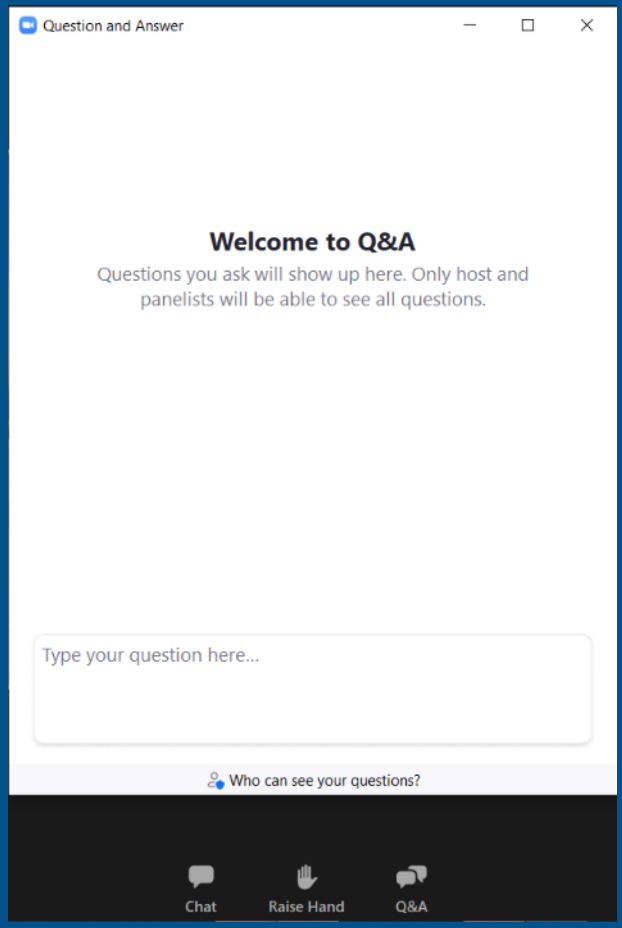
Nutrient Work Group

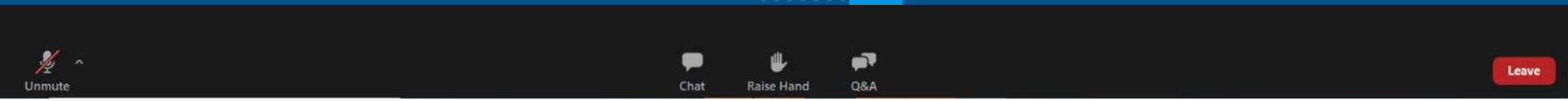
March 13, 2023

DEQ MONTANA

Welcome!

- This meeting is a webinar
- NWG members will be panelists
- Members of the public can raise their hand or use the Q&A feature to ask questions during the public comment portion of the meeting
- *9 raises your hand if you're on the phone
- State your name and affiliation before providing your comment





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Agenda

Meeting Goal: Discuss how Wisconsin implements the AMP and DEQ's proposal for permitting and interim limits. Presentation on nutrient trading (Circular DEQ-13).

Preliminaries
- Nutrient Work Group Roll Call

DEQ Updates
- Staff Updates

EPA Presentation
- Wisconsin AMP Implementation

Narrative Nutrient Standards Permitting Two-Pager

Nutrient Trading (Circular DEQ-13)

Public Comment & Close of Meeting
- Public Comment

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Roll Call

Nutrient Work Group Members

Interest Group	Representative	Substitute
Point Source Discharger: Large Municipal Systems (>1 MGD)	Louis Engels	
Point Source Discharger: Middle-Sized Mechanical Systems (<1 MGD)	Shannon Holmes	
Point Source Discharger: Small Municipal Systems with Lagoons	Rika Lashley	
Point Source Discharger: Non-POTW	Alan Olson	
Municipalities	Kelly Lynch	
Mining	Matt Vincent	
Farming-Oriented Agriculture	Rachel Cone	
Livestock-Oriented Agriculture	Raylee Honeycutt	
Conservation Organization - Local	Kristin Gardner	
Conservation Organization – Regional	Sarah Zuzulock	
Conservation Organization – Statewide	David Brooks	
Environmental Advocacy Organization	Guy Alsentzer	
Water or Fishing-Based Recreation	Pete Cardinal	
Federal Land Management Agencies	Andy Efta	
Federal Regulatory Agencies	Tina Laidlaw	
State Land Management Agencies	Jeff Schmalenberg	
Water Quality Districts / County Planning Departments	Nick Banish	
Soil & Water Conservation Districts – West of the Continental Divide	Samantha Tappenbeck	
Soil & Water Conservation Districts – East of the Continental Divide	Dan Rostad	
Wastewater Engineering Firms	Scott Buecker	
Timber Industry	Julia Altemus	

