Nutrient Work Group Session Six

September 22, 2021

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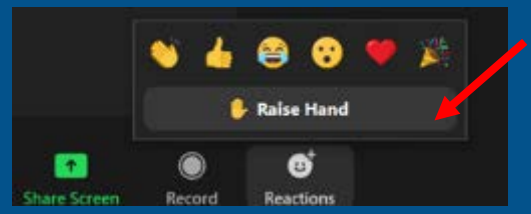
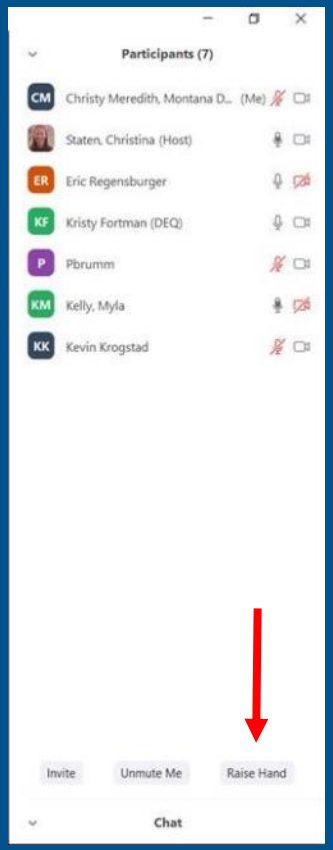
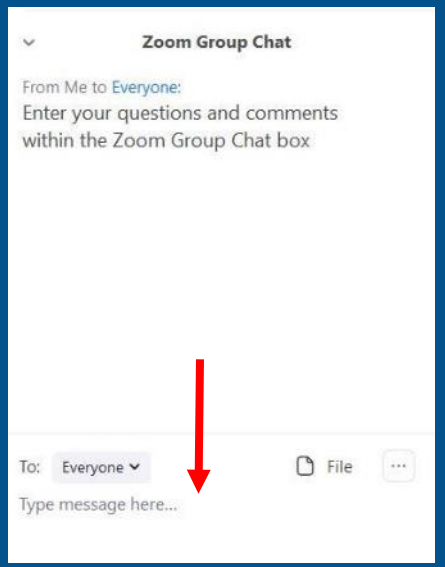
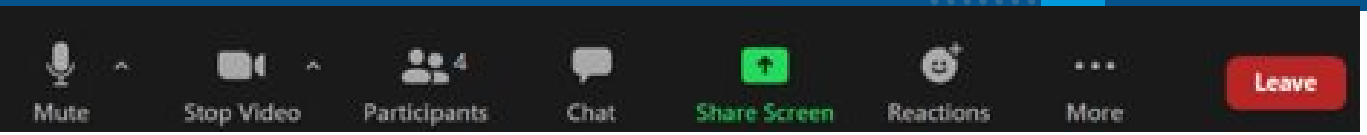
Welcome!

- Please keep your microphone muted until called on
- Only NWG Members may participate during discussions
- Please reserve public comment until the end
- *6 unmutes your phone
- State your name and affiliation before providing your comment
- Enter questions in the chat box or raise hand
- Turning off your video feed provides better bandwidth
- Please sign-in to the chat box with name and affiliation









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Agenda

Meeting Goal:

1. Present DEQ's proposed permit compliance process 2. Continue discussion of stakeholder AMP proposals 2. Begin discussion of AMP – TMDL relationship

9:05 a.m. Welcome and Introductions (Ted Barber, Facilitator)

9:10 a.m. Compliance vs Non-Compliance with the Narrative Nutrient Standards (Rainie DeVaney, Mike Suplee, and Jon Kenning)

9:40 a.m. DEQ Response to Presentation by Municipalities and Point Source Discharger Interest Groups (Mike Suplee, Rainie DeVaney)

10:00 a.m. TMDL – AMP Relationship (Kristy Fortman)

10:30 a.m. Public Comment

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Introductions

DEQ Staff

- Christopher Dorrington, Director
- George Mathieus, Deputy Director
- Kurt Moser, Legal Counsel
- Moira Davin, Public Relations
- Amy Steinmetz, Water Quality Division Administrator
- Jon Kenning, Water Protection Bureau Chief
- Rainie DeVaney, Discharge Permitting Section Supervisor
- Galen Steffens, Water Quality Planning Bureau Chief
- Myla Kelly, WQ Standards & Modeling Section Supervisor
- Kristy Fortman, Watershed Protection Section Supervisor
- Darrin Kron, WQ Monitoring & Assessment Section Supervisor
- Michael Suplee, Water Quality Science Specialist

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Introductions

Nutrient Work Group Members

Interest Group	Representative	Substitute
Point Source Discharger: Large Municipal Systems (>1 MGD)	Susie Turner	
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	Tammy Johnson	
Farming-Oriented Agriculture	John Youngberg	
Livestock-Oriented Agriculture	Jay Bodner	
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	Wade Fellin	
Federal Land Management Agencies	Andy Efta	
Federal Regulatory Agencies	Tina Laidlaw	
State Land Management Agencies	Jeff Schmalenberg	
Water Quality Districts / County Planning Departments	Pete Schade	None
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	

Ground Rules

- Speak one at a time – refrain from interrupting others.
- Wait to be recognized by facilitator before speaking.
- Facilitator will call on people who have not yet spoken before calling on someone a second time for a given subject.
- Share the oxygen – ensure that all members who wish to have an opportunity to speak are afforded a chance to do so.
- Be respectful towards all participants.
- Listen to other points of view and try to understand other interests.
- Share information openly, promptly, and respectfully.
- If requested to do so, hold questions to the end of each presentation.
- Remain flexible and open-minded, and actively participate in meetings.

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Roles and Responsibilities

The Nutrient Work Group is an advisory group to DEQ.

