

Presentation Title

Commission Meeting
Date



Badger Mill Creek Alternatives 2022

Commission Meeting
June 16, 2022

Madison Metropolitan Sewerage District



Badger Mill Creek Alternatives 2022

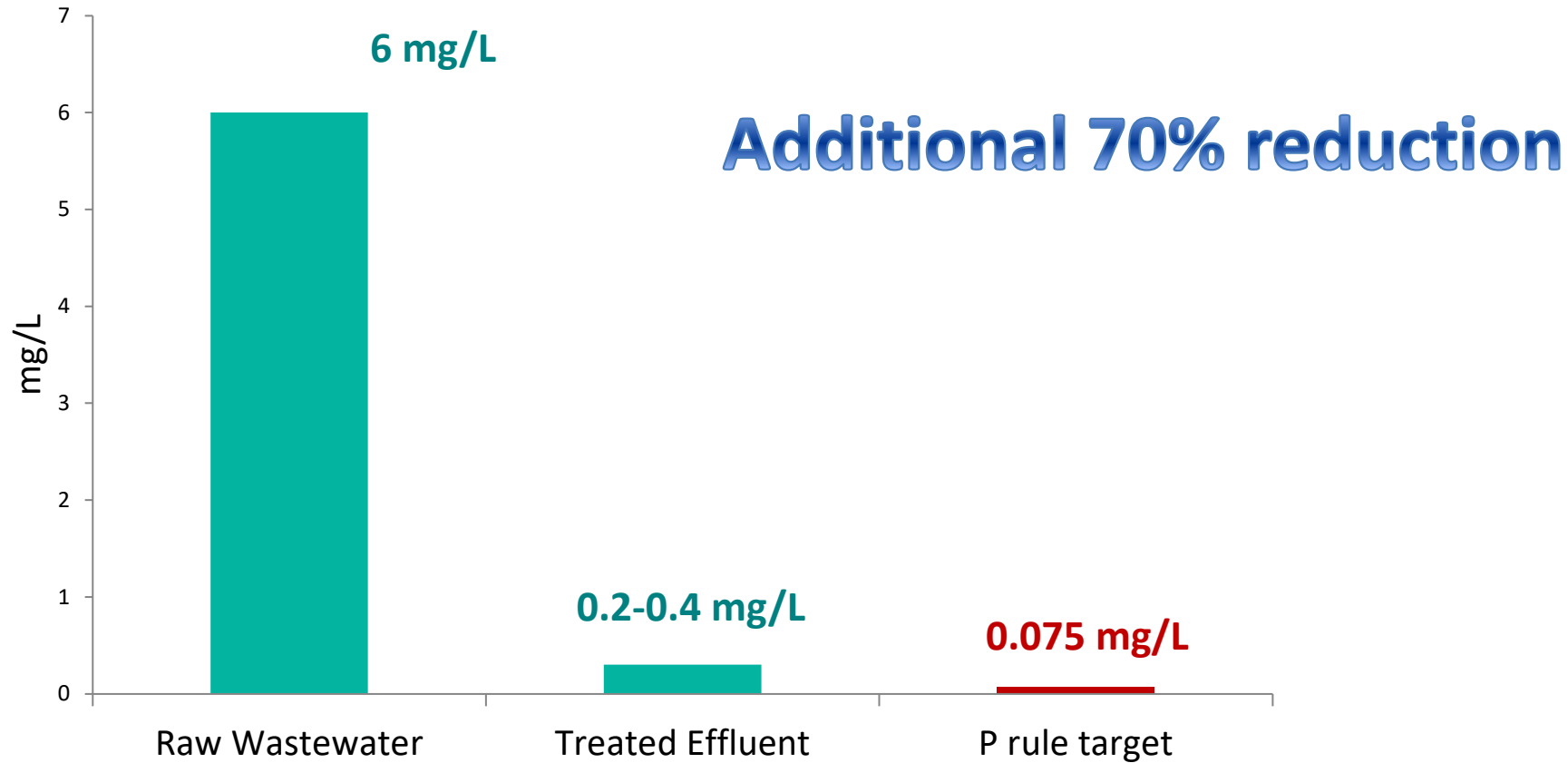


Madison Metropolitan Sewerage District



Reductions in phosphorus necessary

TYPICAL MMSD PHOSPHORUS CONCENTRATIONS



Scale of Reductions Needed

- 3.6 Million Gallons per day
- Average Concentration: 0.3 mg/l
- Water Quality Standard: 0.075 mg/l
- Current discharge:
 - 6 lbs. of P per day *more* than water quality standard
 - 2260 lbs. of P annually *more* than water quality standard