DEQ Updates

DEQ Updates

- Staff Updates

AMP/Permit Examples from Wisconsin

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Resources

- Wisconsin Department of Natural Resources Adaptive Management Webpage: https://dnr.wisconsin.gov/topic/Wastewater/AdaptiveManagement.html
- Mapping tool with AMP info available for download: https://dnr.wisconsin.gov/topic/Wastewater/AmWqtMap.html
- Wisconsin Administrative Code regarding AMP (WAC-NR-217.18): https://docs.legis.wisconsin.gov/code/admin_code/nr/200/217/iii/18

WI Adaptive Management Concept

- Facility is committing to reduce P and restore water quality in watershed in 10 to 20 years.
- To that end, facility typically tasked with making phosphorus reductions equal to the facility's contributing phosphorus load in 1st permit term.
  - Note this is likely a greater reduction than would be required under other options like trading or variance.
- Current status in WI (approximate):

Permitting Strategy	Count
Multi-discharger variance (lagoons)	130
Individual variance	30
Trading Schemes	50
Watershed Adaptive Management	20
Total	230

AMP Option Eligibility (WAC-NR-217.18(2))

- Eligibility Criteria:
  - Phosphorus criterion is exceeded in receiving water due to phosphorus contributions from point and nonpoint sources.
  - NPS loading is >=50% of the total phosphorus contribution, or the permittee demonstrates that the applicable phosphorus criterion can't be met without NPS control.
  - Proposed WQBEL would require tertiary treatment (filtration).
  - Permittee has submitted an AMP that identifies specific actions to be implemented, including:
    - Watershed Source identification study
    - Goals and measures for plan
    - Identification of partners, including partners level of support
    - Financial ability demonstration (including partners, contracts, etc.)

AM Permit Terms and Conditions (WAC-NR-217.18(3))

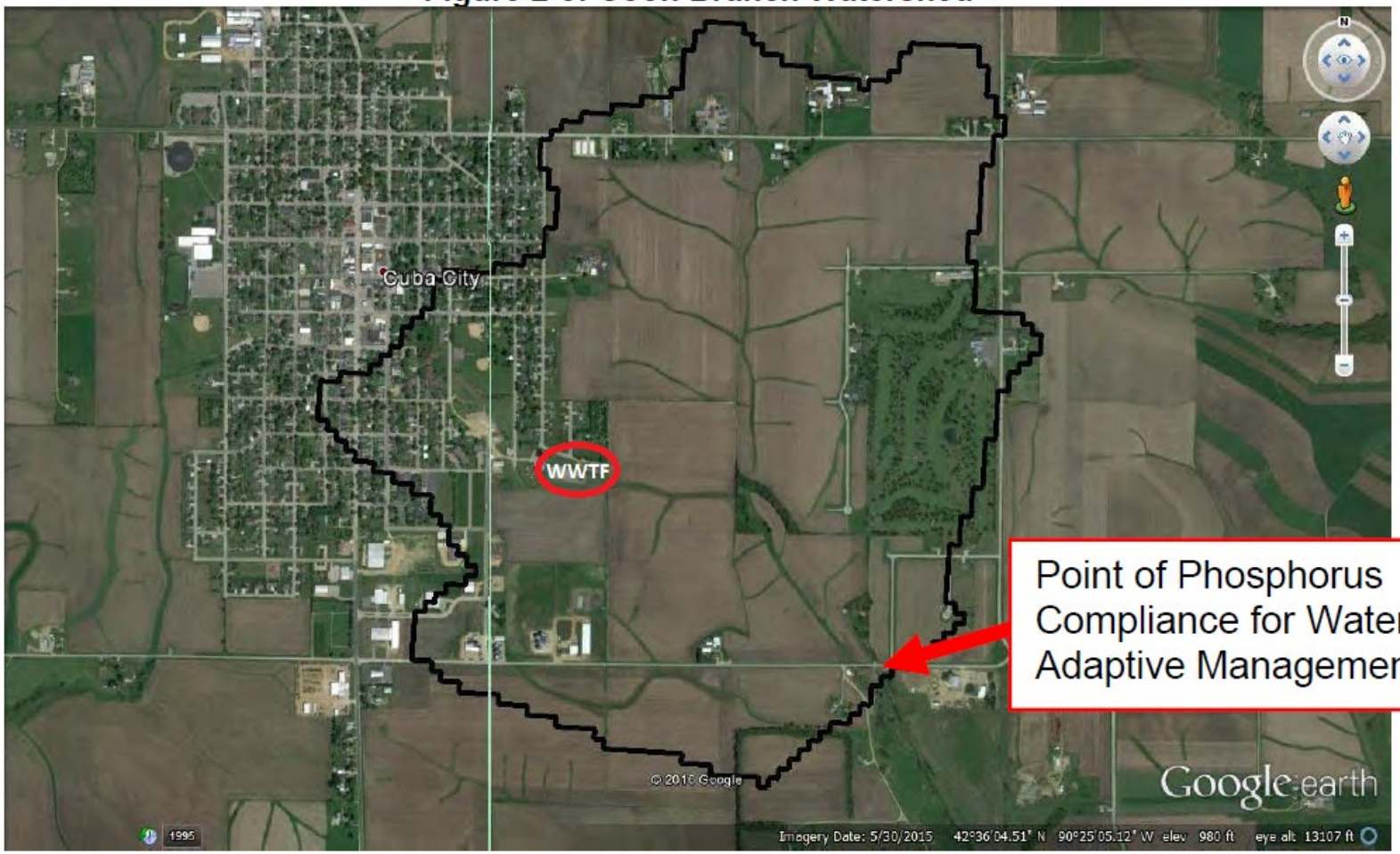
- "At a minimum, the permit must include:"
  - Effluent/receiving water monitoring
  - Implement the AMP
  - Optimize plant
  - Reporting procedures
  - Numerical effluent limitations
  - Provisions for removal from AMP

