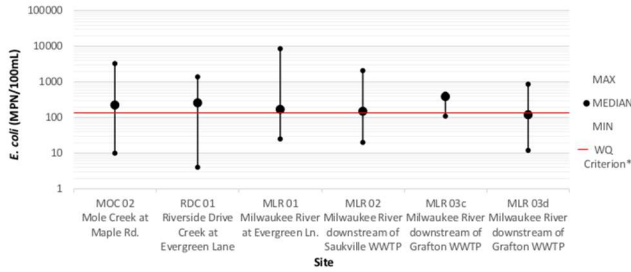


FIGURE 89. E. COLI TRENDS: MOLE CREEK: MILWAUKEE RIVER, HUC 040400030603

Village of Grafton-Milwaukee River

HUC 040400030603



	MEETS CRITERION	MEDIAN	WQ CRITERION*
MOC 02	NO	225	126
RDC 01	NO	260	126
MLR 01	NO	170	126
MLR 02	NO	150	126
MLR 03c	NO	390	126
MLR 03d	YES	120	126

Figure 2: Water Quality Criterion Summary

Figure 1: Summary of Pollutant Concentration by Site

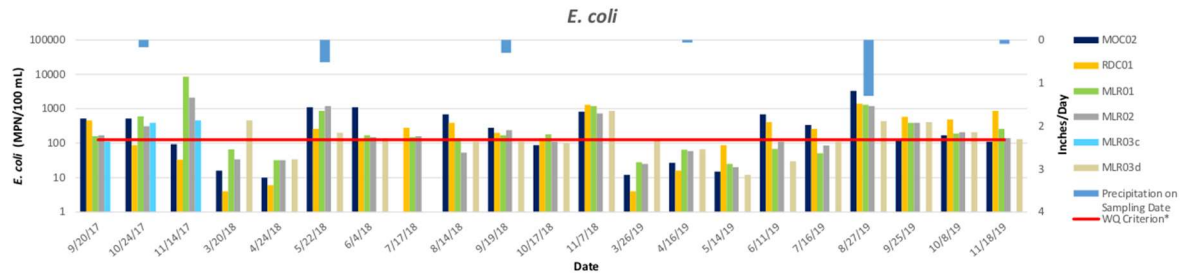


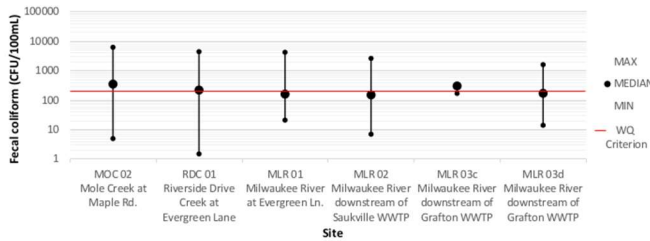
Figure 3: Pollutant Concentration and Precipitation by Date

*The WQ Criterion for E. coli is 126 CFU/100 mL. MMSD results are in MPN/100 mL.

Figure 90. FECAL COLIFORM TRENDS: MOLE CREEK: MILWAUKEE RIVER, HUC 040400030603

Village of Grafton-Milwaukee River

HUC 040400030603



	MEETS CRITERION	MEDIAN (CFU/100 mL)	CRITERION (CFU/100 mL)
MOC 02	NO	350	200
RDC 01	NO	220	200
MLR 01	YES	160	200
MLR 02	YES	150	200
MLR 03c	NO	300	200
MLR 03d	YES	170	200

Figure 2: Water Quality Criterion Summary

Figure 1: Summary of Pollutant Concentration by Site

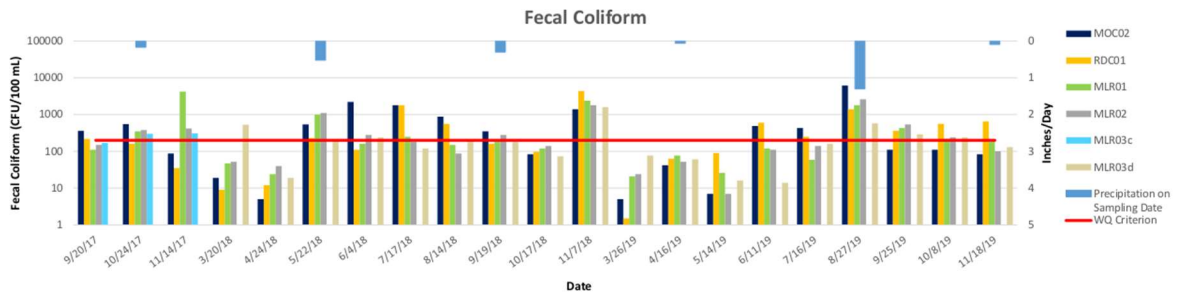


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 91. TP TRENDS: PIGEON CREEK, ULAO CREEK: MILWAUKEE RIVER, HUC 040400030604

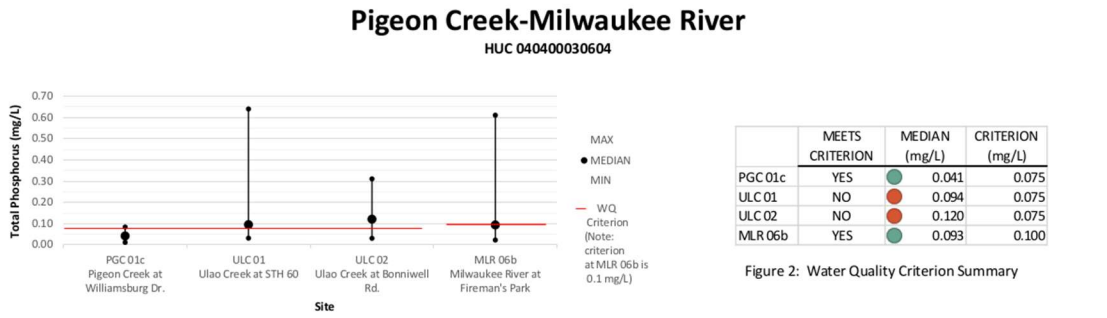


Figure 1: Summary of Pollutant Concentration by Site

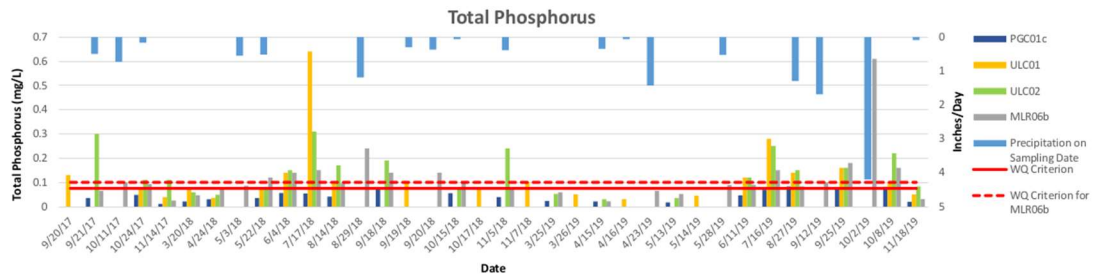


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 92. TSS TRENDS: PIGEON CREEK, ULAO CREEK: MILWAUKEE RIVER, HUC 040400030604

