NUTRIENT WORK GROUP MEETING SUMMARY
JULY 28, 2021

9:00 a.m.
Hybrid Meeting: Zoom and DNRC Montana Room

ATTENDANCE: NUTRIENT WORK GROUP MEMBERS

Representative & Affiliation	Representing
Louis Engels (sub. for Susie Turner) City of Billings	Point Source Discharger: Large Municipal Systems (>1 MGD)
Shannon Holmes City of Livingston	Point Source Discharger: Middle-Sized Mechanical Systems (<1 MGD)
Rika Lashley Morrison-Maeirle	Point Source Discharger: Small Municipal Systems with Lagoons
Alan Olson Montana Petroleum Association	Point Source Discharger: Non-POTW
Scott Buecker AE2S	Wastewater Engineering Firms
Amanda McInnis (sub. for Kelly Lynch) Consultant for Montana League of Cities and Towns	Municipalities
Pete Schade Lewis and Clark County Water Quality Protection District	County Water Quality Districts or Planning Departments
Tammy Johnson Montana Mining Association	Mining
Kristin Gardner Gallatin River Task Force	Conservation Organization: Local
Sarah Zuzulock Zuzulock Environmental Services	Conservation Organization: Regional
David Brooks Montana Trout Unlimited	Conservation Organization: Statewide
Guy Alsentzer Upper Missouri Waterkeeper	Environmental Advocacy Organization
Guy Alsentzer (sub. for Wade Fellin) Upper Missouri Waterkeeper	Water or Fishing-Based Recreation
Andy Efta U.S. Forest Service, Northern Region	Federal Land Management Agencies
Tina Laidlaw U.S. Environmental Protection Agency	Federal Regulatory Agencies
Jeff Schmalenberg MT Dept. of Natural Resources and Conservation	State Land Management Agencies
Dan Rostad Yellowstone Conservation District Council	Soil and Water Conservation Districts – East & West of the Continental Divide

NOT IN ATTENDANCE: NUTRIENT WORK GROUP MEMBERS

Representative & Affiliation	Representing
John Youngberg Montana Farm Bureau	Farming-Oriented Agriculture
Jay Bodner Montana Stockgrowers Association	Livestock-Oriented Agriculture
Julia Altemus Montana Wood Products Association	Timber Industry

ATTENDANCE: OTHER PARTICIPANTS

Aaron Losing, City of Kalispell
Adam Sigler, Montana State University Extension
Amy Steinmetz, DEQ, Water Quality Division Administrator
Amelia Flanery, DEQ Surface Water Discharge Permitting
Brian Heaston, City of Bozeman
Christina Staten, DEQ, Watershed Protection Section
Christy Meredith, DEQ, Watershed Protection Section
Darrin Kron, DEQ, Monitoring and Assessment Section Supervisor
David Clark, HDR
Ed Coleman, City of Helena
Eric Regensburger, DEQ, Water Quality Standards and Modeling Section
Erin Wall, Montana Rural Water Systems
Galen Steffens, DEQ, Water Quality Planning Bureau Chief
George Mathies, DEQ, Deputy Director
Hannah New, DEQ, Surface Water Discharge Permitting
Hannah Riedl, DEQ, Watershed Protection Section
Heather Henry, DEQ, Surface Water Discharge Permitting
Jason Mohr, Legislative Environmental Policy Office
Jeff May, DEQ, Surface Water Discharge Permitting
Joe Lierow, ExxonMobil
John Bernard
Jon Kenning, DEQ, Water Protection Bureau Chief
Kayla Glossner, DEQ, Surface Water Discharge Permitting
Kristi Kline, Montana Rural Water Systems
Kurt Moser, DEQ, Legal Counsel
Loren Franklin, KC Harvey Environmental
Mark Ockey, DEQ, Watershed Protection Section
Matt Wolfe, Sibanye Stillwater
Maya Rao, DEQ, Surface Water Discharge Permitting
Michael Kasch, HDR
Mike Suplee, DEQ, Water Quality Standards and Modeling Section
Mikindra Morin – Northern Plains Resource Council
Moira Davin, DEQ, Public Information Officer
Myla Kelly, DEQ, Water Quality Standards and Modeling Section Supervisor
Peggy Trenk, Treasure State Resources Association
Rainie DeVaney, DEQ, Surface Water Discharge Permitting Section Supervisor