Cuba City, Wisconsin, WI0022217

- Service population: 2,000
- Average daily discharge: 0.16 mgd
- Design discharge: 0.3 mgd
- Receiving water: Coon Branch of the Galena River
- Facility type: Oxidation ditch, BNR, chemical precipitation
- Cuba City's consultant submitted a 105 page AMP to WDNR.
- WDNR determined the facility met eligibility requirements for AM.

Cuba City (Figure 2-3, AMP Document)

Figure 2-3: Coon Branch Watershed



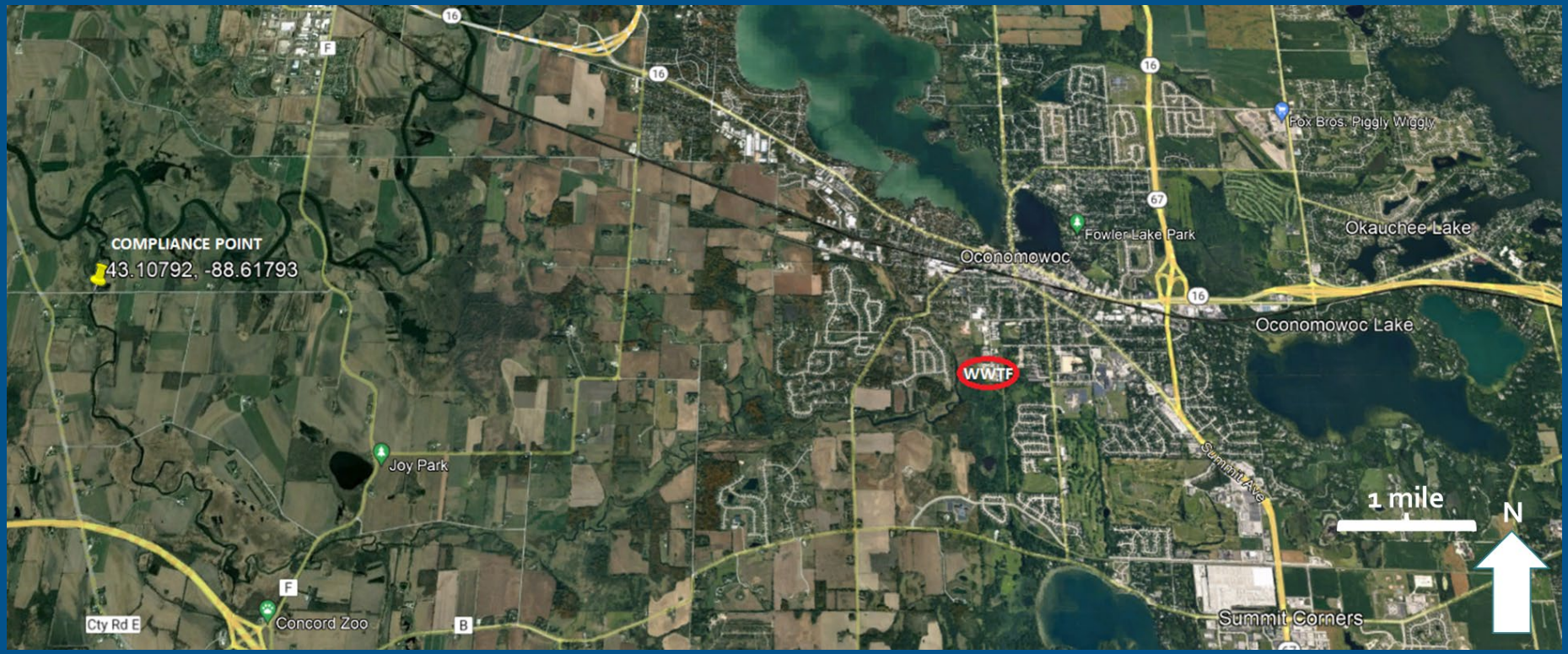
Permit Requirements Related to AMP – Cuba City