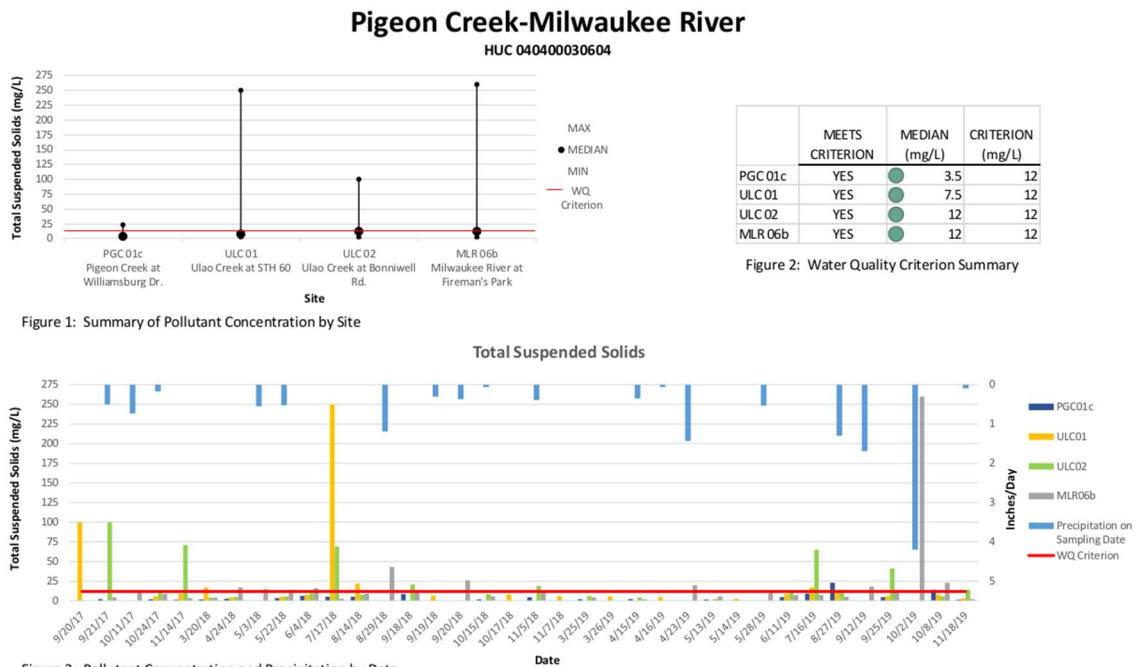


Figure 1: Summary of Pollutant Concentration by Site

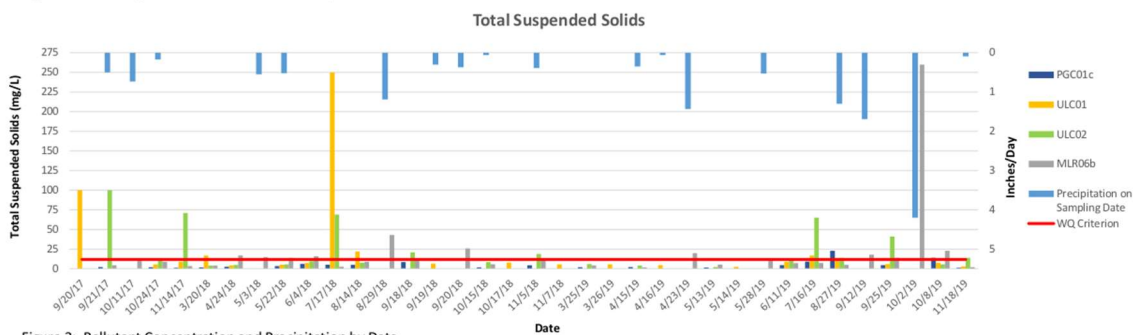
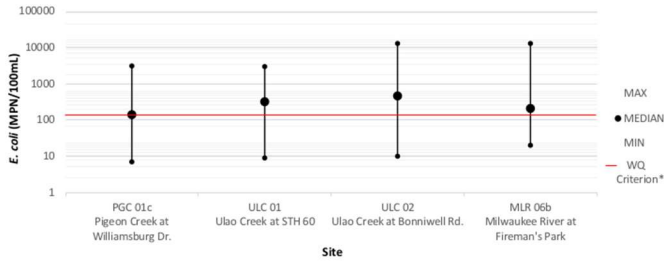


Figure 3: Pollutant Concentration and Precipitation by Date

FIGURE 93. E.COLI TRENDS: PIGEON CREEK, ULAO CREEK: MILWAUKEE RIVER, HUC 040400030604

Pigeon Creek-Milwaukee River HUC 040400030604



	MEETS CRITERION	MEDIAN	WQ CRITERION*
PGC 01c	NO	140	126
ULC 01	NO	320	126
ULC 02	NO	465	126
MLR 06b	NO	210	126

Figure 2: Water Quality Criterion Summary

Figure 1: Summary of Pollutant Concentration by Site

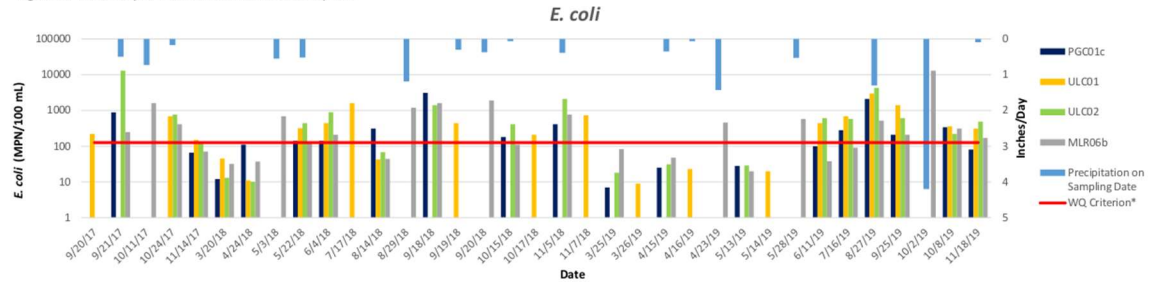
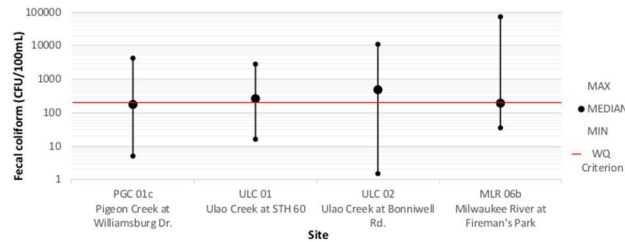


Figure 3: Pollutant Concentration and Precipitation by Date

*The WQ Criterion for E. coli is 126 CFU/100 mL. MMSD results are in MPN/100 mL.