Members agree to:

- Provide specific local expertise, including identifying emerging local issues;
- Review project reports and comment promptly;
- Attend as many meetings as possible and prepare appropriately;
- Complete all necessary assignments prior to each meeting;
- Relay information to and from their broader interest group counterparts after each meeting and gather information/feedback from their counterparts as practicable before each meeting;
- Articulate and reflect the interests that NWG members bring to the table;
- Maintain a focus on solutions that benefit the entire state;
- Present recommendations for the rulemaking throughout the planning process.

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Compliance vs Non-Compliance

Response Variable Relative Change or Threshold Effluent Limits

Three Options for Demonstrating Compliance with Response Variable Effluent Limits:

1) Simple Approach
2) Exact Binomial Test Approach
3) Modeled Approach (for complex watersheds), or, Other Permittee proposed Options

*Permittee chooses approach with submission of AMP watershed monitoring plan.
*Reporting transparency: results reported in annual reports posted on DEQ's webpage
*Applicable *only* to response variable threshold or relative change effluent limits.

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1. Simple Approach

Relative Change Effluent Limits; algae density, D.O. delta

- Upstream near field monitoring location compared to downstream near field monitoring location
  - Downstream exceeds upstream=Non-compliance

Threshold Effluent Limits; e.g., Chlorophyll-a

- Downstream near field monitoring location compared to threshold
  - Downstream exceeds threshold=Non-compliance

2. Exact Binomial Approach

Would evaluate threshold and non-threshold data together

Best applied in simple AMP watersheds

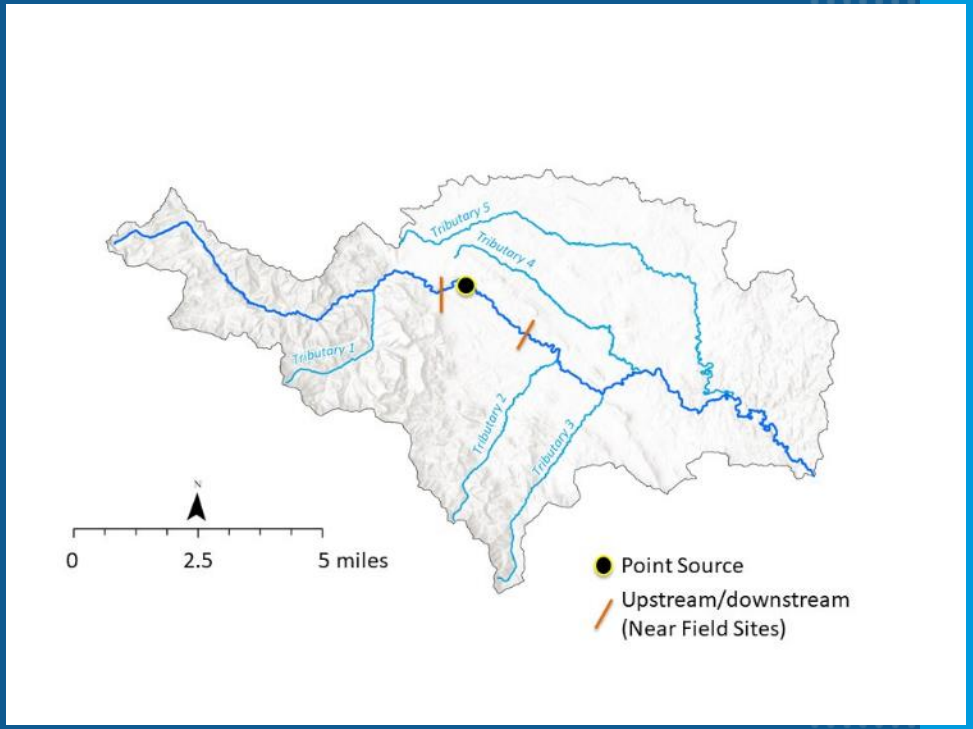
Permittee Collects Data

Evaluate response variable data with thresholds using Exact Binomial Test

Summarize (compute an average for) the response variable data that do not have thresholds

Combine into Decision Framework

Determine Compliance or Non-compliance with Permit Limits



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2. Exact Binomial Approach

We want to accommodate varying numbers of response variable samples and not penalize those who collect more samples than the minimum

Proposed Minimum Annual Sampling:

- 2-3 measures of algae density in W. Montana
- 4 measures (weekly avg) of DO delta in E. Montana

Why a simple "1 in 3" interpretation is problematic:

- Annual sampling- 3 samples over three years, one exceedance allowed: rate = 0.333
- Semi-annual sampling- 6 samples over three years, one exceedance allowed: rate = 0.166
- Quarterly sampling- 12 samples over three years, one exceedance allowed: rate = 0.0833
- Monthly sampling- 36 samples over three years, one exceedance allowed: rate = 0.0277