- AMP Phase 1 TP interim limit of 0.6 mg/L (6 month average) and 1.0 (monthly average), effective either immediately (1 mg/L) or after 13 months (0.6 mg/L).
- Sampling locations: Outfall (effluent), and one in-stream (the 'compliance point' for AMP).
- TP Monitoring: 3/week effluent, biweekly receiving stream. River flow monitoring each time a TP sample is taken (biweekly).
- Section 2.2.1.5: TP and AMP Requirements:
  - Reduce TP load by 280 lbs/year by end of first permit term (which is facility's annual load).
  - By end of 2nd permit term, TP load reduction goal is 2,250 lbs/year.
  - By end of 3rd permit term, TP load reduction 2,996 lbs/year.
  - If TP is not reduced by 280 lbs/year by end of permit term, the AMP option may be removed.
  - Final limits: 0.075 mg/L TP 6-month average, 0.22 mg/L TP monthly average.
- Continue to optimize performance.
- Report Schedule
  - annual reports documenting metrics outlined in AMP and progress towards the 280 lbs/year reduction.
  - End of Cycle 1: Report of in-stream and effluent trends, resubmit application with updated information.

Oconomowoc, Wisconsin, WI0021181

- Service population: 21,000
- Average daily discharge: 2.4 mgd
- Design flow: 4.0 mgd
- Receiving water: Oconomowoc River
- Facility type: Mechanical plant with BNR/chemical precipitation
- Oconomowoc's consultant submitted a 97 page AMP to WDNR.
- WDNR determined the facility met eligibility requirements for AM.

Oconomowoc (Google Earth Image)



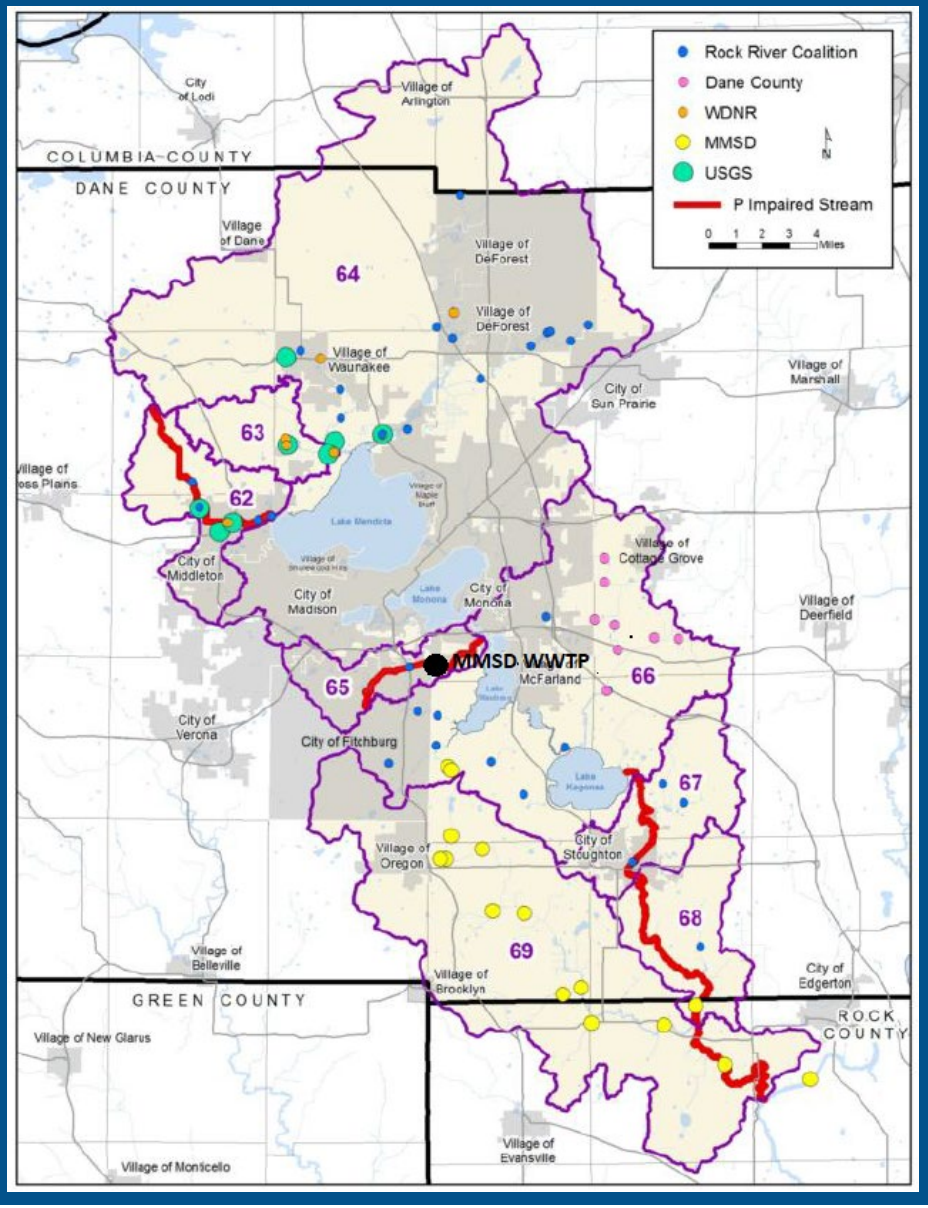
Permit Requirements Related to AMP – Oconomowoc