FIGURE 94. FECAL COLIFORM TRENDS: PIGEON CREEK, ULAO CREEK: MILWAUKEE RIVER, HUC 040400030604

Pigeon Creek-Milwaukee River HUC 040400030604



	MEETS CRITERION	MEDIAN (CFU/100 mL)	CRITERION (CFU/100 mL)
PGC 01c	YES	175	200
ULC 01	NO	260	200
ULC 02	NO	480	200
MLR 06b	YES	190	200

Figure 2: Water Quality Criterion Summary

Figure 1: Summary of Pollutant Concentration by Site

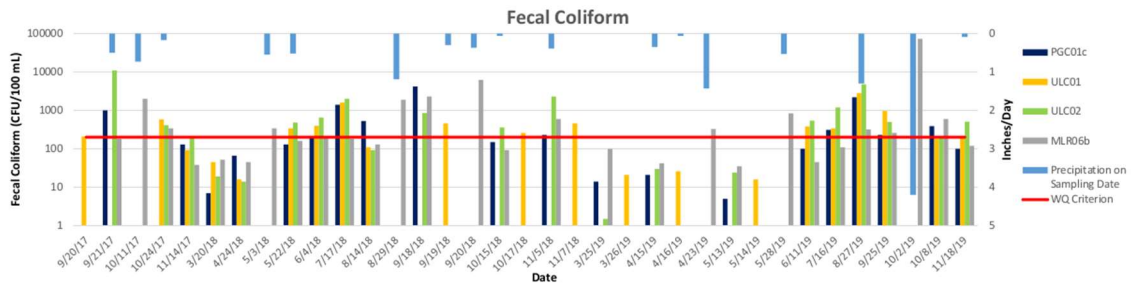


Figure 3: Pollutant Concentration and Precipitation by Date

Appendix J: EVAAL & STEPL: Vulnerable Fields and Priority Sites Mapped

FIGURE 95: EVAAL, STEPL, & MONITORING SITE DATA: CEDAR CREEK HUC10

EVAAL, STEPL, & Monitoring Site Data Cedar Creek HUC10