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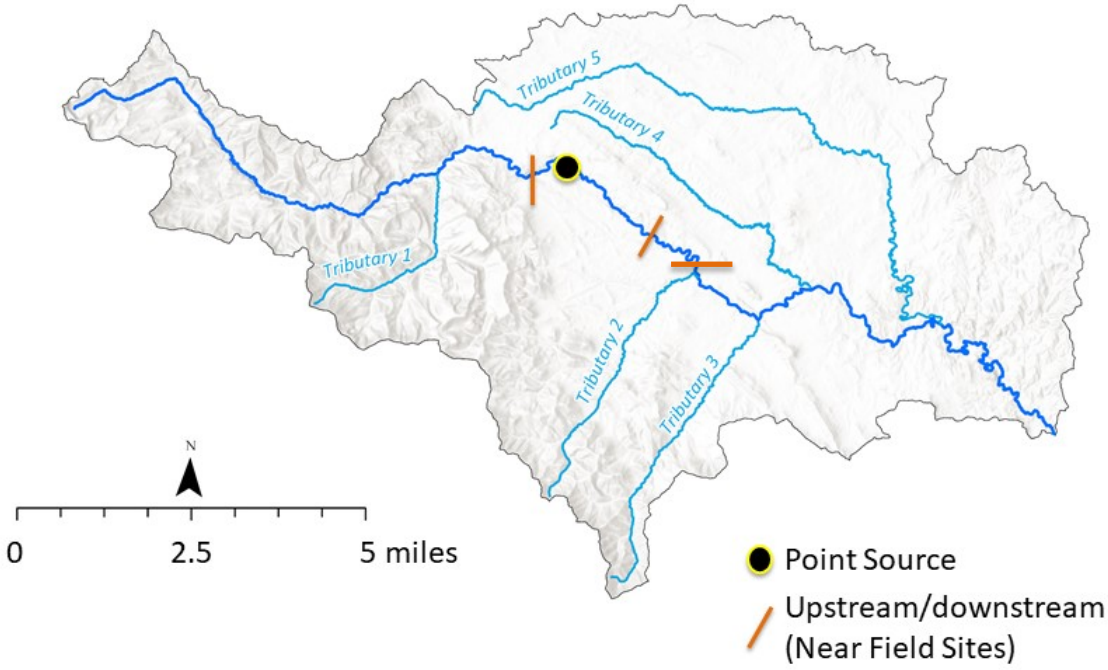
2. Exact Binomial Approach

Can accommodate additional near field sampling sites

-Just increases the number of samples

- Adaptable to different response variables and thresholds



Number of intended near field sites need to be proposed upfront in the AMP watershed monitoring plan

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2. Exact Binomial Approach

Some Details

EBT used (proposed) in CA, OR, TX, NC, AK, NE, KS for 303(d) listing

- Assumptions: samples are independent
- Ideal for dichotomous data (above, below a threshold)
- Returns a consistent interpretation of the allowable exceedance rate *regardless of sample size*
- Accepted in non-parametric and parametric ‘camps’

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2. Exact Binomial Approach

Within adaptive management program, begin by assuming permittees comply with their permit limits (“innocent until proven guilty”)

Assume Compliance:
H0: Permittee is in compliance with permit limit
Ha: Permittee is not in compliance with permit limit

Equivalent evaluation processes applied to each of the upstream and downstream near field sites

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2. Exact Binomial Approach

Decisions need to be made about:

- Allowable exceedance rate (<100% and >0%)
- Gray zone (effect size): range of exceedance rates where the consequence of decision errors are considered relatively minor

Initial DEQ Recommendations:

- 10% exceedance rate (used for conventional pollutants like pH, bacteria, and BOD in OR, CA)
- 15% gray zone (EPA recommended; it means decision error in this case is not too critical)
  - Also prevents flip flopping between compliance and non-compliance with each new sample collected

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2. Exact Binomial Approach

H0: Compliant with permit limit
H*a*: Non-compliant with permit limit
Allowable Exceedence Rate: 10%
Gray Zone: 15%

Evaluation of a single data type (e.g., DO delta) and its associated threshold.

Sample Size Range	Number of threshold exceedences allowed while still remaining in compliance with the permit limit
2-10	1
11-18	2
19-26	3
27-35	4

- If <10% of response variable samples exceed threshold, “pass” the EBT
- If >25% of response variable samples exceed threshold, “fail” the EBT
- From 11-24% exceedance, decision varies according to ***n***.

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2. Exact Binomial Approach — *Early review*

Downstream Near Field Site(s). For Sample Sizes ≤ 6:

Scenario	EBT Result: Benthic Algae Levels <125 mg Chla/m^2 AND <35 g AFDW/m^2 AND <30% FA cover?	Macroinvertebrates On average, D/S HBI > or ≤ U/S (note: higher HBIs are worse)	Interpretation
A	PASS	D/S HBI ≤ U/S	Compliant with permit limit
B	PASS	D/S HBI > U/S	Compliance unclear: Continue data collection to end of permit cycle, with annual reviews.
C	FAIL	D/S HBI ≤ U/S	Probably not compliant: Continue data collection to end of permit cycle, with annual reviews. Collecting additional samples advisable (may change outcome).
D	FAIL	D/S HBI > U/S	Not compliant with permit limit

Downstream Near Field Site(s). For Sample Sizes ≤ 8:

Scenario	EBT Result: DO Delta <5.3 mg/L?	BOD_5 On average, D/S BOD > or ≤ U/S (note: higher BOD is worse)	Interpretation
A	PASS	D/S BOD ≤ U/S	Compliant with permit limit
B	PASS	D/S BOD > U/S	Compliance unclear: Continue data collection to end of permit cycle, with annual reviews.
C	FAIL	D/S BOD ≤ U/S	Probably not compliant: Continue data collection to end of permit cycle, with annual reviews. Collecting additional samples advisable (may change outcome).
D	FAIL	D/S BOD > U/S	Not compliant with permit limit

Data can be evaluated at <5 years, but interpretation is less certain and early results could change in some cases

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2. Exact Binomial Approach — *5-year Review*

Downstream Near Field Site(s). For Sample Sizes ≥ 10 (1 permit cycle):			
Scenario	**EBT Result: Benthic Algae Levels** <125 mg Chla/m^2 AND <35 g AFDW/m^2 AND <30% FA cover?	**Macroinvertebrates** On average, D/S HBI > or ≤ U/S (note: higher HBIs are worse)	**Interpretation**
A	PASS	D/S HBI ≤ U/S	Compliant with permit limit
B	PASS	D/S HBI > U/S	Compliant: Investigate cause of higher (worse) downstream macroinvertebrate HBI; what are each site's HBI scores?
C	FAIL	D/S HBI ≤ U/S	Not-compliant, however, actual HBI scores should be reviewed and compliance decision discussed with DEQ
D	FAIL	D/S HBI > U/S	Not compliant with permit limit