- AMP Phase 1 TP interim limit of 0.6 mg/L (6 month average) and 0.95 (monthly average), effective either immediately (0.95 mg/L) 0r in 30 days (0.6 mg/L).
- Sampling locations: Outfall (effluent), and one in-stream (the 'compliance point' for AMP).
- TP Monitoring: 3/week effluent, biweekly receiving stream. River flow monitoring each time a TP sample is taken (biweekly).
- Section 3.2.1.6: TP and AMP Requirements:
  - Reduce TP load by 5,079 lbs/year by end of first permit term (which is greater than facility's annual load).
  - By end of 2nd permit term, TP load reduction goal is 7,850 lbs/year.
  - By end of 3rd permit term, TP load reduction 9,750 lbs/year.
  - If TP is not reduced by 5,750 lbs/year by end of first permit term, the AMP option may be removed.
  - Final limits: Based on 2015 TMDL; result in about 77% reduction from WWTP.
- Section 3.2.1.8: Reopener Clause
- Continue to optimize performance.
- Report Schedule (Section 5.2) – annual reports documenting metrics outlined in AMP and progress towards the 280 lbs/year reduction.
- End of Cycle 1: Report of in-stream and effluent trends, resubmit application with updated information.

Madison Metropolitan Sewerage District (MMSD), WI0024597

- Service population: approximately 500,000 (28 sanitary districts)
- Average daily discharge: 40 mgd
- Design flow: 50 mgd
- Receiving water: Badfish Creek and Badger Mill Creek
- Facility type: Advanced secondary treatment mechanical plant with BNR.
- MMSD's consultant submitted a 130 page AMP to WDNR.
- WDNR determined the facility met eligibility requirements for AM.

Madison Metropolitan Sewerage District (Figure 2-4, AMP Document)



Permit Requirements Related to AMP – MMSD

- AMP Phase 1 TP interim limit of 0.6 mg/L (6 month average) and 1.0 (monthly average), effective within 30 days.
- Sampling locations: Sampling locations in both watersheds.
- TP Monitoring: 3/week effluent, biweekly receiving stream. River flow monitoring each time a TP sample is taken (biweekly).
- Section 7.1.4: TP and AMP Requirements:
  - Reduce TP load by 5,329 lbs/year by end of first permit term (which is 40% of facility's annual load of 13,320 lbs/year).
  - By end of 2nd permit term, TP load reduction goal is 52,648 lbs/year.
  - By end of 3rd permit term, TP load reduction 95,724 lbs/year.
  - If TP is not reduced by 5,329 lbs/year by end of permit term, the AMP option may be removed.
  - Final limits: 0.075 mg/L TP 6-month average, 0.22 mg/L TP monthly average.
- Continue to optimize performance.
- Report Schedule
  - annual reports documenting metrics outlined in AMP and progress towards the 5,329 lbs/year reduction.
  - End of Cycle 1: Report of in-stream and effluent trends, resubmit application with updated information.