Rickey Schultz, HDR
Ryan Sudbury, City of Missoula
Shane LaCasse, CSH
Stephanie Bonucci, GNA Technical Advisor
Ted Barber, Meeting facilitator
Vicki Watson

MEETING INITIATION

George Mathieus, DEQ's Deputy Director, welcomed everyone to the meeting just after 9:00 a.m. and encouraged people to engage, generate conversation, and ask questions. Ted Barber, the meeting facilitator, then reviewed ground rules for the meeting and the roles and responsibilities of Nutrient Work Group members (found on slides 5 and 6 of **Attachment A**). Ted also took a roll call of Nutrient Work Group members present either via Zoom or in the Montana Room of DNRC's Headquarters building in Helena.

STATE LAW VS ADMINISTRATIVE RULES VS POLICY

Mike Suplee, DEQ Water Quality Science Specialist, reviewed slides 9, 10, and 11 of **Attachment A** to answer the questions: what are rules, what is the rulemaking process, and how does it fit in? Senate Bill 358 will be contained in state law / Montana Code Annotated (MCA). Subsequently, Administrative Rules of Montana (ARM) are written by departments, which is the process we are undertaking. Once rules are adopted, they have the force of law. Underneath this, there is more detail: written policy and work unit policy. The hierarchy is that each component must be consistent with the one above it (slide 10).

Discussion

Samantha Tappenbeck, conservation districts west of the continental divide representative, asked if the federal clean water act minimum water quality standards are numeric or narrative. Mike responded that they are both; that the Clean Water Act allows for both types of water quality standards.

Guy Alsentzer, environmental advocacy organizations representative, stated a critical issue at hand is whether it is lawful to eliminate more protective, numeric standards and attempt to replace those standards with less protective, more ambiguous, narrative criteria. George Mathieus responded that the goal of this process is not to lessen water quality standards. The goal is to protect water quality, but in a different way. The implementation of how we're going to do this is important to this process.

TECHNICAL SUBCOMMITTEE REPORT: ADAPTIVE MANAGEMENT PROGRAM DEFINITION

Rainie DeVaney, supervisor of the surface water discharge permitting program, reviewed a definition drafted for the adaptive management program (slide 14 of **Attachment A**). Rainie stated that DEQ considered all comments received on the definition and DEQ is comfortable moving forward with the version presented on slide 14.

TECHNICAL SUBCOMMITTEE REPORT: DEFINING WATERSHEDS & MAJOR WATERBODY CATEGORIES

Mike Suplee discussed slides 16 through 18 of **Attachment A**, stating that this process will be watershed-based. There are two major hydrologic systems in Montana: the Pacific Northwest region (Section 17) and the Missouri River section (Section 10). Both of these are 2-digit HUCs shown on slide 17. Mike then stated that HUC 8s are a good starting point for the adaptive management process. HUC 8s (shown on slide 18) work well for water quality assessments, TMDL development, etc.

Mike then discussed slides 20 through 23 of **Attachment A**, stating that another component that's important to identify for the purpose of applying correct sampling methods is whether a waterbody is a large river, medium river, or wadeable stream. The draft definition of each is provided on slide 23.

Discussion

Rika Lashley, representative of small municipal systems with lagoons, asked if there is a marked difference in river behavior between large and medium sized rivers. Mike responded that there is. Large rivers have far more volume and tend to manifest their nutrient effects a lot further downstream due to water velocity and depth. Medium-sized rivers are relatively shallow and can grow a lot more filamentous algae.

Samantha asked if stream order is a factor in the categorization of waterbody sizes. Mike responded: only in a general sense. Most large rivers are Strahler order 7 or larger; however, you have to take into account flow patterns and wadeability – Strahler order is just one piece of the puzzle.

There was a chat box question from Brian Heaston, City of Bozeman, that was missed during the meeting. Brian asked what stream size determination implicates in the AMP rules – assessment methodology? The answer to this is monitoring methods.

Matt Wolfe with Sibayne-Stillwater mine stated HUC 8 is a good reference point for AMPs and TMDLs, but it should be noted that some TMDLs have been done at HUC 10 or 12 in order to provide more practical analysis and set load limits at the medium river scale, whereas some HUC 8 designations may be at the large river scale. Mike noted that he doesn't disagree with this statement and there may be cases where the AMP watershed may be a smaller scale or may be portions of multiple HUC 8 boundaries.