Downstream Near Field Site(s). For Sample Sizes ≥ 20 (1 permit cycle):			
Scenario	**EBT Result: DO Delta** <5.3 mg/L?	**BOD_5** On average, D/S BOD > or ≤ U/S (note: higher BOD is worse)	**Interpretation**
A	PASS	D/S BOD ≤ U/S	Compliant with permit limit
B	PASS	D/S BOD > U/S	Compliant: Investigate cause of higher (worse) downstream BOD
C	FAIL	D/S BOD ≤ U/S	Not-compliant: Minimal BOD sampling probably missed high-BOD events
D	FAIL	D/S BOD > U/S	Not compliant with permit limit

Five years (1 permit cycle) is a critical juncture for compliance decisions. Also, watershed improvements/point source optimization or upgrades = restart/reset of dataset

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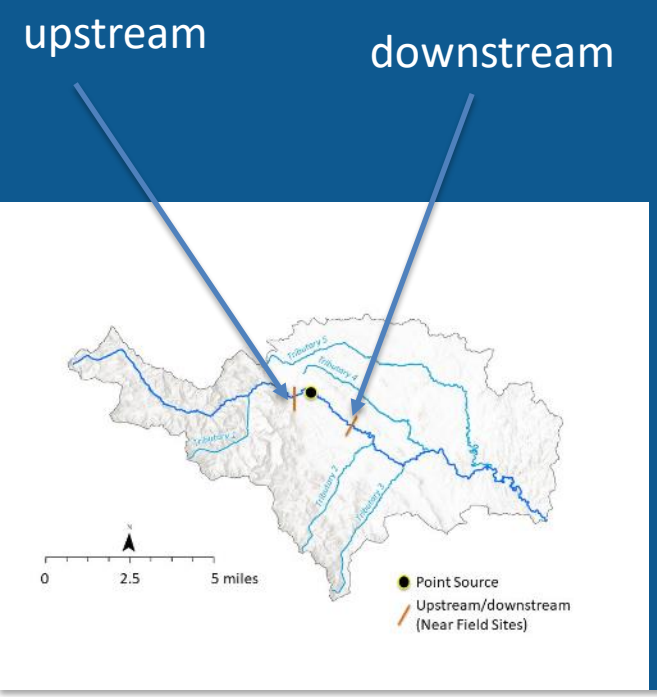
2. Exact Binomial Approach — *Roll Up: Upstream/downstream results inform next steps*



Example Results for Near Field Sites Bracketing a Point Source.

Upstream Site(s)	Downstream Site(s)	Implication
Compliant	Compliant	Permittee is compliant with permit limits, continue to monitor
Compliant	Non-compliant	Work should focus on point source improvements
Non-compliant	Compliant	Suggests work should focus on improvement to upstream watershed
Non-compliant	Non-compliant	Suggests work could begin upstream of point source, at point source, or both

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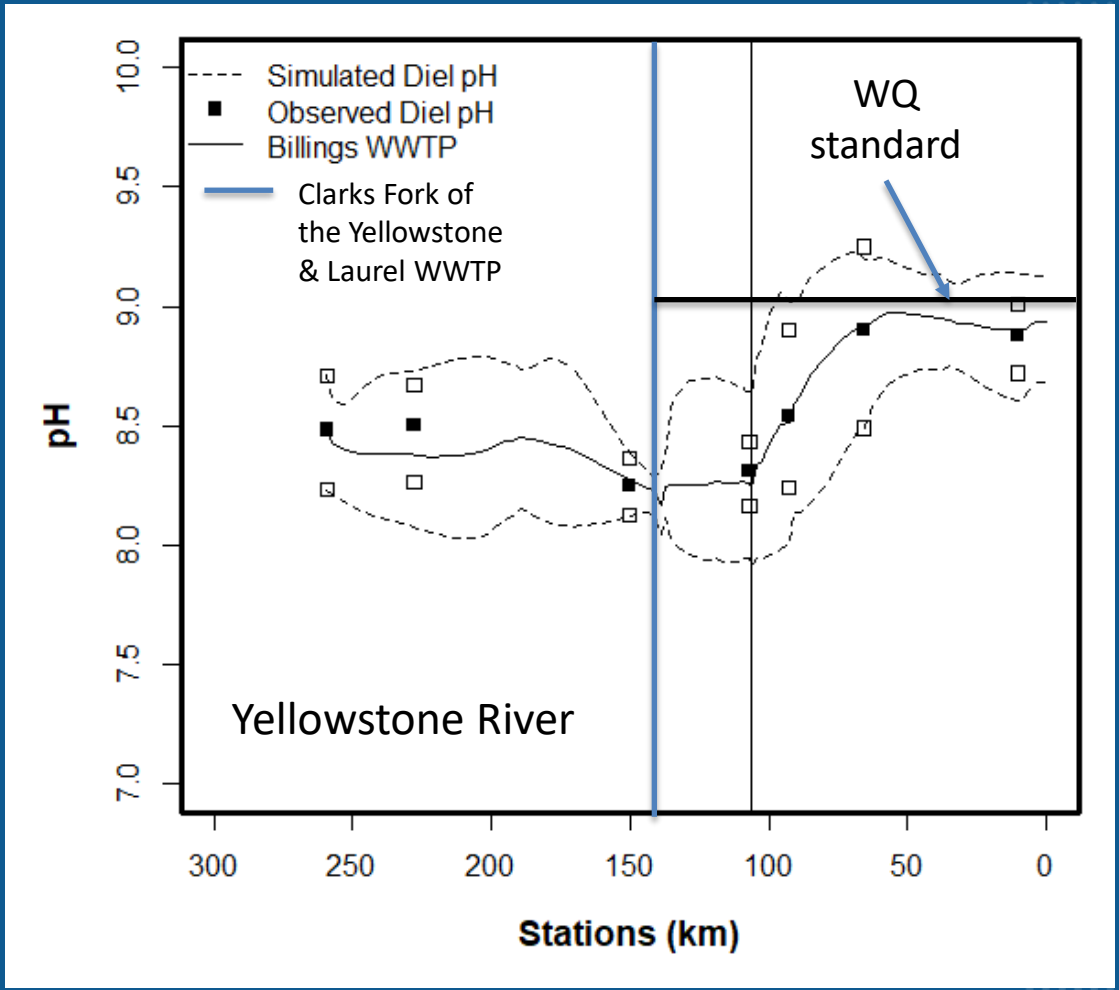
3. Modeled Approach