Narrative Nutrient Standards Permitting Handout

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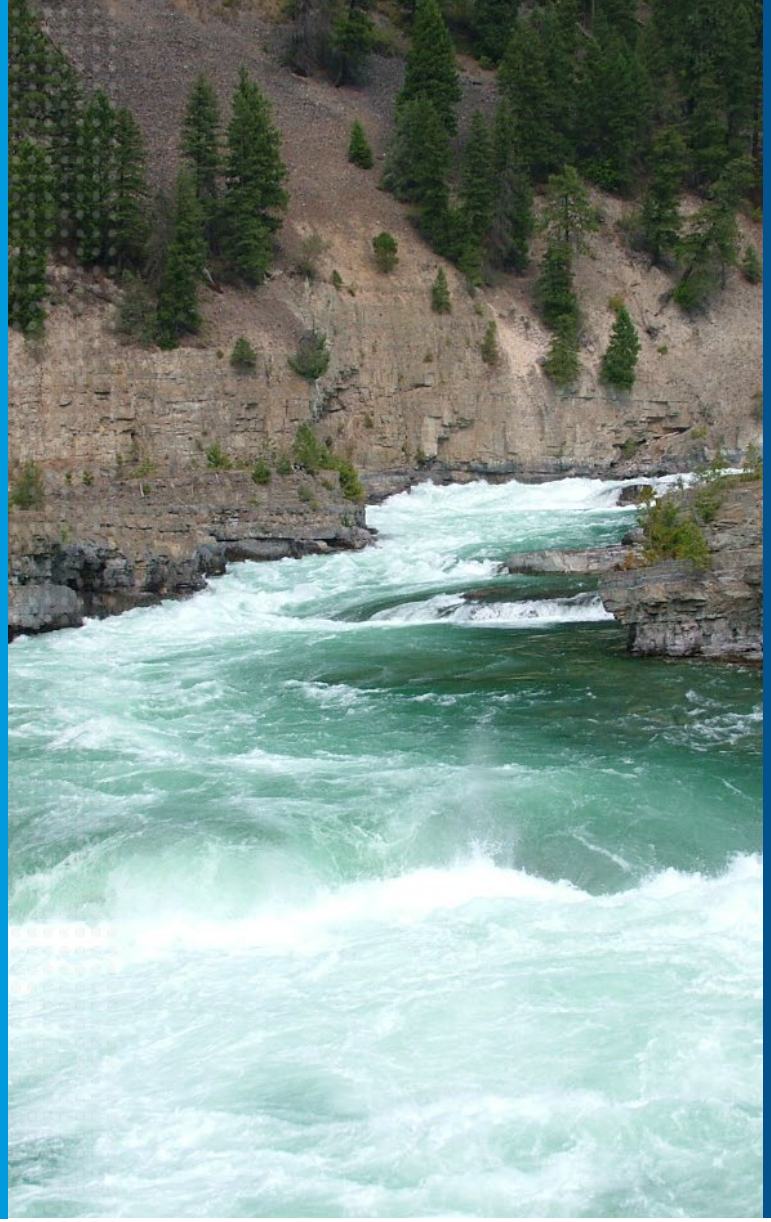

Nutrient Trading (Circular DEQ-13)

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DEQ Nutrient Trading (Circular DEQ-13)

Nutrient Work Group

March 13, 2023

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Nutrient Trading Summary

- Details in Circular DEQ-13 (December 2012)
- Trading is a tool to meet TMDL load allocations, offset new or increased loads on a TMDL water body, or comply with water quality based effluent limits for nutrients.
- Point source trade details are included and enforced through the MPDES permit.
- Generation of credits should be secured for at least the length of the permit (typically 5 years).
- To date, only septic trades implemented in MT

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Nutrient Trading and AMP

- Nutrient trading can be used in conjunction with an AMP or without an AMP.
- Trading is a tool in the toolbox.
  - With the amount of available trading partners in MT it is likely not a stand-alone solution to site-specific nutrient issues.
- MT trading business case study (2014) concluded not enough potential nutrient sources to justify a centralized approach (e.g. a DEQ managed trading program). Rather, buyer-seller arranged trades were the recommended option.

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Trading Partners

- Point source to point source. Point source to Non-point source (NPS). NPS to NPS.
- Point sources (MPDES permit)
- Nonpoint sources (ie…septic systems, logging, agricultural, livestock, animal feeding operations, etc.)
- Third parties (local governments, nonprofits, private brokers etc.)

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Trade Credits - Baseline

- Credits can be generated and transferred by PS or NPS entities.
- Credits can only be generated after baseline conditions are met.
- PS Baseline
  - Reductions below water-quality based standard (no TMDL)
  - Reductions below TMDL load allocation (TMDL)
  - Cannot trade reductions below a variance
- NPS Baseline
  - Reductions below that required by any statute or rule governing its nonpoint source activity. (TMDL or no TMDL)

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Trade Credits - Seasonality

- Credits are expressed as pounds of nitrogen or phosphorous per applicable period of time that is delivered to surface waters in the watershed.
- Credits cannot be banked for a future time period, unless it can be demonstrated that an off-season reduction provides a water quality benefit within the applicable period of the standards.

Location of Trade

- In the same watershed
- DEQ-13 encourages upstream trading - credits are generated upstream in the watershed of where they are applied.
- DEQ-13 does allow downstream trading, but it has its caveats:
  - Creates a “hot spot” between where the credit is applied and where the credit is generated
  - More EPA scrutiny
  - May increase the trade ratio

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Trade Credit Sources

- DEQ-13 includes summary of trading credit calculations for non-point best management practices used by other states and agencies (Idaho, Oregon, Ohio, NRCS, and EPA) that are allowed for MT trades.
  - Standard trade ratios for common agriculture and livestock BMPs
  - Revised Universal Soil Loss Equation, Version 2 (RUSLE2)
  - Spreadsheet Tool for Estimating Pollutant Loads (STEPL) / Pollutant Load Estimation Tool (PLET)
- Montana's Septic Trading Tool – Method for Estimating Attenuation of Nutrients from Septic Systems (MEANSS) is included in DEQ-13.
- Other proposed methods for determining credits are also allowed in DEQ-13 as approved by DEQ.