TECHNICAL SUBCOMMITTEE REPORT: LIMITS OF AN AMP WATERSHED & WATERSHEDS WITH MULTIPLE SOURCES

Rainie discussed slides 26 through 29 of **Attachment A** stating that there is a need to look at both the upstream and downstream extents of a watershed because there could be reasons to expand or shrink boundaries (slide 26). Slide 27 is an example watershed identifying what DEQ sees as the minimum for monitoring locations and what needs to be identified and quantified in a watershed-scale monitoring plan. Slide 28 was a new concept presented to the technical subcommittee to address situations where multiple permittees will be in different permit statuses with different expiration dates. Slide 29 is draft rule language outlining all the concepts shown on slides 26 through 28.

Discussion

Samantha asked if DEQ feels HUC 8 is the appropriate scale for both point and nonpoint sources. Rainie responded that DEQ thinks it is a good starting point.

Louis Engels, representing large municipal systems, asked who decides who takes the lead on a watershed monitoring plan in watersheds with multiple sources. Rainie responded that DEQ anticipates that when there are multiple point sources, they will work this out between themselves. The idea is that since we are working at a watershed scale, they will work together.

Rika asked how the timing of AMP development will be tied into permit renewal schedules. Rainie responded that this is a component DEQ is still working through. However, DEQ would like to see one watershed-scale plan submitted for watersheds with multiple point sources, so when a permit comes up for renewal, the monitoring plan is already approved.

Amanda McInnis, representing municipalities, asked if higher HUC levels make sense for smaller point source discharger watersheds. Rainie responded yes, especially if there's only one discharger in smaller watershed.

Joe Lierow with ExxonMobil asked how much time DEQ expects to compile, submit, and approve an AMP. Rainie responded that for this meeting we are discussing the watershed-scale monitoring plan and that the larger AMP plan is a bigger component. She also said DEQ doesn't have a firm timeline in mind and is open to feedback from the group. As a post-meeting point of clarification, DEQ will not be writing adaptive management plans, only reviewing and approving them.

Louis asked if DEQ will quantify the contribution of nonpoint sources via their current program or if that will be up to the point source. Rainie responded yes and no, as there are areas where DEQ has already done the work and can provide this information, but there are also other areas where this work has not been completed and will not have the information compiled.

MEETING FOCUS DISCUSSION: RESPONSE VARIABLES AND HARM-TO-USE THRESHOLDS

Mike Suplee went over slides 32 through 48 of **Attachment A** to discuss what is at the heart of this process: what will be measured and what thresholds will determine harm-to-use. He stated that he will elaborate on this subject at the upcoming technical subcommittee meetings but want to focus on those parameters that are best for evaluating eutrophication (i.e., nutrient over-enrichment).

Slide 37 shows the way algal growth is quantified on river bottoms. Algae is removed from the bottom and dried and weighed to measure chlorophyll-a and ash free dry weight (AFDW), and percent cover is also estimated in the field. Mike recommends we develop thresholds for all three parameters. The left picture shows a clean bottom with low levels of chlorophyll-a. The middle picture shows where levels have gone up and where we expect problems may start to occur, and the right picture shows high levels of algal growth.

Mike stated that we know a fair amount about how chlorophyll-a levels affect beneficial uses, as is demonstrated on slide 38, which shows 150 mg/m^2 as a threshold for western Montana streams. This slide provides a good overview of why we look at algae and how it ties back to harm-to-use. Extensive

public opinion surveys of fisherman and other users showed that they don't like to see algal growth go above 150 mg/m^2; levels higher than this become unacceptable.

Mike then discussed prairie streams, which are warm water streams dominated by warm water fish species. He stated they naturally have a lot of macrophyte (plant) growth and grow algae on their own at levels that would be considered to impact recreational uses in western streams. Dissolved oxygen (DO) delta (slide 40) is used for these streams, as opposed to chlorophyll-a levels. DO delta is the difference between the daily high and daily low value of DO and is measured using deployed instruments (slide 41).