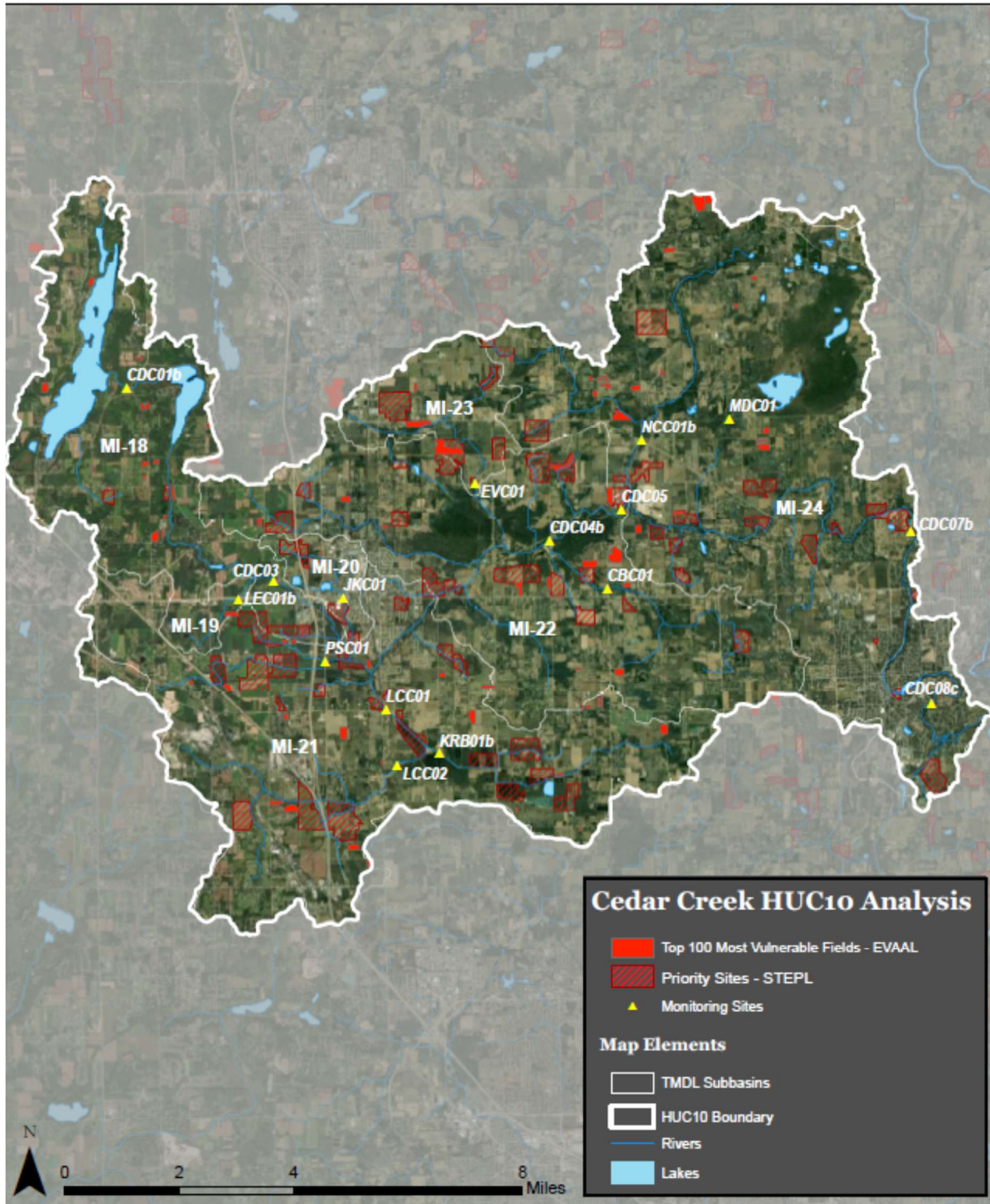


FIGURE 96: EVAAL, STEPL, & MONITORING SITE DATA: MOLE, PIGEON, ULAO HUC10

EVAAL, STEPL, & Monitoring Site Data Mole, Pigeon, Ulaio HUC10

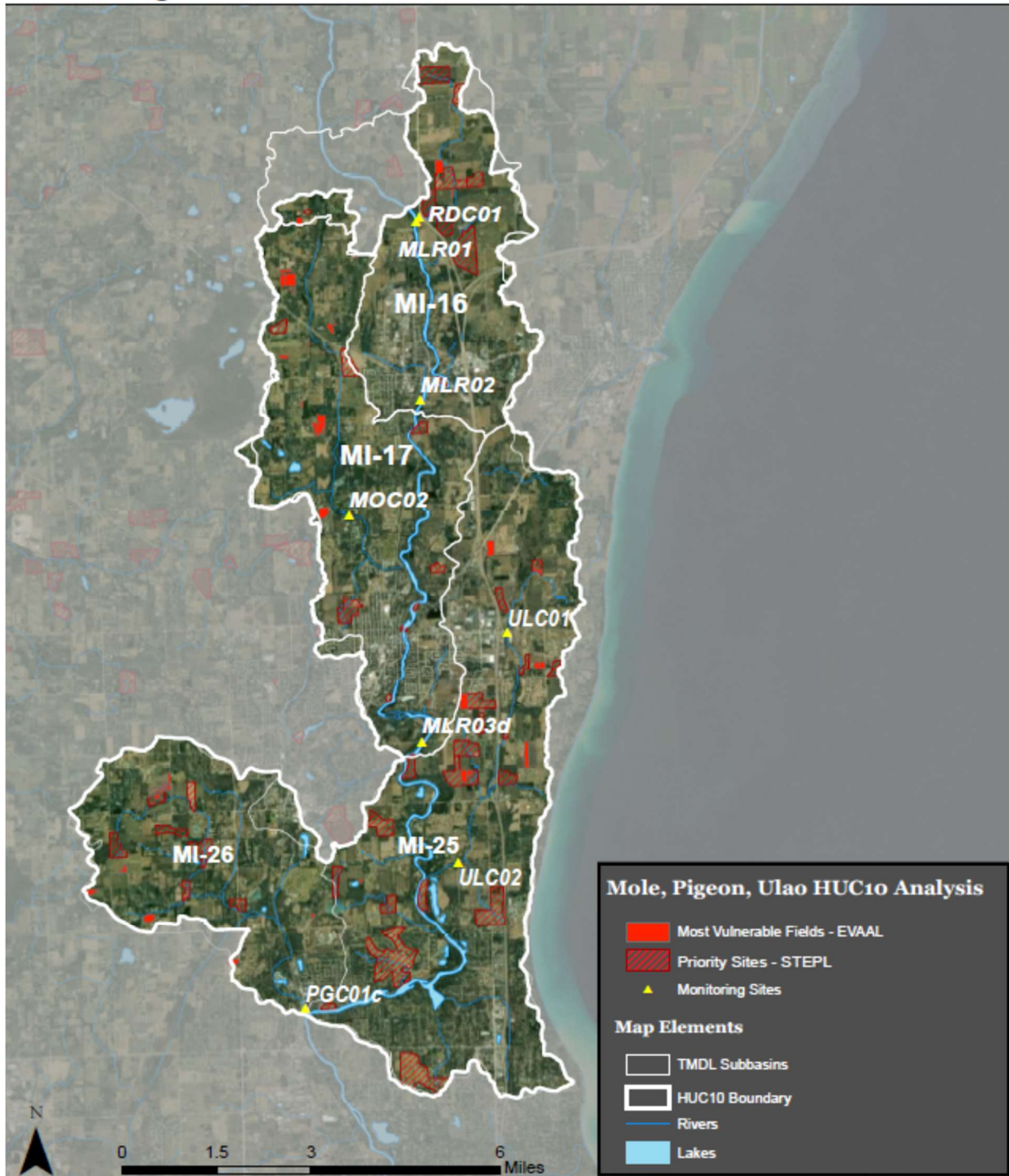


FIGURE 97: EVAAL, STEPL, & MONITORING SITE DATA: HUC 040400030301

EVAAL, STEPL, & Monitoring Site Data HUC040400030301

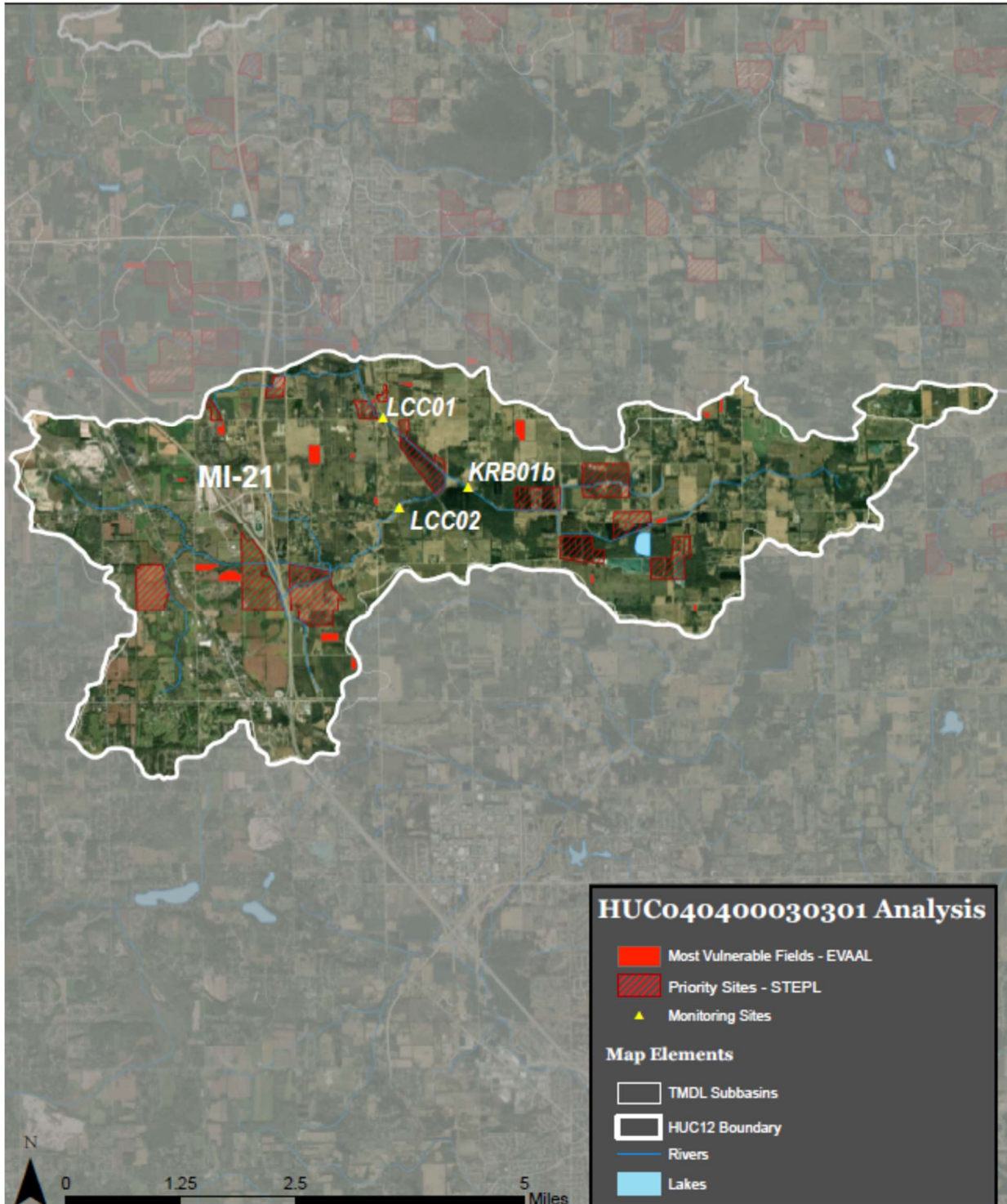


FIGURE 98: EVAAL, STEPL, & MONITORING SITE DATA: HUC 040400030302

EVAAL, STEPL, & Monitoring Site Data HUC040400030302

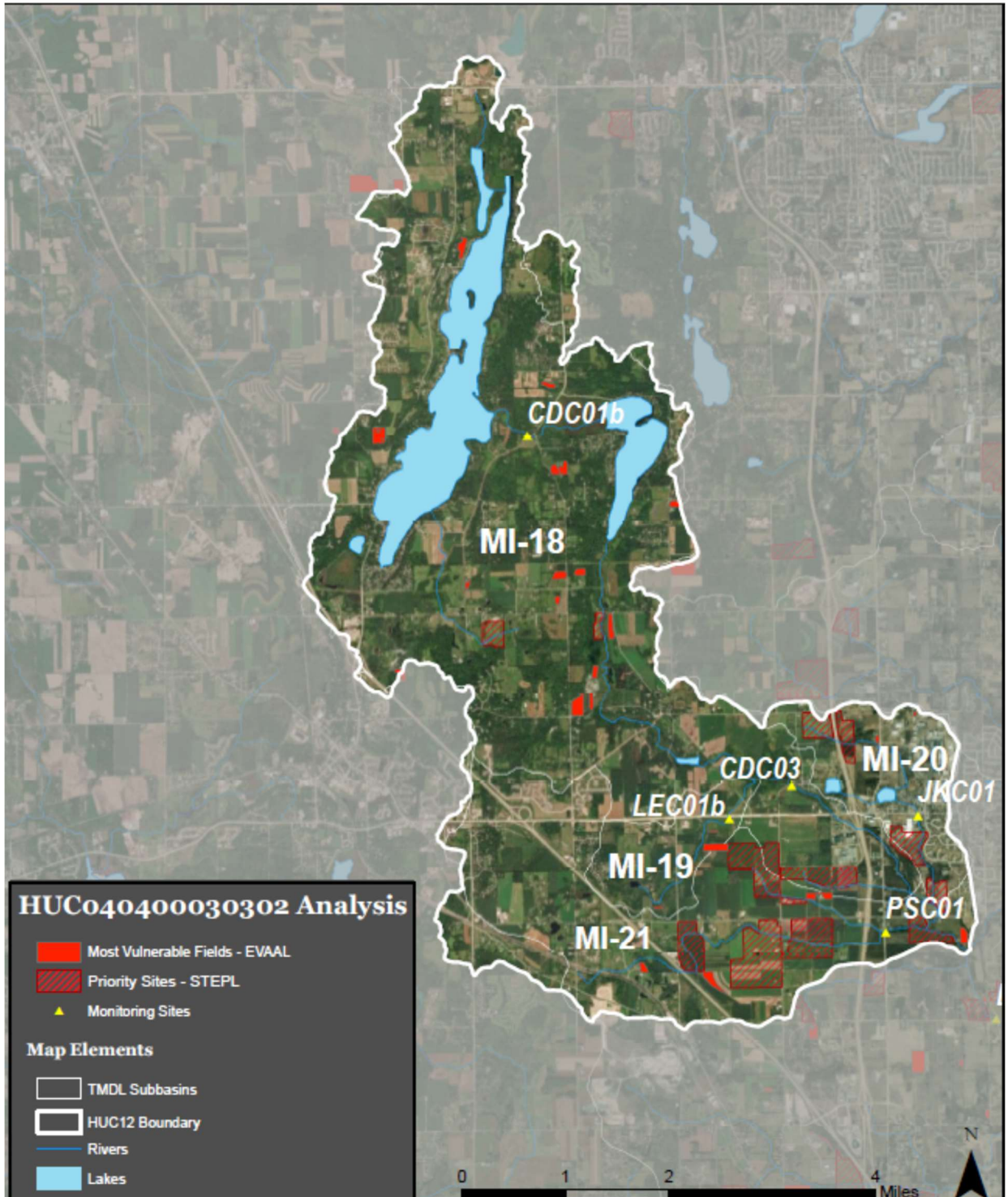


FIGURE 99: HUC 30304 EROSION VULNERABILITY ASSESSMENT FOR AGRICULTURAL LANDS (EVAAL)