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MEANSS Summary

- Developed at DEQ ~2010 to provide site-specific estimates of septic nutrient attenuation
  - Lack of existing models/methods to provide those estimates
  - Included in DEQ-13 for septic trades
  - Included in numerous TMDL load allocations
- Estimate nitrogen and phosphorus reductions as septic system wastewater migrates to and enters surface water.
- Uses readily available NRCS soils data (HSG and $CaCO_3$) and location data to estimate amount of nitrogen and phosphorus reaching surface water from each septic.
- Amount of nitrogen and phosphorus entering surface water used as part of final trade ratio.

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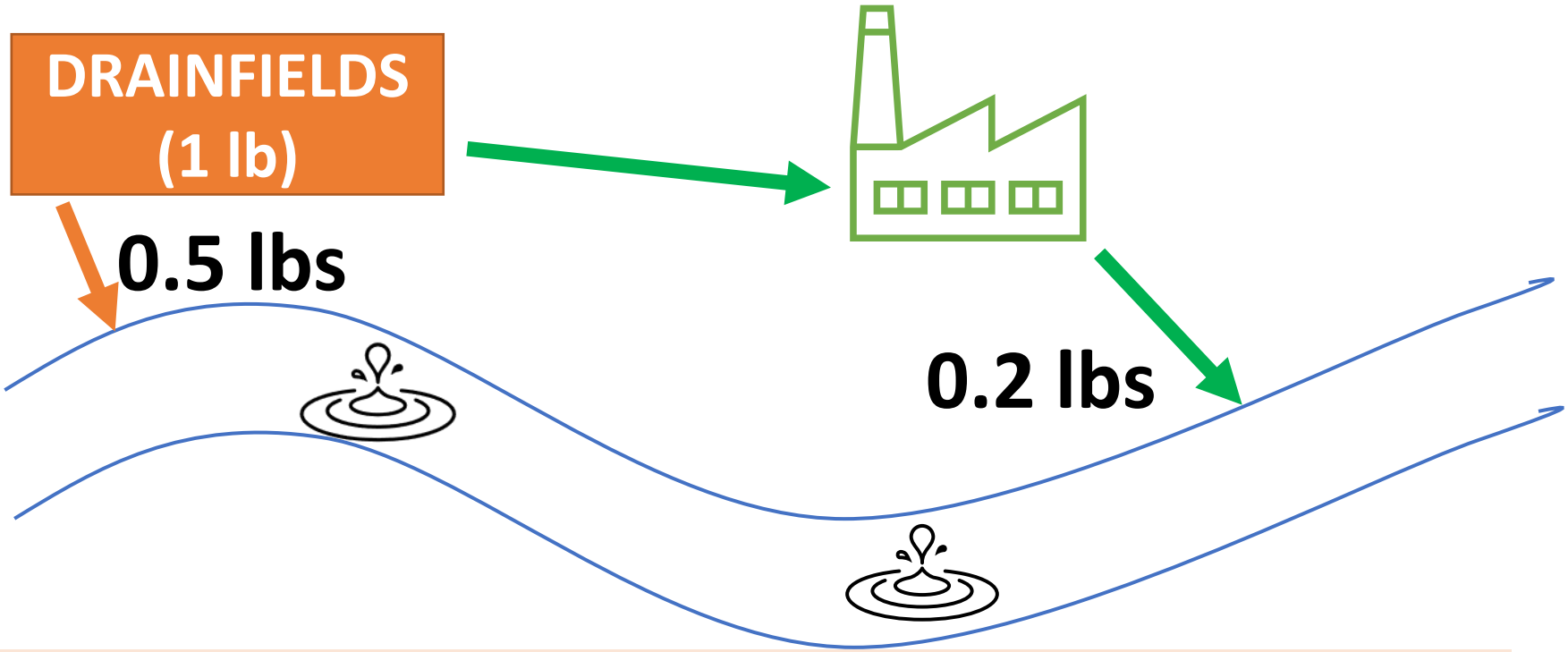
TRADE CREDIT CONCEPT



IN THIS EXAMPLE, OUT OF 1 LB NITROGEN DISCHARGED FROM SEPTICS, 0.5 LBS REACHES STREAM. WHEN SEPTICS HOOK UP TO WWTP THAT SAME 1 LB IS TREATED AND 0.2 LBS DISCHARGED TO STREAM. WWTP RECEIVES 0.3 LBS (0.5 – 0.2) OF ADDITIONAL NITROGEN LOAD TO MPDES EFFLUENT LIMIT.