Applicable to complex AMP watersheds with stacked MPDES permits

Large watershed-scale data collection provides for:

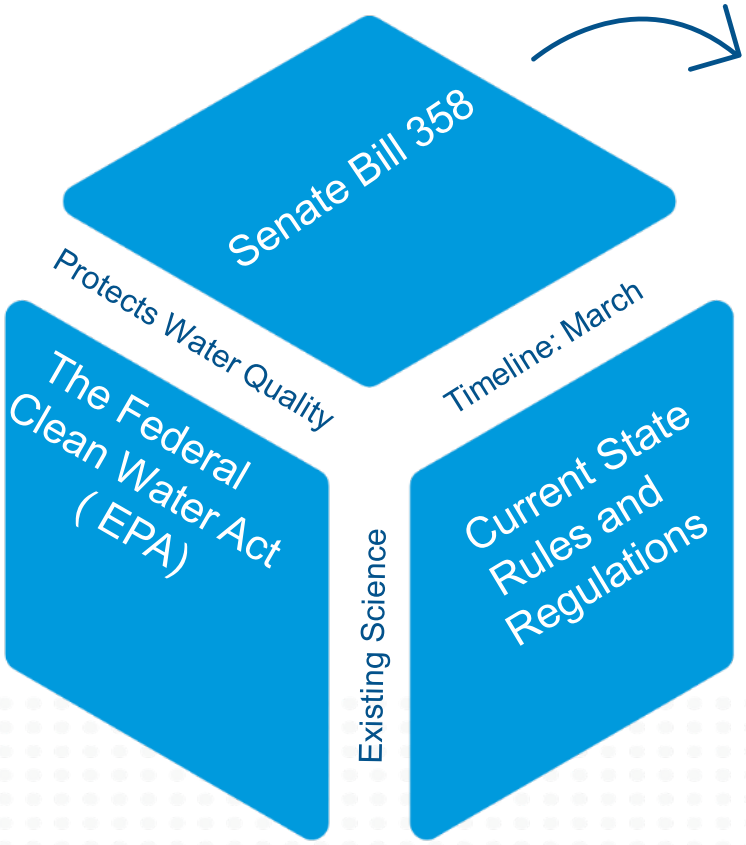
1. attainment evaluation,
2. modeling, and
3. simulation of different management actions



Nutrient Work Group Discussion and Feedback

Narrative Nutrient Standards

Must meet...



Senate Bill 358:

- Rule provides for AMP
- Balances all factors impacting a water body
- Prioritizes the minimization of phosphorous, taking into account site-specific conditions
- Identifies response variables and associated thresholds
- Considers whether point source is new or existing, and impaired or unimpaired
- Rules adopted by March 1, 2022

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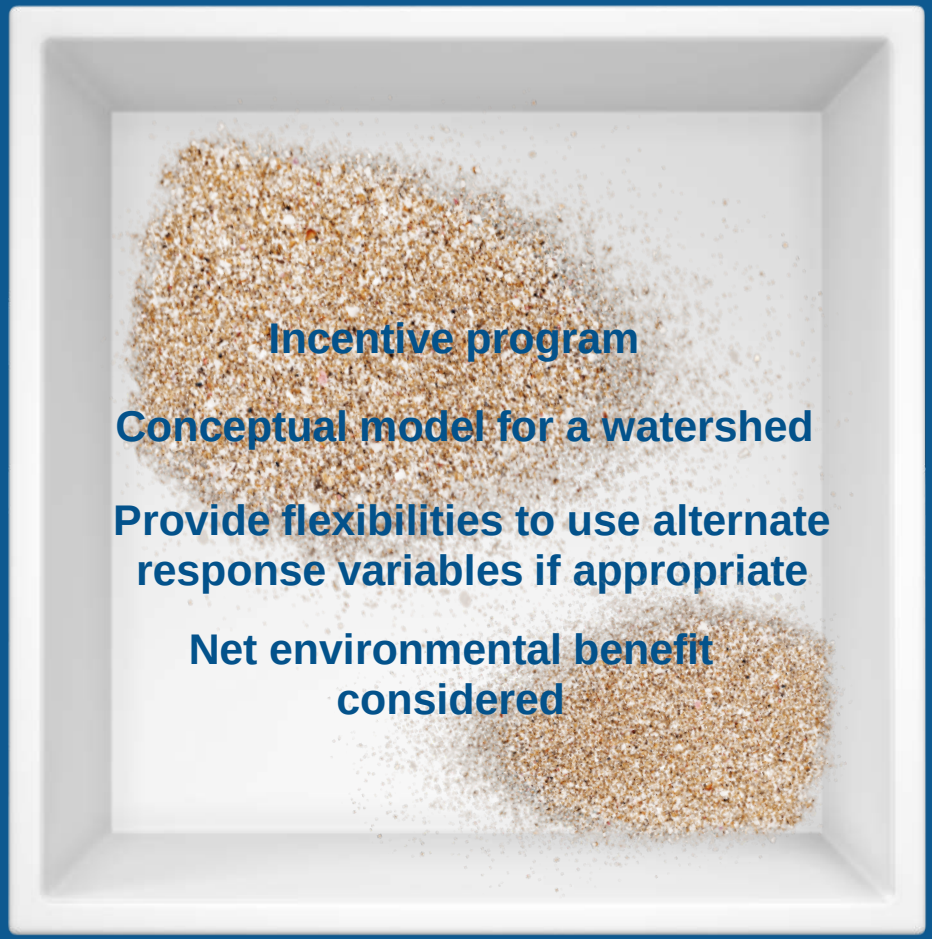
What's in the AMP sandbox?