Timeline



Next Requirement

3-31-2023

Final Compliance Alternatives Plan,
including Watershed AM Request, if desired
approach

Possible Compliance Alternatives

Treatment

Water
Quality
Trading

Adaptive
Management

Reduce or
Eliminate
Flow

Site-
Specific
Criterion

Variance

Status update:

Since our last Commission presentation District staff:

- Worked to answer the Commission's questions
- Continued to assess possible compliance alternatives
- Met with DNR and made changes based on their comments
- Submitted the "Preliminary Compliance Options Report"
- Created the more detailed report on possible options

Changes to Preferred Options:

Adaptive Management

Was included in the Preliminary Compliance Options Report as one of our preferred alternatives at DNR's request

Treatment

Was discontinued as a preferred compliance option due to cost and energy demand.

Remaining Compliance Alternatives

Water Quality Trading

Adaptive Management

**Reduce or Eliminate
Flow**

Water Quality Trading

- Would need to offset the ~2260 pounds of excess phosphorus each year.
- Current point of compliance appears to be the Badger Mill Creek HUC 12.
- Badger Mill Creek HUC 12 has very limited acreage available for non-point trades.



Types of trades

- Non-point
 - Yahara WINS \$15-200/lb
- Point (Urban)
 - One pond estimated to \$4000-6000 per pound
 - Similar to Treatment at Nine Springs