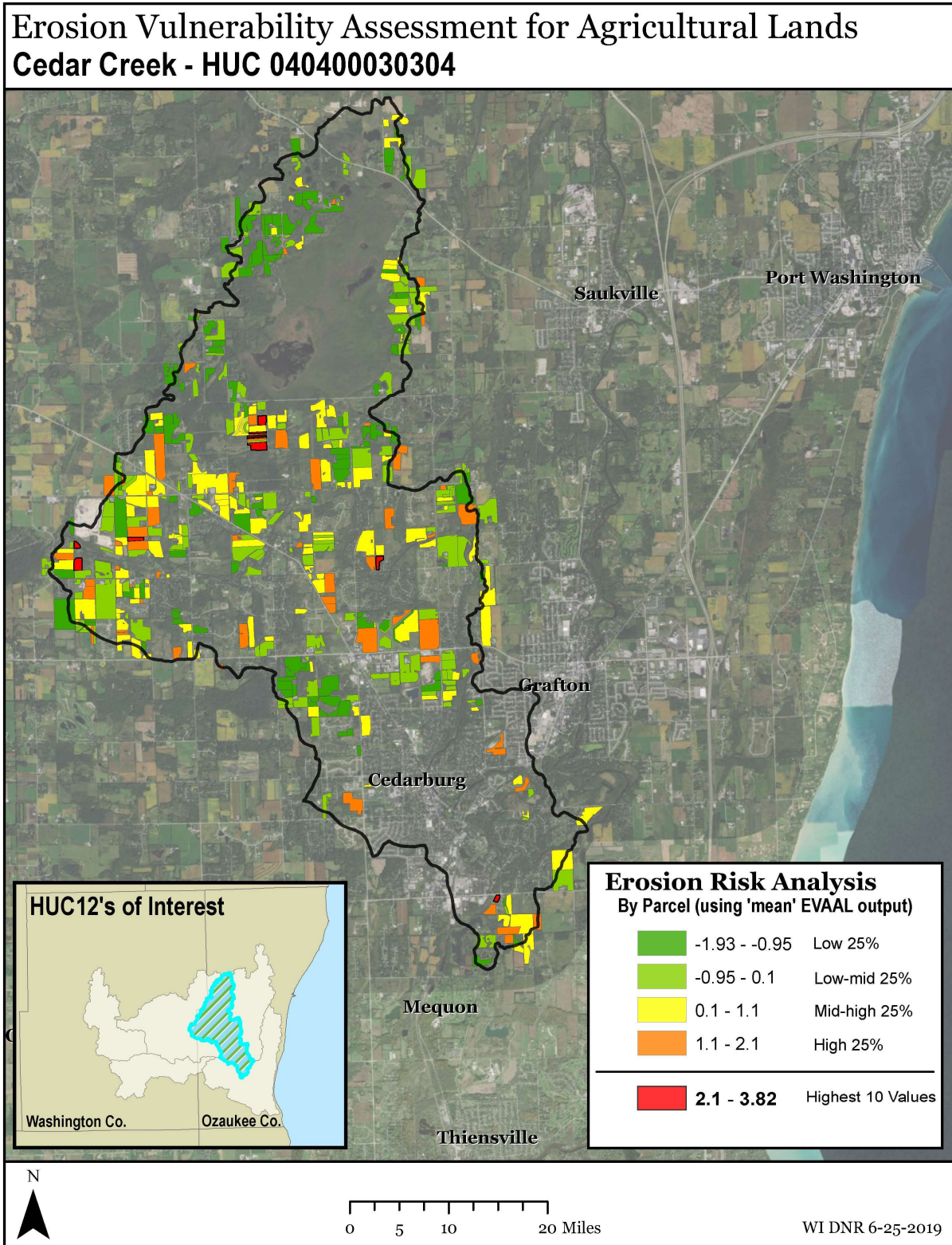


FIGURE 100: HUC 30603 EROSION VULNERABILITY ASSESSMENT FOR AGRICULTURAL LANDS (EVAAL)