Trade Ratios

- Trades are based on a trading ratio. The ratio is then converted to credits as shown in previous example.
- For every pound of nutrient reduction generated by the seller the buyer (permittee) receives “X” pounds of credit. The trade ratio is 1/X (X is <=1).
- Trade ratio begins at 1 and then can be increased for:
  - Delivery Ratio (where applicable)
    - In previous example, reduction of septic load from 1 to 0.5 lbs is a delivery ratio of 2.
  - Uncertainty Ratio (where applicable)
- Septic trade ratios also account for municipal wastewater discharge concentration (“treatment ratio”)
  - In previous example, the WWTP effluent load of 0.2 lbs is applied to the final trade ratio. The final trade ratio is based on the original load (1 lb) and the final load that is removed from the stream (0.3 lbs) ……. **1/0.3 = 3.33**.

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Helena Septic Trade Ratio Example

- To determine trade ratio for future septic system hookups, DEQ analyzed 9,090 existing septic systems in several subwatersheds outside the city's service area.
- The average nitrogen delivery ratio estimated using MEANSS was 2.12. For every 2.12 pounds discharge from septic systems, 1 pound reached surface water (or for every 50 mg/L discharged, 23.4 mg/L reached surface water).
- After accounting for Helena's WWTP nitrogen effluent concentration limit (10.5 mg/L), the final trade ratio was 3.88 (50 / 12.9).

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questions ....
power
bear

PUBLIC COMMENT

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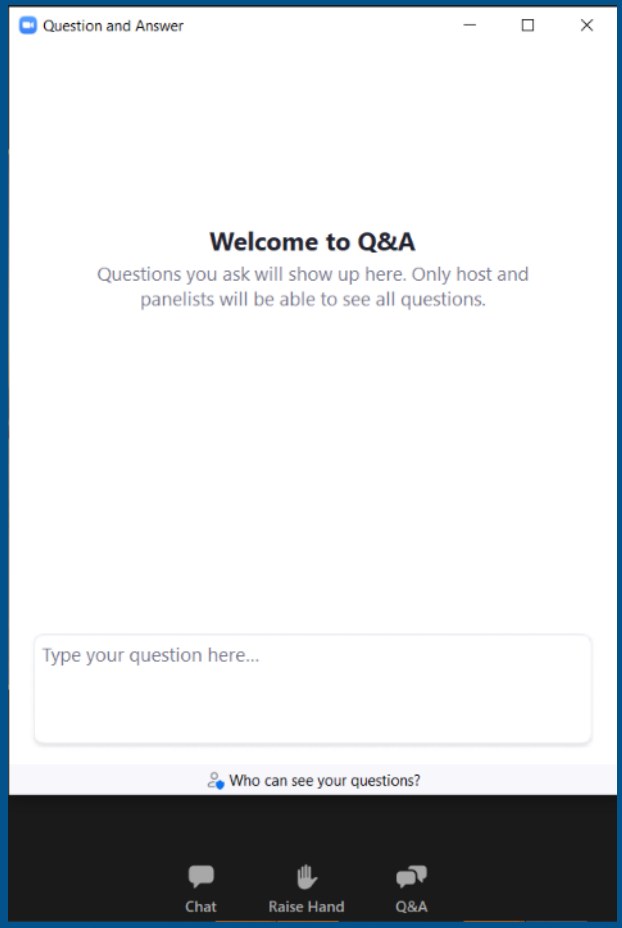
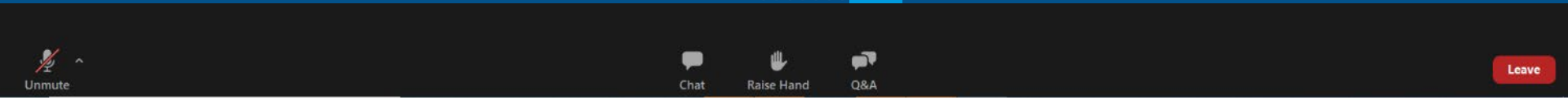
Questions/ Comments

- Raise hand (*9 if on the phone) or type questions into the Q&A
- DEQ will unmute you if you wish to provide your comment orally
- If calling by phone, press*6 to unmute
- State your name and affiliation before providing your comment





Meeting Summary

- Wisconsin adaptive management implementation
  - Permitting examples
- Narrative Nutrients Standards Permitting handout
- Nutrient trading (Circular DEQ-13)
- April 10, 2023 NWG meeting

Thanks for Joining Us

Contact:
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To submit comments or questions

Submit Comments or Questions

https://deq.mt.gov/water/Councils

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