Mike stated that Minnesota has adopted a DO delta of 4.5 for their plains region. Ohio uses 6.0 and Montana's analysis has landed on a number around 5.0. Slide 42 is an example from Minnesota showing how the change in DO delta on the horizontal axis affects tolerant fish species in their streams. At a low DO delta, tolerant fish species (like carp) are a small proportion but become the dominant population as DO delta goes up.

Regarding slide 44 for medium rivers, Mike noted that this is where we have the least amount of specificity; however, modeling is also a good option for medium rivers. For large rivers (slide 45), modeling will allow you to collect data, build the model, and then manipulate the model to see what different actions might have on the water quality system. Slide 46 is an example of things that can be looked at by modeling the water quality of a large river. Slide 47 shows an example of the things that were looked at modeled by DEQ for the Yellowstone River. Slide 48 shows the tools available to help you select a model.

Discussion

Louis Engels asked if Mike could talk about the relationship between nutrients and water temperature and the effect on algal growth. He stated that it seems even above point or nonpoint sources, we are seeing blooms, especially this year. Louis also asked which variable has the most affect on algal growth. Mike responded that water temperature does encourage algal growth and that we're seeing this for example on the Smith River. DEQ believes increased water temperatures are increasing algae growth; however, you can't grow algae without nutrients. Mike stated that you can have warm water without algae if there are no nutrients.

Kristin Gardner, representative of local conservation organizations, stated that in the Gallatin, they have had issues with chlorophyll-a and biomass data not reflecting the existence of nuisance algae growth when clearly, from visual inspection, there is nuisance algae growth. She further stated that from conversations with DEQ staff, this is happening in other watersheds too, and asked if Mike could give an update on where the state is on investigating this issue. Mike responded that one of the things DEQ has been seeing in the last five to six years is algae blooms occurring earlier in the year (late spring runoff) with neon green color and have found these algae have low chlorophyll a to ash free dry weight (AFDW) ratios. Mike said a lot of DEQ's data and understanding was honed on the Clark Fork River where algae is dark green in color. There are other places where blooms are occurring on large rivers and the ratios are changing. Mike also stated that one thing that may be helpful is the estimation of percent cover – this can be a helpful tool because it overrides some of these changes. He also said that both chlorophyll-a and AFDW should be measured, as both are important if ratios are changing in certain circumstances.

Sarah Zuzulock, regional conservation organizations representative, stated that nuisance algae levels are highly site specific for a given stream and can fall below general nuisance thresholds for chlorophyll-a and other measures of benthic algae depending on many factors in a watershed. She then asked what other response variables are under consideration, such as nitrogen and phosphorus concentration limits, bioassessment metrics as an indicator of nutrient enrichment, flow volumes, etc. Sarah also asked how these response variables will be incorporated into a permit to ensure nondegradation of water quality, as opposed to allowing a point source discharge that can reach the threshold of water quality impairment. Mike responded that one downside of measuring filamentous algae is that they go through cyclic patterns where they develop quickly, peak, and then go through a senescence phase. If you're not out there at the right time, you could miss growth altogether. Mike further stated that there are other water quality parameters we could look at that could be included with the assessment process to accompany this data. We could look at species composition of algae and what that tells us, as well as the composition of aquatic macroinvertebrate community and what that tells us. As to the second part of Sarah's question, Mike stated that all of this gets back to the idea that thresholds will be defined for each of these things and defines what harm-to-use is, and a certain set of decisions will flow from that.

David Brooks, statewide regional conservation representative, asked how you deal with the fact that using DO delta does not account for situations when the DO values are quite low (such as low, warm water periods of the year). For example, you can have a DO delta under 5, but the absolute values of DO never get above, say 6 mg/L, which is too low for many native, wild, and sensitive fish or aquatic organisms. Mike responded that the advantage of DO delta over straight DO is if DO never drops below our water quality standard. In Eastern Montana, DO can be very high during the day, but almost never drops down to 0 at night, but if you measure DO delta, you'll find that it's high. Mike also stated that we know that periods of drought versus non-drought periods impact how DO delta manifests.

Samantha Tappenbeck asked if the harm-to-use threshold for DO delta can be scalable with stream size/category. Mike responded that we know the most about wadeable streams and know less about how it will behave in medium to large rivers. However, Mike doesn't recommend DO delta for large rivers because you don't often see that extreme of changes because there is so much volume and oxygen in large rivers.