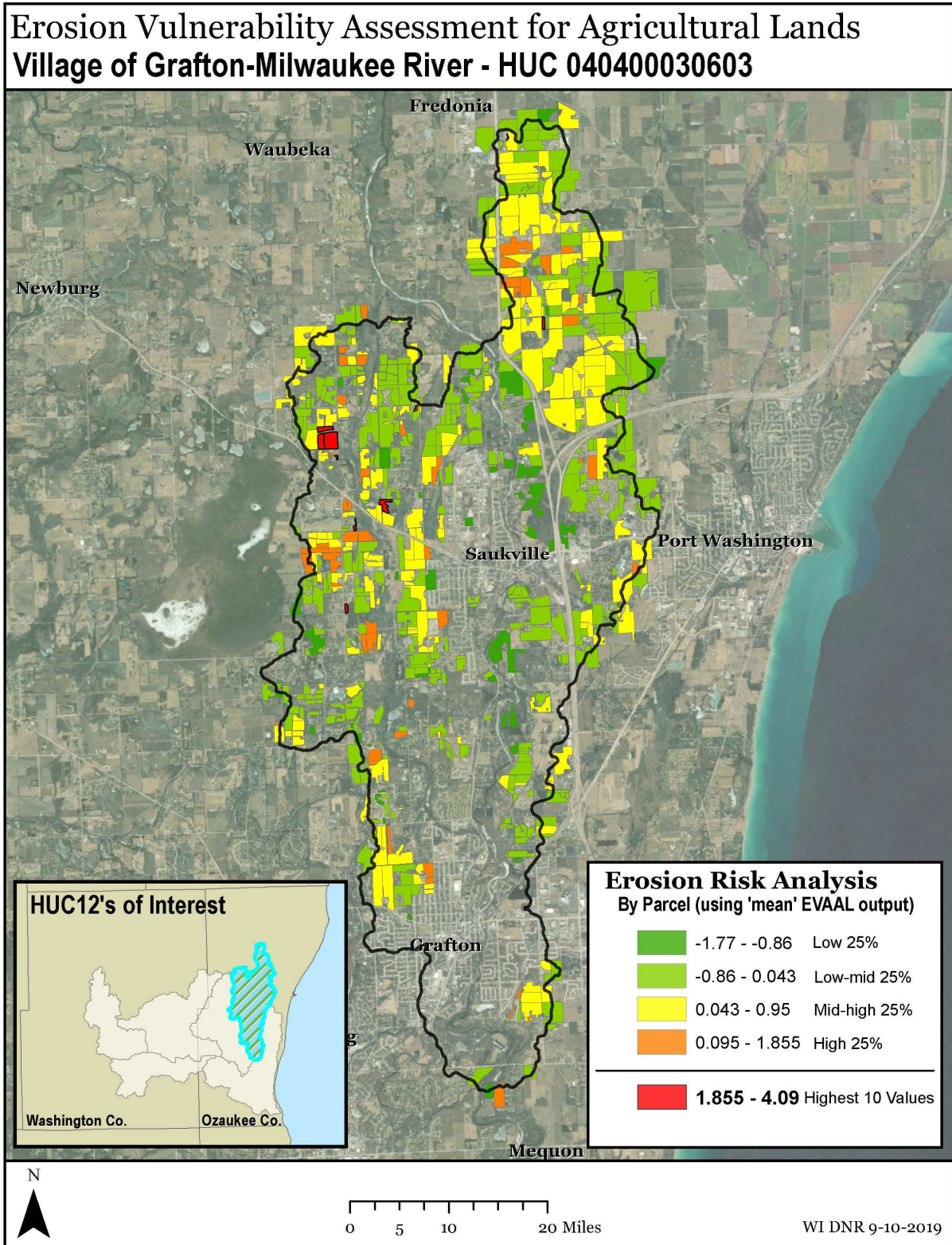


FIGURE 101: EVAAL, STEPL, & MONITORING SITE DATA: HUC 040400030603

EVAAL, STEPL, & Monitoring Site Data HUC040400030603

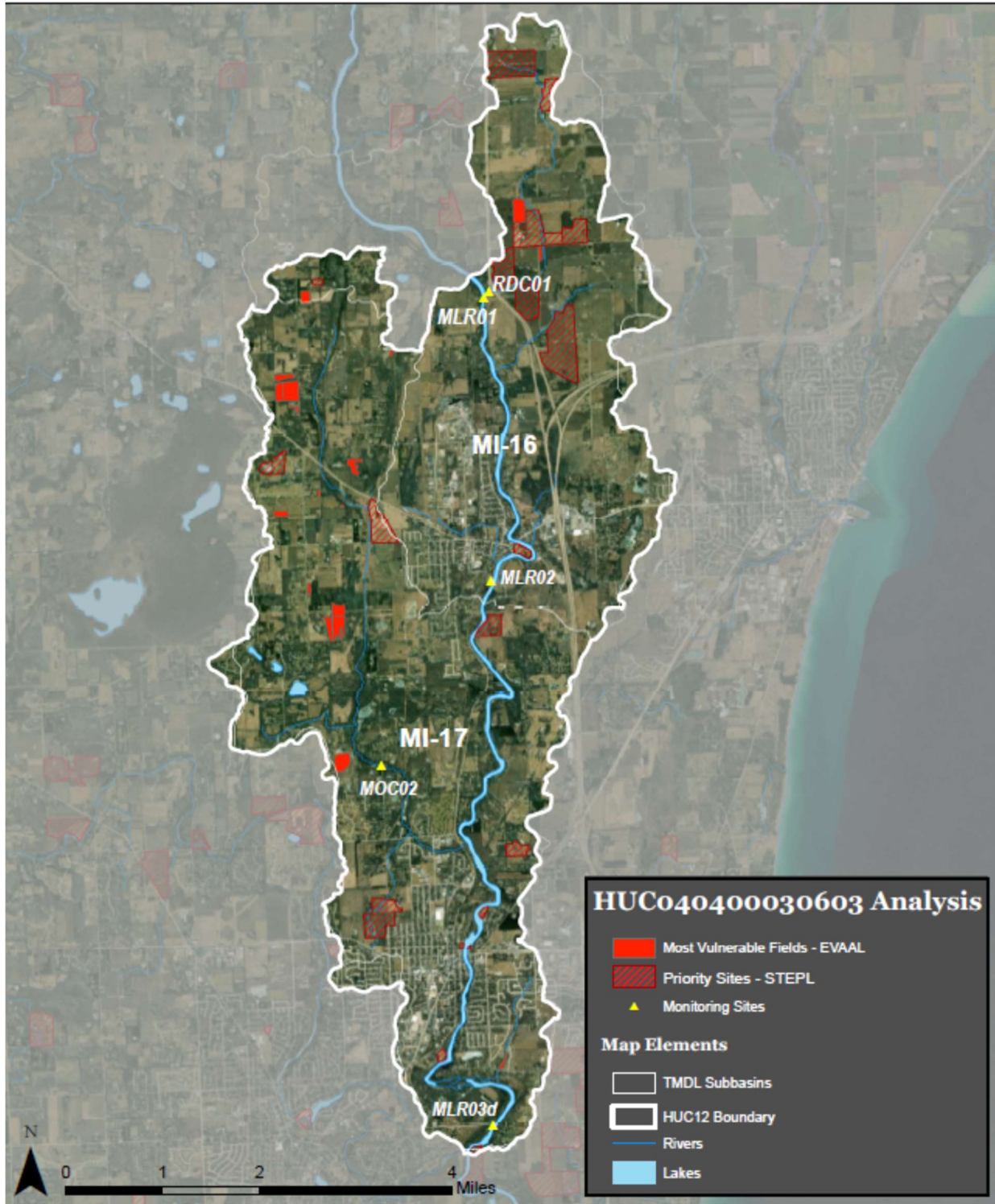