Possible Urban Practices

Alum Stormwater Treatment – courtesy of State of MN

Possible Non-Point type Practices



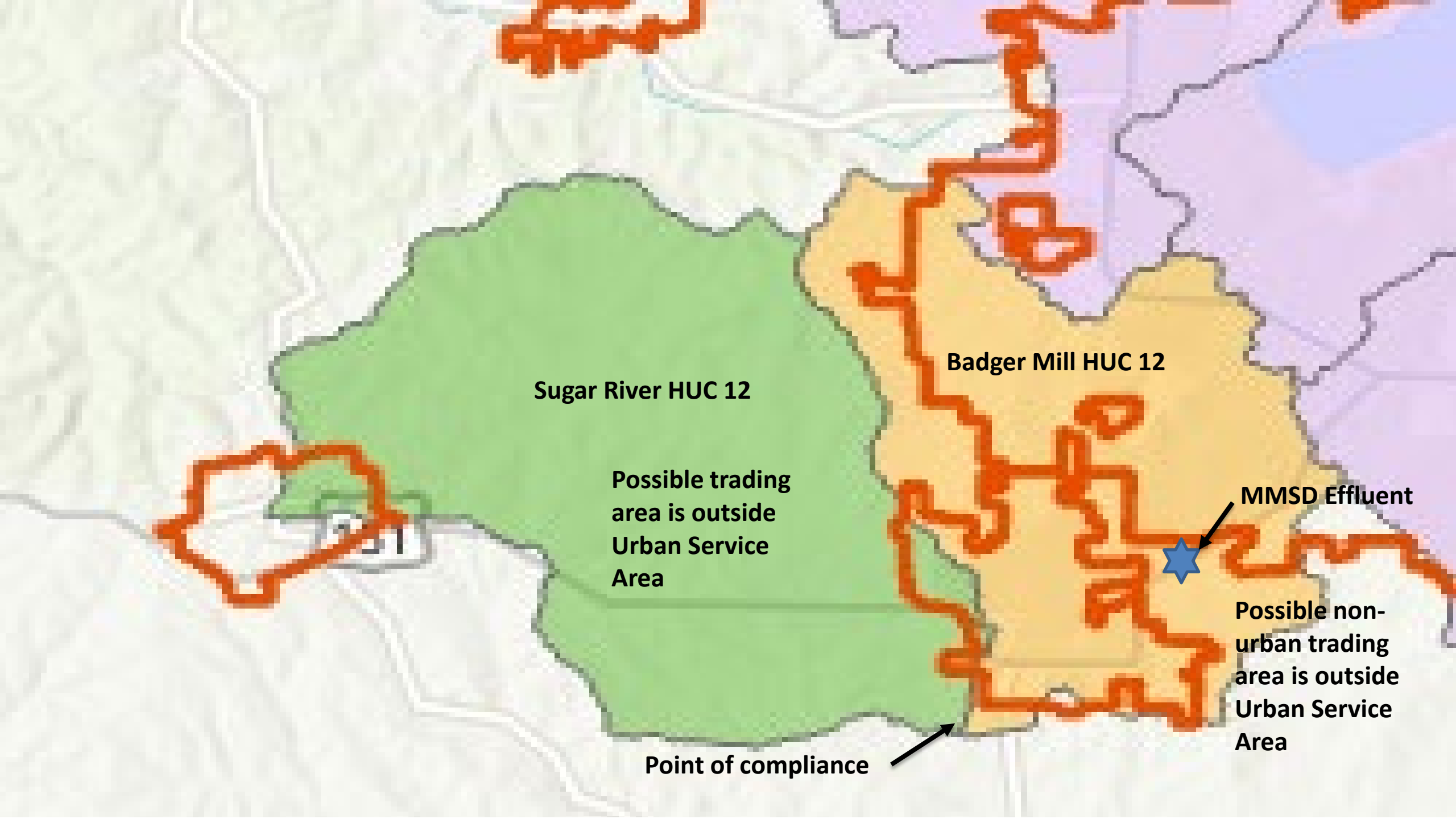
Cover Crops

Soil Conservation and Soil Health

Nutrient and Pest Management

Productivity and Profitability

Madison Metropolitan Sewerage District



Sugar River HUC 12

Badger Mill HUC 12

**Possible trading
area is outside
Urban Service
Area**

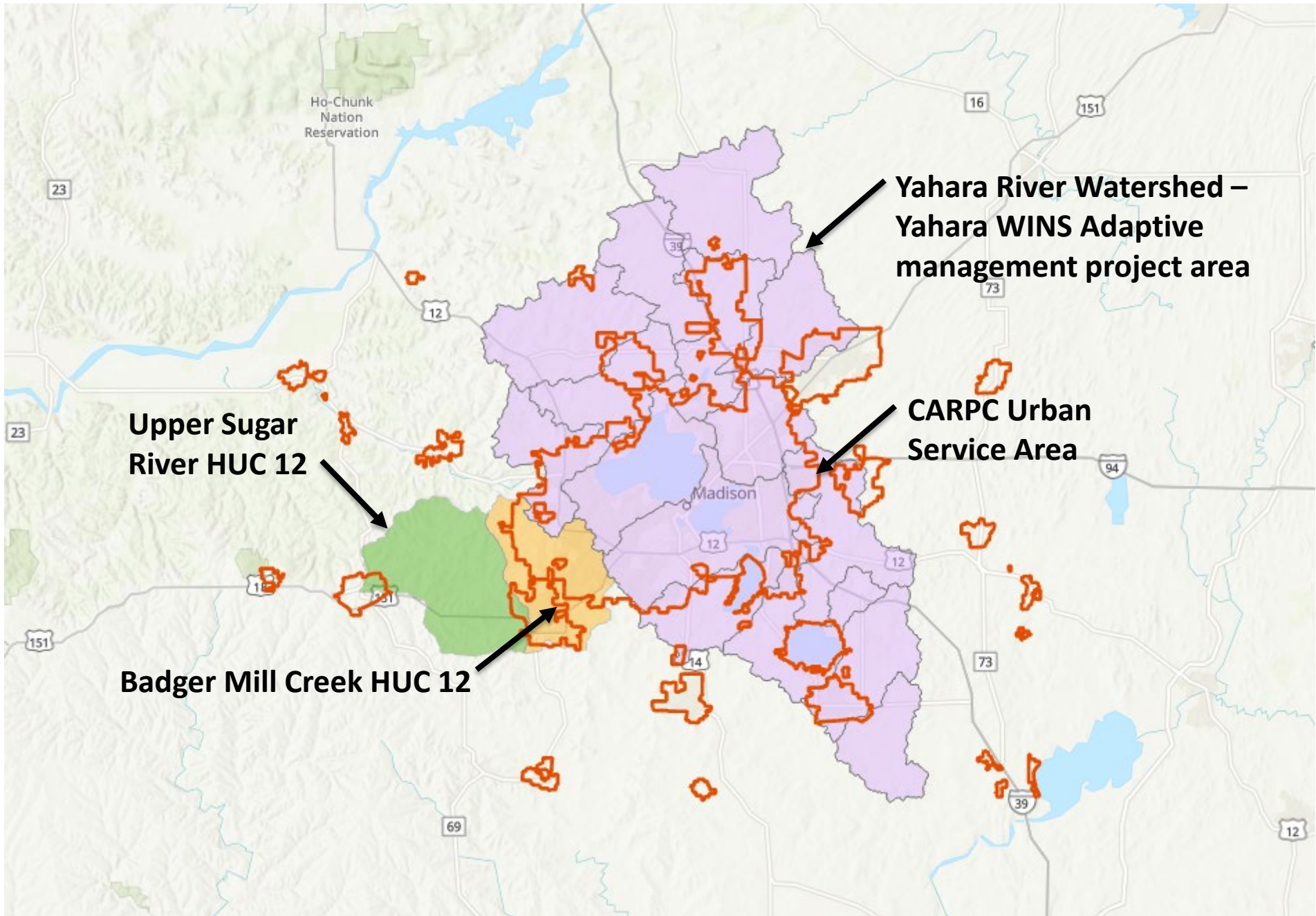
MMSD Effluent

**Possible non-
urban trading
area is outside
Urban Service
Area**

Point of compliance

Adaptive Management

- Water Quality Trading ~2200 pounds per year with likely trade ratios