Shane LaCasse of CSH asked if there is variability in the DO reading based on the location of where the reading is taken. For instance, in the main current versus a more stagnant section of the river. Mike responded: yes, for many waterbodies. He said it's normal for pools not to be connected during the summer period and locating the instrument in the right place is helpful.

Amanda McInnis asked if there are recreational use thresholds for percent cover other than mg/m^2 of chlorophyll-a. Mike responded that DEQ has not developed this to a high-degree, but typically use about 30% cover. Work in West Virginia and Virginia is coming up with about 25% cover; Utah is using 30% cover as well. Mike stated that he anticipates that if we adopt this as criteria, we'll land in the 30-40% range.

Kristin Gardner asked what the field methods are for measuring percent cover. Mike responded that DEQ uses a standardized visual assessment form and noted that a field team can be calibrated and trained to come to a common agreement on what they're seeing in about an hour. He also stated that it is a good, coarse, easy form of data to collect and an person or team can get out there as often as necessary to collect this data.

Matt Wolfe stated that from the chart shown on algae levels in wadeable streams, it appears salmonid growth and survival is better in moderate levels of nutrients and chlorophyll-a than at low levels of nutrients and chlorophyll-a and asked if this was true. Mike responded that he doesn't know the situation for every salmonid species; however, yes, the data shown in the presentation (slide 38 of **Attachment A**) came predominately from work out of the Pacific Northwest to make sure salmonid species stay healthy. Mike further stated that a little bit more algae is better because you get more biological productivity (bugs for fish to eat). He also said it's not like other water quality variables such as a toxic compound that results in problems the moment it enters the system. If you have no nutrients, you have problems; if you have some nutrients, they are beneficial; too many nutrients cause problems. It is tricky to determine the inflection point.

Tina Laidlaw, federal regulatory agencies representative, asked DEQ to note EPA's comments and concerns with Utah's percent cover value before considering it as protective for Montana. She further stated EPA can provide a copy of their action letter on Utah's headwater streams, if requested. Amanda McInnis stated she would like to see this (**Action**). Mike noted that DEQ will be happy to look at that and stated that DEQ will look beyond Montana's borders to see what the threshold should be, as the range is not that huge, and it shouldn't be difficult to come to a consensus on the value of percent cover.

Rika Lashley asked: other than cost, would there be reasons why modeling is not effective for wadeable streams, as the ability to simulate effects of improvements on stream quality would be nice for those too. Mike responded that there is nothing that precludes the use of models for wadeable streams. This tends not to be done due to cost, as there are simpler, more direct ways to get at things.

Amanda McInnis asked Mike to explain the application of the 150 mg/m^2 threshold, as it seems like there could be a wide variety of ways that could be applied. Mike responded that we do not measure 150 on an individual stone in a wadeable stream. Instead, 11 individual samples are collected, and an average is taken that is then compared to the 150 mg/m^2. Amanda followed up with the question of when, where, and under what flow conditions is this method applied and if there are other ways to interpret this going forward other than a max end of growing season, low flow condition. Mike responded that he didn't have an answer for this, as he needed more information on what other options we might investigate. However, typically the method is applied during summer, base flow conditions.

Samantha Tappenbeck asked if there are any methods used to ground truth models for large river systems – are there variables measured on-the-ground to calibrate the model and/or confirm results? Mike responded: yes, there are. It depends on how much money and time you have to put into the process. He said for example, DEQ measured every possible parameter for the Yellowstone so the model would be constrained by actual data.

ACTION ITEMS & FUTURE LISTENING SESSION

Galen Steffens, Bureau Chief of DEQ's Water Quality Planning Bureau, went over the action items from both the previous Nutrient Work Group meetings and Technical Subcommittee meetings shown on slides 51 through 53 of **Attachment A**. She noted that action items are tracked in the meeting notes that are posted on the website. Galen also stated that DEQ is tentatively looking at September 28 for a future listening session.