FIGURE 102: HUC 30604 EROSION VULNERABILITY ASSESSMENT FOR AGRICULTURAL LANDS (EVAAL)

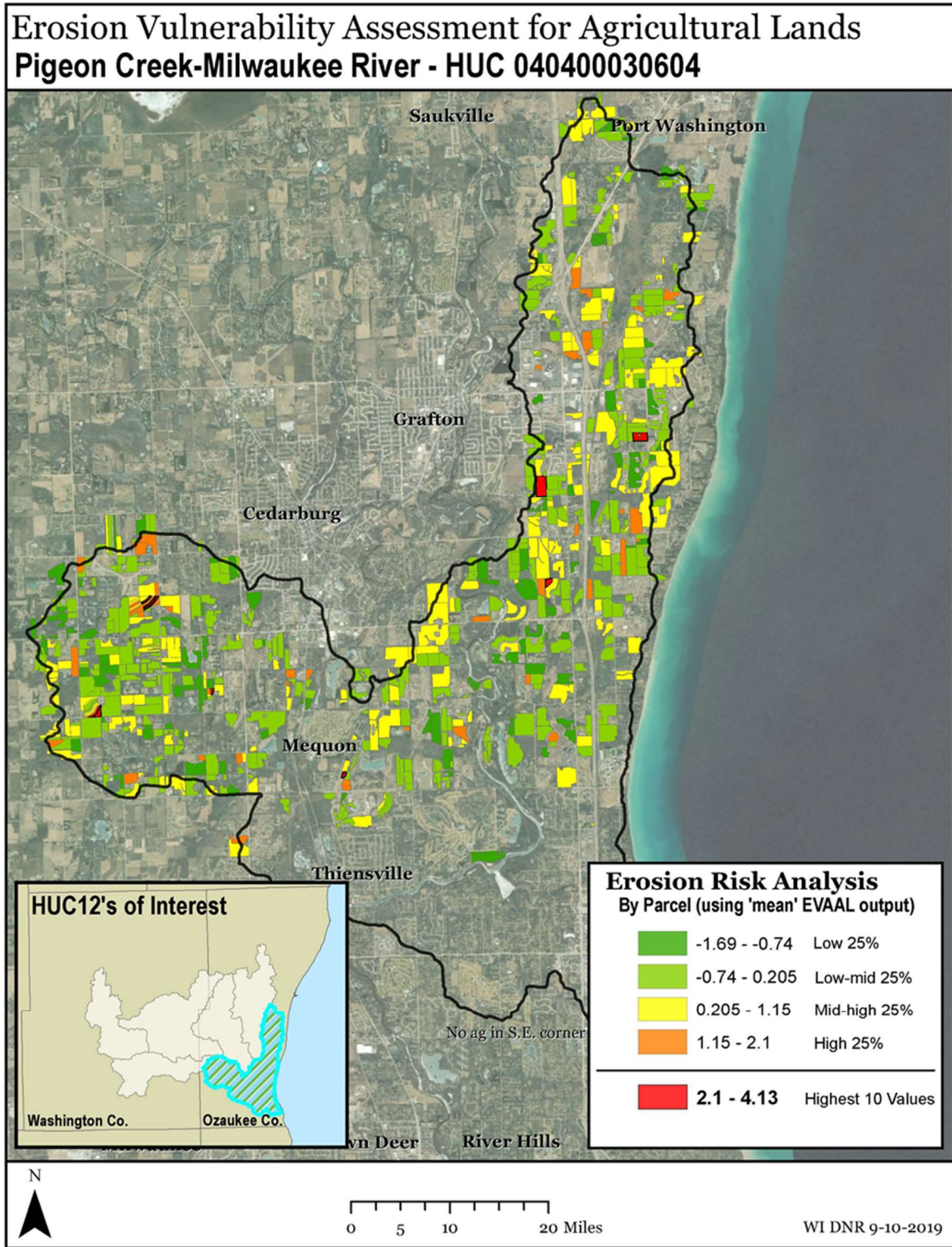
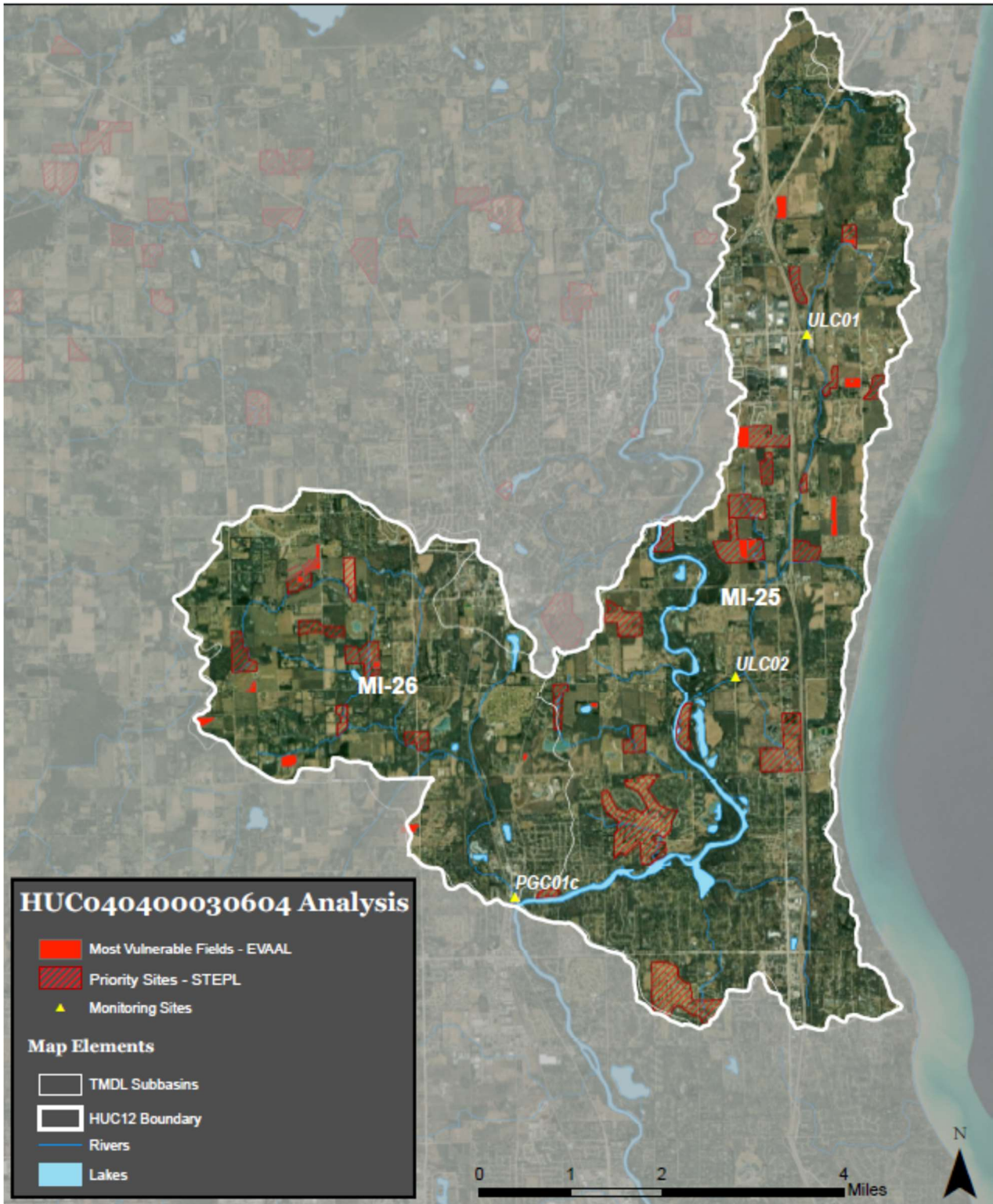