- Adaptive Management would need to account for ~7600 pounds if limited to BMC HUC 12
- Adaptive Management would need to account for ~24,150 pounds if expanded to Upper Sugar River and BMC HUC 12's
- For comparison, Yahara WINS needs ~96000 pounds of practices. This will result in phosphorus compliance for 92% of MMSD effluent, 2 other wastewater treatment plants and 20 municipal stormwater permittees.
- Many differences between Yahara and BMC



Modify BMC Flow

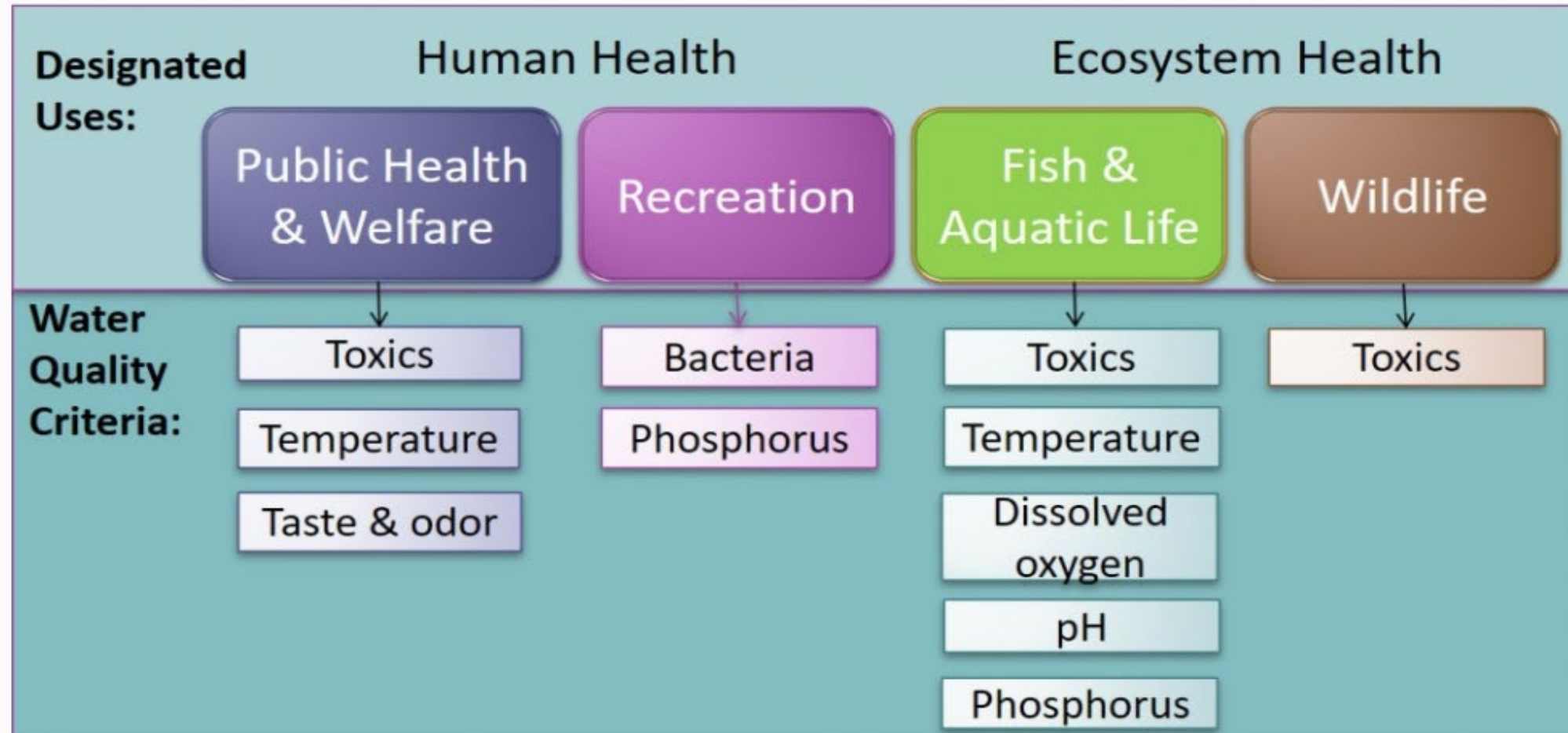
- Phosphorus diverted/discharged to Badfish Creek (0-3.6 MGD)
- Recommendation from the energy study (reduce MMSD carbon footprint)
- Badfish Creek appears to have capacity to take the remaining 8% of our flow.