NONPOINT SOURCE PROGRAM OVERVIEW

Christina Staten, DEQ Water Quality Specialist, gave an overview of DEQ's Nonpoint Source Program, shown on slides 58 through 65 of **Attachment A**. She noted that the map on slide 62 shows TMDL project areas with completed nutrient TMDLs, as opposed to HUC 8 boundaries. In some cases, TMDL project areas match HUC 8 boundaries, but in many cases are smaller or larger than a HUC 8. The key points to this talk are shown on slide 65 noting that in many watersheds, significant help may be available from DEQ, including the quantification of nutrient loads from nonpoint sources, the compilation of watershed partners where TMDLs have been completed or are in-progress, and existing or developing watershed restoration plans (WRPs) that prioritize waterbodies for restoration. Where there are existing WRP's, Christina noted that local entities such as conservation districts and watershed groups are developing partnerships with landowners and are seeking funding partners to implement nonpoint source restoration projects.

Discussion

George Mathieus noted that in many cases, permittees won't be starting from scratch, and these are opportunities for dischargers to grab onto, as there's a lot of work out there that's been completed by DEQ that will be useful for an AMP. Rainie Devaney also noted that it warrants a conversation with DEQ at the start of the AMP process so there isn't unintended duplicative work.

Louis Engels commented that we see diminishing returns as we ratchet down on facilities, which doubles or triples energy requirements to treat a wastewater a little bit further. He further stated that if we really want to make nutrient concentrations decrease, the importance of incorporating nonpoint sources into AMPs is critical.

Samantha Tappenbeck asked if Christina could talk about how numeric standards factored into TMDL development and approval and if the switch to narrative standards will affect TMDLs and WRPs that are already complete. Christina stated that DEQ is still discussing how this will affect completed TMDLs; however, any TMDL that is revised will undergo public comment and will require EPA approval. New nutrient TMDL development is currently on hold, as we work through this process.

Vicki Watson asked if an area has a TMDL and has a watershed restoration plan (WRP) in progress, whether it needs to be renamed to an AMP. Christina replied: No. Under state law, DEQ is required to develop TMDLs, and they must be approved by EPA. They are a separate process from the Adaptive Management Program that is under development. Vicki also asked whether nutrients should be removed from WRPs that are under development. Christina again replied no, that WRP development is a locally led process and nutrients can be addressed if they are determined to be a priority by the entity developing the WRP. The revision to water quality standards should not affect whether nutrients are addressed in WRPs.

Brian Heaston with the City of Bozeman asked that given a TMDL wasteload allocation sits at the crossroads of water quality standards attainment and MPDES permitting, how does DEQ foresee providing for a consistent outcome under the AMP framework and TMDL process. Rainie DeVaney replied that we have dedicated meetings coming up specific to this topic and DEQ recognizes this is a topic we need to spend time on.

PUBLIC COMMENT

Public comment was taken during the meeting and answers to questions are incorporated into the "Discussion" sections above.

CLOSE OF MEETING

The next Nutrient Work Group meeting is scheduled for August 25 from 9 to 11 a.m.

The meeting ended at 11:00 a.m.

SUMMARY OF ACTION ITEMS

	Action	Meeting Date	Who*	Status
1	Provide documents in advance of NWG meetings	6/23/21	DEQ	Ongoing
2	Get Microsoft Teams up and running for NWG and TSC members	6/23/21	DEQ	Complete
3	Address the question of nonpoint source participation in the AMP process	6/23/21	DEQ, NWG	Complete
4	Consensus opinion of farming and nonpoint source community on this process and what they think is possible or realistic	6/23/21	Nonpoint source representatives	Comment noted
5	Add timeframes to the Adaptive Management Program flowchart	6/23/21	DEQ and TSC	Ongoing
6	Create responsibility chart for adaptive management program	6/23/21	DEQ and TSC	Complete
7	Summarize the process for determining a wadeable stream vs large river	6/23/21	DEQ	Complete
8	Add groundwater to the adaptive management program framework	6/23/21	DEQ and TSC	Complete
9	Summarize SOPs for sampling nutrients	6/23/21	DEQ	Ongoing
10	Provide copy of EPA action letter on Utah's headwater streams	7/28/21	DEQ	In Progress