Can work within requirements and framework

Non-numeric limits based on BMPs
Reason: Alone these are insufficient

Two step rule-making process
Reason: DEQ moving forward with comprehensive rule package by March 1 per SB358

Numeric effluent limits are infeasible
Reason: DEQ has already identified response variables and associated numeric thresholds



Revise use classes or existing stream assessments
Reason: DEQ assumes waterbodies are appropriately classified; there is a separate standards setting process for this (UAA).

TBELs for nutrients
Reason: Not viable

Put response variables in AMP/TMDL, not in the permit
Reason: Some type of limit needs to go in the permit

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Water Quality Standard

Beneficial Uses
(aquatic life, human health, agriculture, recreation)

Non Degradation
(high quality water for the sake of clean water)

Criteria
(numeric or narrative)

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What is a beneficial use change?

A Use Attainability Analysis (UAA) is a Clean Water Act tool to determine if the beneficial uses of a waterbody are appropriate – are they existing and are they attainable?

- Existing - are the beneficial uses attained (or have they been attained since 1975 or ...under MT state law
- Attainable – determined by 6 use removal factors in 131.10(g)

This is conducted as a structured scientific assessment and submitted to EPA as a change in water quality standard

Note: Narrative standards fall under our General Prohibitions (ARM 17.30.637) which apply to ALL classified waterbodies.

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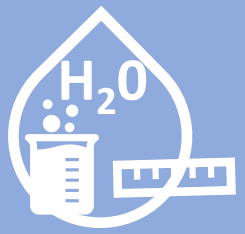
TMDLs and the Adaptive Management Program

DEQ's Water Quality Planning Process

1 Develop Water Quality Standards

Adopt criteria to describe desired conditions and protect beneficial uses.

2 Monitor Water Quality



Collect data about water quality

3 Assess Water Quality

Describe water quality and determine whether waters are "impaired" (do not meet water quality standards and do not fully support beneficial uses)

4 Identify Sources of Pollution

Estimate amount of pollution from identified sources

5 Develop Total Maximum Daily Loads (TMDLs)

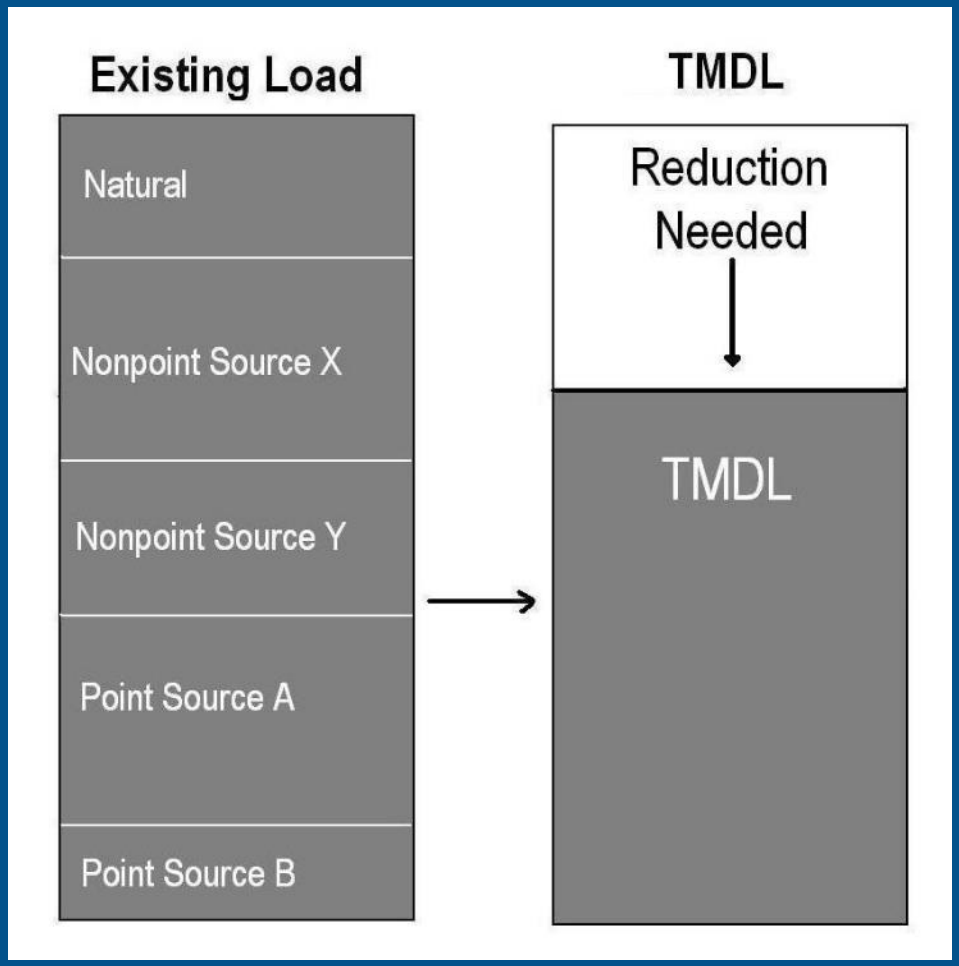
Determine reductions needed for impaired waters to meet water quality standards, and recommend pollution reduction strategies

6 Support Water Quality Improvements

Support efforts to reduce point and nonpoint source pollution and protect and restore water quality.

What is a TMDL ?

What is a TMDL ?