Stream Classification's matter to WPDES Permits.

TYPES OF CRITERIA FOR WISCONSIN'S LAKES, RIVERS AND STREAMS

Wisconsin's numeric criteria are designed to protect a particular use for a given waterbody.

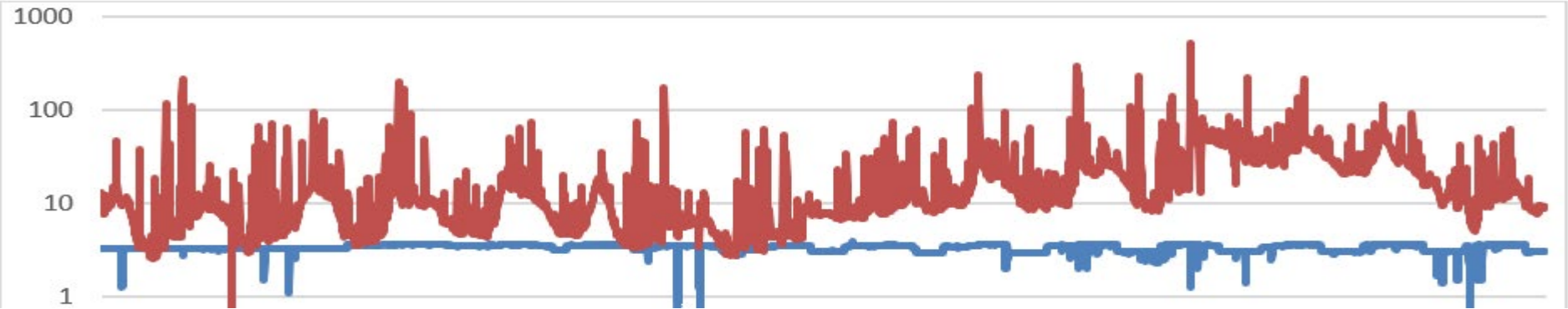


Stream Classification differences make WPDES Permit Requirements more Restrictive in BMC