* NWG = Nutrient Work Group, TSC = Technical Subcommittee

ATTACHMENT A: JULY 28, 2021 NUTRIENT WORK GROUP MEETING PRESENTATION SLIDES

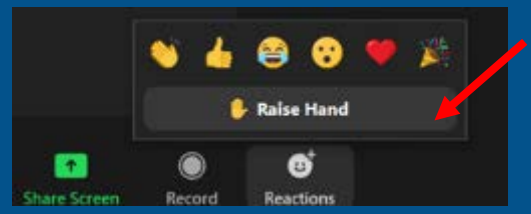
Nutrient Work Group Session Three

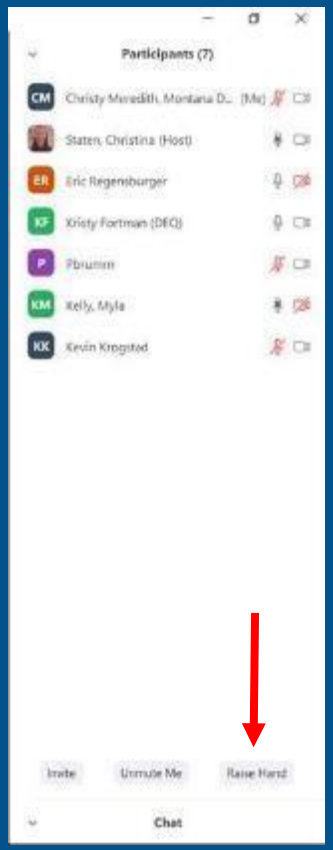
July 28, 2021

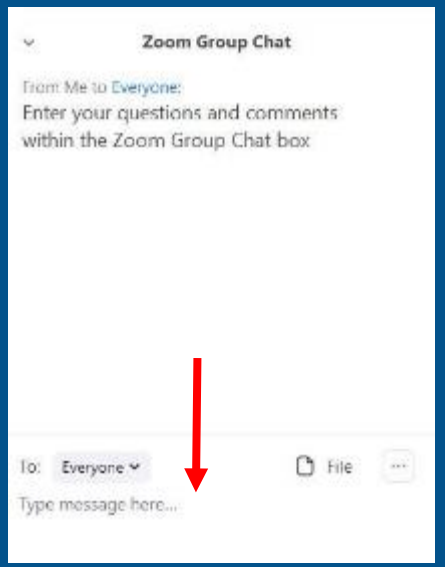
DEQ MONTANA

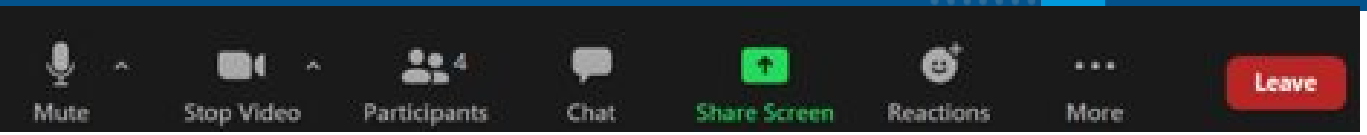
Welcome!

- 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 at any time
- Turning off your video feed provides better bandwidth
- Please sign-in to the chat box with name and affiliation









DEQ MONTANA

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

DEQ MONTANA

Introductions

Nutrient Work Group Members

Interest Group	Representative	Substitute
Point Source Discharger: Large Municipal Systems (>1 MGD)	Susie Turner	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	Amanda McInnis
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	
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.

DEQ MONTANA

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.

DEQ MONTANA

Agenda

Meeting Goal: Finalize AMP Definition, Review Watershed Scale Framework, Begin Response Variables/Thresholds Discussion

- Overview of MT State Law vs. MT Administrative Rules vs. Policy
- Technical Subcommittee Report
  - AMP definition
  - Defining watersheds and major waterbody categories
  - Watersheds with multiple point sources
- Introduction to Response Variables and Harm-to-Use Thresholds
- Outstanding Action Items
- Public input
- If Time: Nonpoint Source Program Overview

DEQ MONTANA

State Law vs. Administrative Rules vs. Policy

DEQ MONTANA

Department Rules: Where do they fit in?

The Three Coequal Branches of State Government

Legislative—makes the laws; MT legislature meets every two years, January-May

Executive—executes and administers the laws; DEQ is an executive branch agency, director serves at the pleasure of the Governor

Judicial—interprets the laws, particularly when there is disagreement about meaning and application of state statutes and administrative rules

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Department Rules: Where do they fit in?

The Hierarchy of State Law (in order of rank)

None of the components should be in opposition/inconsistent with those above it

State Constitution

State Law (passed by Legislature, signed by Governor); in the Montana Code Annotated (MCA)

Administrative Rules (Department; ARMs and Circulars). Have the force of law once adopted.