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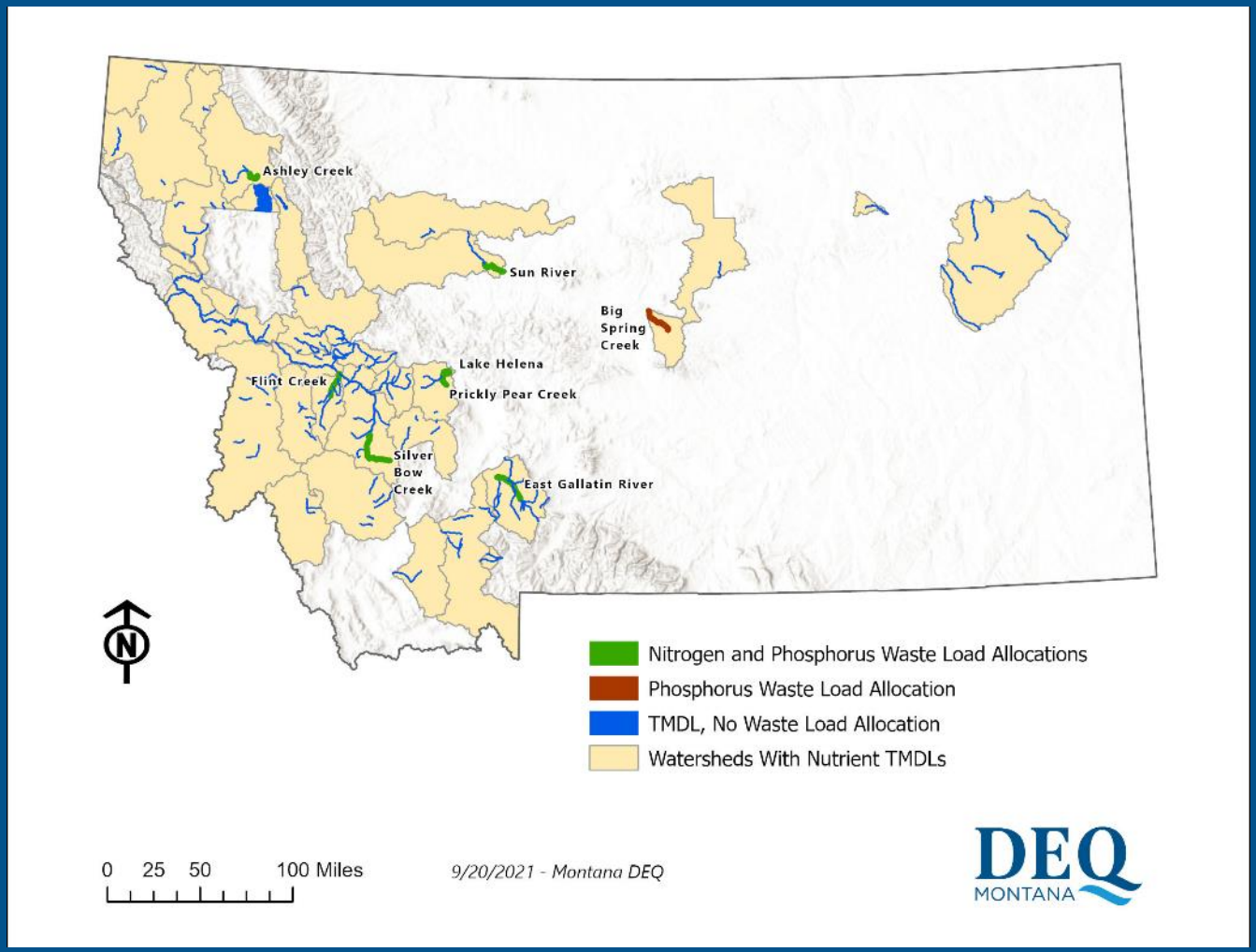
Completed Nutrient TMDLs



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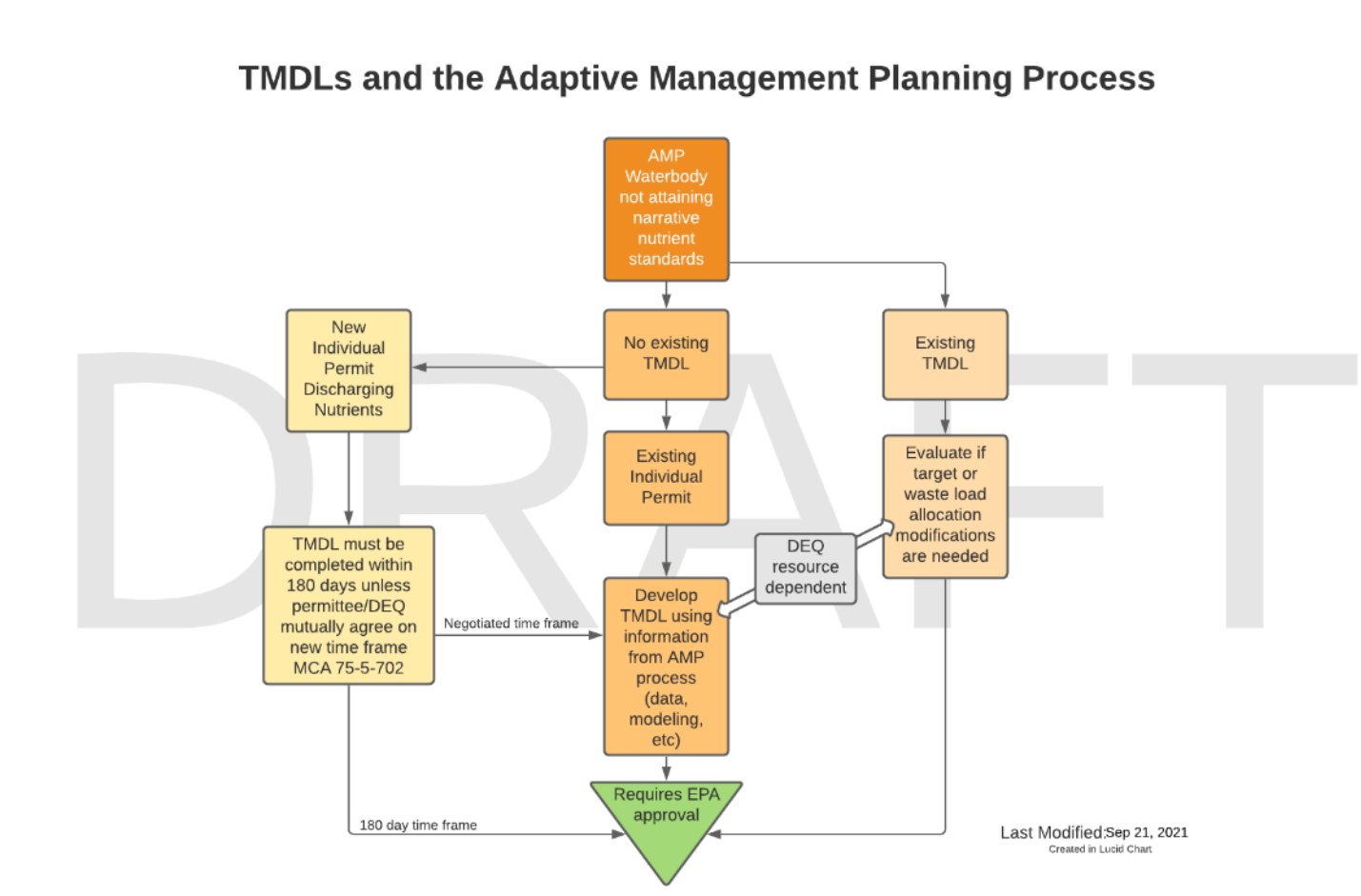
TMDLs and the Adaptive Management Program