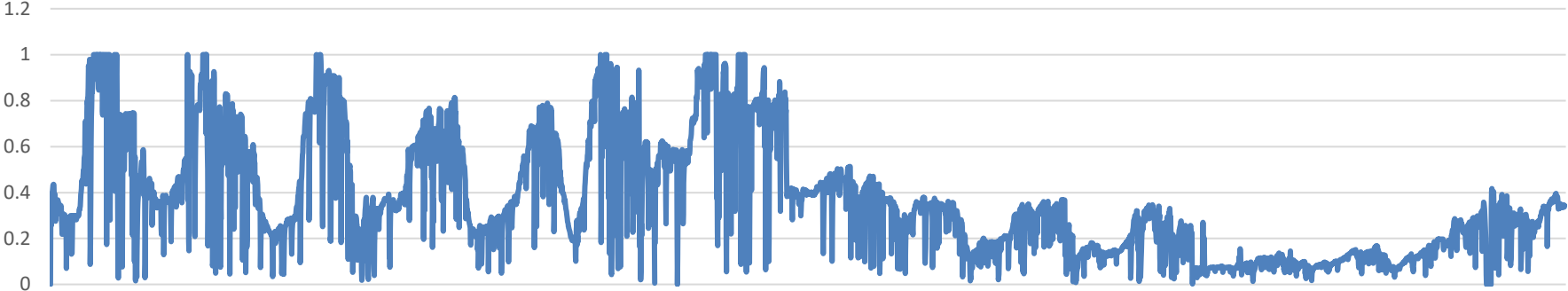
	001 – BFC	005-BMC
CBOD	19 mg/l	7 (May-Oct) 16 (Nov-April)
TSS (monthly avg)	20 mg/l	10 mg/l(May-Oct) 16 mg/l (Nov-Apr)
Ammonia (total max)	17 mg/l	11mg/l
Thermal	No limit	Alternative Effluent Limit: Oct, Nov, Jan, Feb

Badger Mill Creek Flows have changed

USGS Flow Data for Bruce Street Gage 2007 to 2021



Percentage of BMC Flow at Bruce Street that is from MMSD Effluent



Case Study

Flow shut off 2021

Discharge, cubic feet per second

Most recent instantaneous value: 13.9 04-29-2022 10:00 CDT

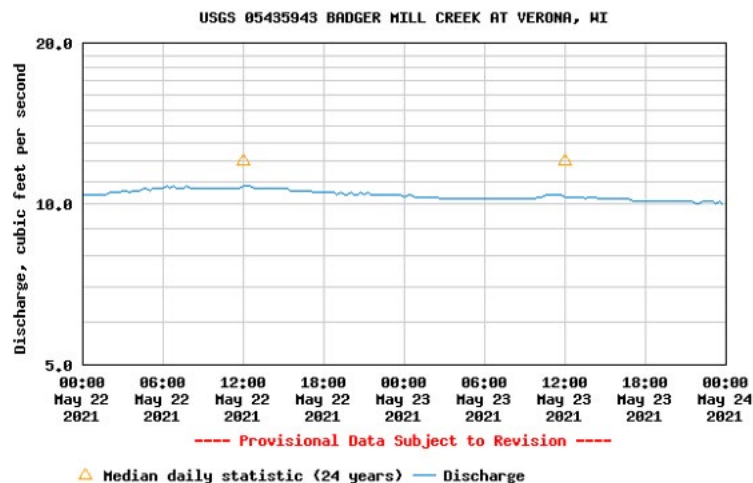


Figure 13 - Stream at Old PB on May 23, 2021, pumps shut off since May 21 – USGS Gage flow and Photo