FIGURE 103: EVAAL, STEPL, & MONITORING SITE DATA: HUC 040400030604

EVAAL, STEPL, & Monitoring Site Data HUC040400030604



Appendix K. 2017 Water Quality DNA analysis for presence of sewage, University of Wisconsin-Milwaukee School of Freshwater Sciences.

FIGURE 104. 2017 WATER QUALITY DNA ANALYSIS FOR SEWAGE: METHODS & LOCATIONS SOURCE: DR. RYAN NEWTON, UNIVERSITY OF WISCONSIN-MILWAUKEE SCHOOL OF FRESHWATER SCIENCES (2017)

Methods: Sampling locations

- 16 total sampling locations
- Sampled on 5 days in summer 2017 by UWM & Milwaukee Riverkeeper citizen scientists

Sample Site Breakdown			
		Surrounding Land Use	
		Rural	Urban
Water Quality	Impacted	4 Sites	4 Sites
	Good	4 Sites	4 Sites

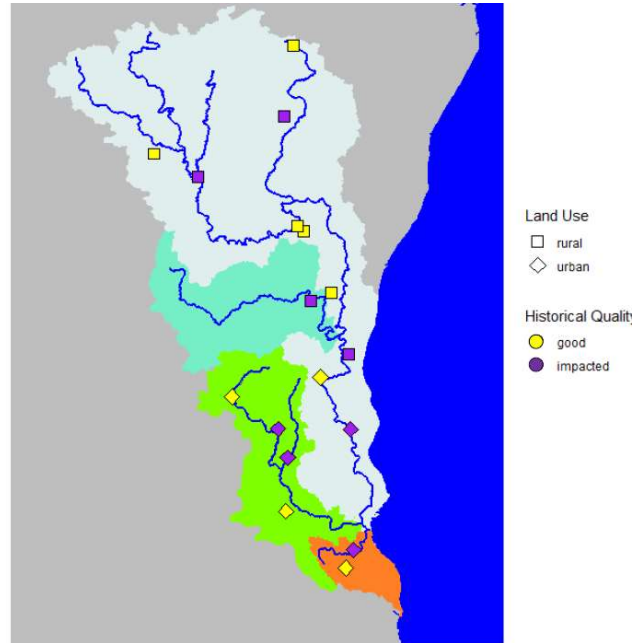


FIGURE 105. 2017 WATER QUALITY DNA ANALYSIS FOR PRESENCE OF SEWAGE: RESULTS SOURCE: DR. RYAN NEWTON, UNIVERSITY OF WISCONSIN-MILWAUKEE SCHOOL OF FRESHWATER SCIENCES (2017)

Grading the Milwaukee Area Rivers for Sewage Contamination

Bacterial genera and (# of sequences) used for sewage tracking

Prevotella (1), *Arcobacter* (4), *Cloacibacterium* (1), *Bacteroides* (1), *Acinetobacter* (1),



Sewage Contamination Level Scoring

<1 in 1000 seq. = very low
 1 in 500 to 1000 seq. = low
 1 in 200 to 500 seq. = moderate
 1 in 100 to 200 seq. = high
 >1 in 100 seq. = very high

Very low = 4
 Low = 3
 Moderate = 2
 High = 1
 Very high = 0



Sewage bacteria contamination

Site	Sewage bacteria contamination					score	Grade
	very low	low	moderate	high	very high		
Batavia Creek at South 28th			2	3		7	C
Cedar Creek at Covered Bridge	5					20	A+
Dretzka Park Creek at W Bradley Road		1	2		2	7	C
East Branch Milwaukee River at CTH S	1	4				16	A-
Indian Creek DS Bradley Road	2	1	1	1		14	B
KK River DS of 6th St				1	4	1	F
Little Menomonee River at Milwaukee		2	2		1	10	C+
Mole Creek at Maple Road	2	2	1			16	A-
Nichols Creek DS of CTH N				1	4	1	F
Pigeon Creek at Highland Road		1	4			11	B-
Riveredge Creek at Hawthorne			5			10	C+
Ulao Creek at Bonniwell	1	2	1			12	B
Underwood Creek at GRavel Shoals			1	1	3	3	D
Unnamed Tributary - W Townline Rd			3	1		7	C
Willow Creek		1	4			11	B-
Wilson Park Creek, 20th & Wilson					5	0	F