Next Meetings

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Next Meeting

- Listening Session
  - Thursday, September 23: 1:00 – 3:00 pm

    Website question submittal button https://deq.mt.gov/water/Councils
- Tuesday, October 5: 1:30 – 3:30 p.m.

  Next meeting topics:
  - Wrap-up from today's meeting
  - Complete discussion of outstanding issues prior to rulemaking

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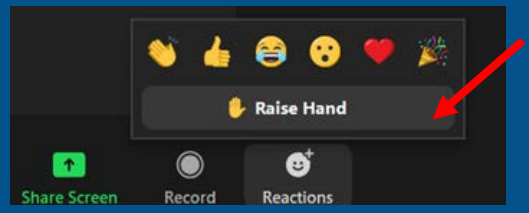
Upcoming Meetings Through November 2021

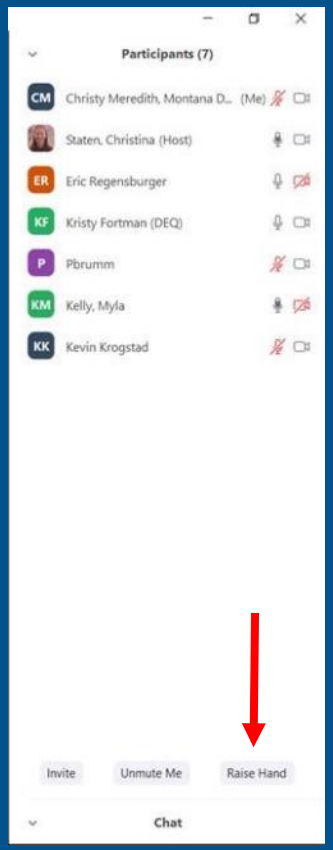
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
19	20	21	22 **NWG Meeting**	23	24	25
26	27	28	29	30	1 October	2
3	4	5 **NWG Meeting**	6	7	8	9
10	11 Holiday	12 ~~NWG Meeting~~	13	14	15	16
17	18 **Draft rule package provided to NWG for NWG comment**	19	20	21	22	23
24	25	26	27 **NWG Meeting**	28 **Comments Due from NWG members**	29	30
31	1 November	2	3 **NWG Meeting**	4	5	6

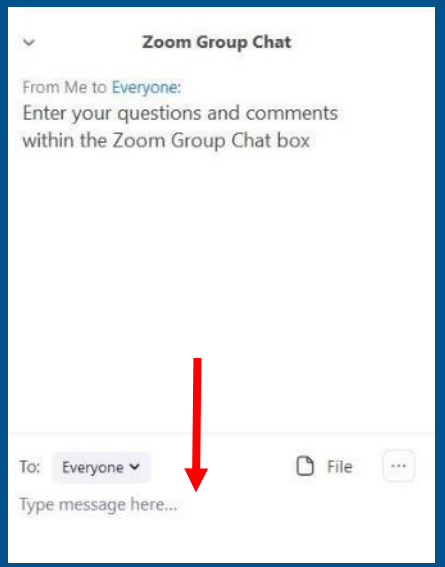
Public Comment

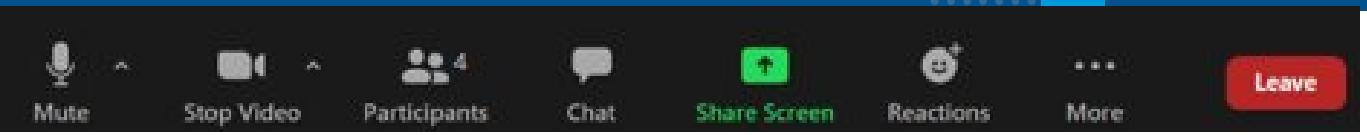
Questions/ Comments

- Raise hand or type questions into the chat
- Please keep your microphone muted until called on
- If calling by phone, press*6 to unmute
- State your name and affiliation before providing your comment









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Thanks for Joining Us

Contact:
Galen Steffens
Galen.Steffens2@mt.gov

To submit comments or questions

Submit Comments or Questions

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

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