Normal Operations 2022

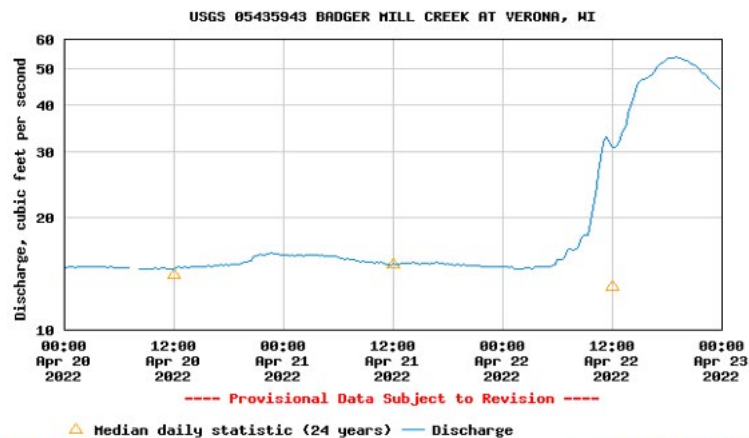


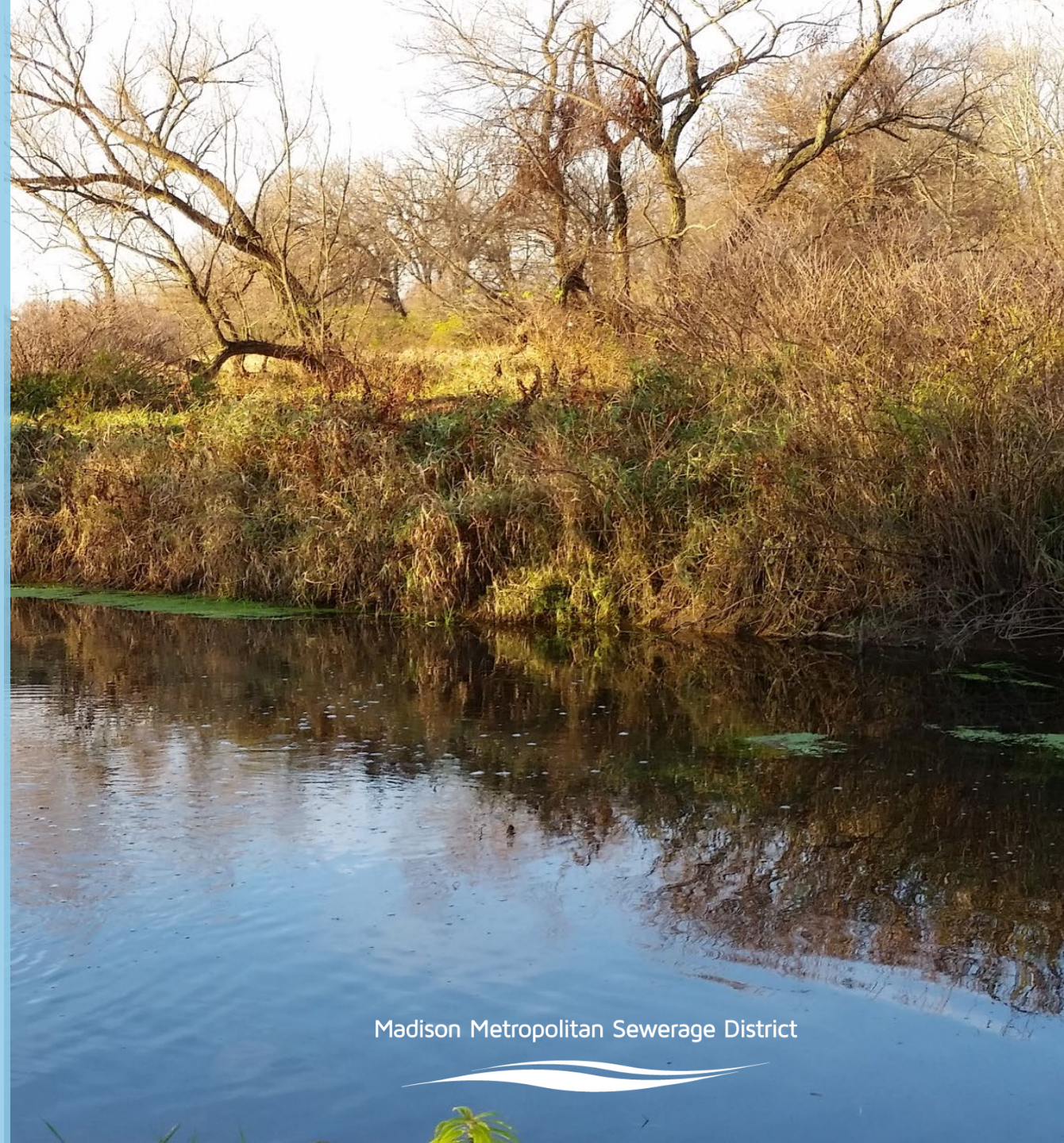
Figure 14 - BMC at Old PB on April 21, 2022 – USGS Gage flow and Photo, normal the District's operation

Compliance Options Outreach

- Strive to understand all interests around this topic.
- Working now to secure a public relations consultant to assist with community and stakeholder outreach
- Specific engagement will be dependent on the counsel of the selected consultant, but may include focus groups, public meetings and information sessions
- Consultant will work closely with District staff
- Plan to start the work in July and complete in late fall

Next Steps

- Commission resolution
- Engage outreach consultant
- Incorporate learnings and refine potential compliance options
- Return to Commission with a preferred alternative (winter 2022)
- Submit Final Compliance Option Report to DNR by March 31, 2023



Thank you!