Written Policy (Department memos, Technical Guidance Documents, etc.)

Work Unit Policy (written or understood)

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Department Rules: Where do they fit in?

Federal Clean Water Act (CWA)

Sets minimum bar for water quality protection nationally

Federally Delegated Montana holds primacy to implement some Clean Water Act programs. Montana must implement these federally delegated programs consistent with applicable federal regulations.

Cooperative Federalism Montana interacts cooperatively with the federal government to solve common problems. EPA is our main federal counterpart. Many water quality standards rules we adopt must receive EPA review and only become applicable for CWA purposes after EPA approval.

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Discussion / Questions

Nutrient Work Group

Technical Subcommittee Report

Final Draft Definition

Adaptive Management Program means a watershed-scale system that protects water quality from the impacts of nutrient sources by: (a) prioritizing phosphorus reduction while accounting for site specific conditions, (b) allowing for nutrient sources to be addressed incrementally over time by incorporating flexible decision-making which can be adjusted as management actions and other factors become better understood, (c) reasonably balancing all factors impacting a waterbody while considering the relative cost of treatment options, their feasibility, and their expected water quality improvement, (d) identifying specific nutrient reduction requirements, and (e) setting as its goal the protection and achievement of beneficial uses of the waterbody.

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Defining Watersheds & Major Waterbody Categories

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Water Resource Regions

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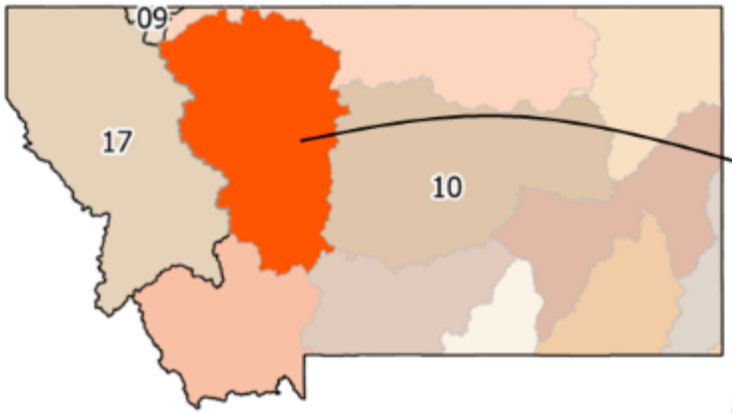
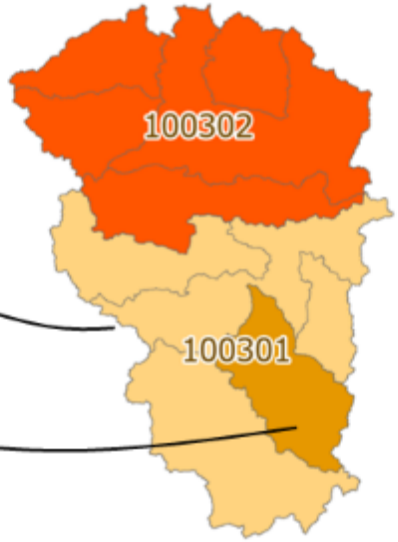
HUCs (Hydrologic Unit Codes)



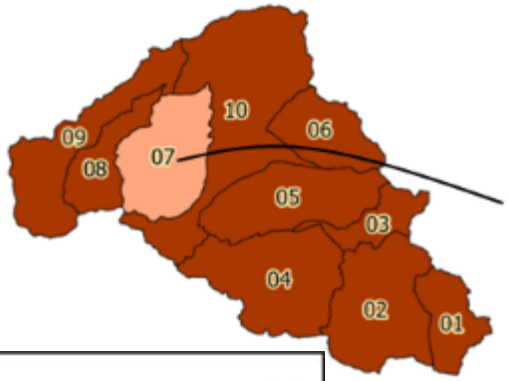
2-Digit Hydrologic Unit
10 – Montana Region

4-Digit Hydrologic Unit
1003 – Missouri-Marias



6-Digit Hydrologic Unit
100301 – Upper Missouri

8-Digit Hydrologic Unit
10030103 - Smith



10-Digit Hydrologic Unit
1003010302 – South Fork
Smith River

12-Digit Hydrologic Unit
100301030207 – Woods
Gulch Creek

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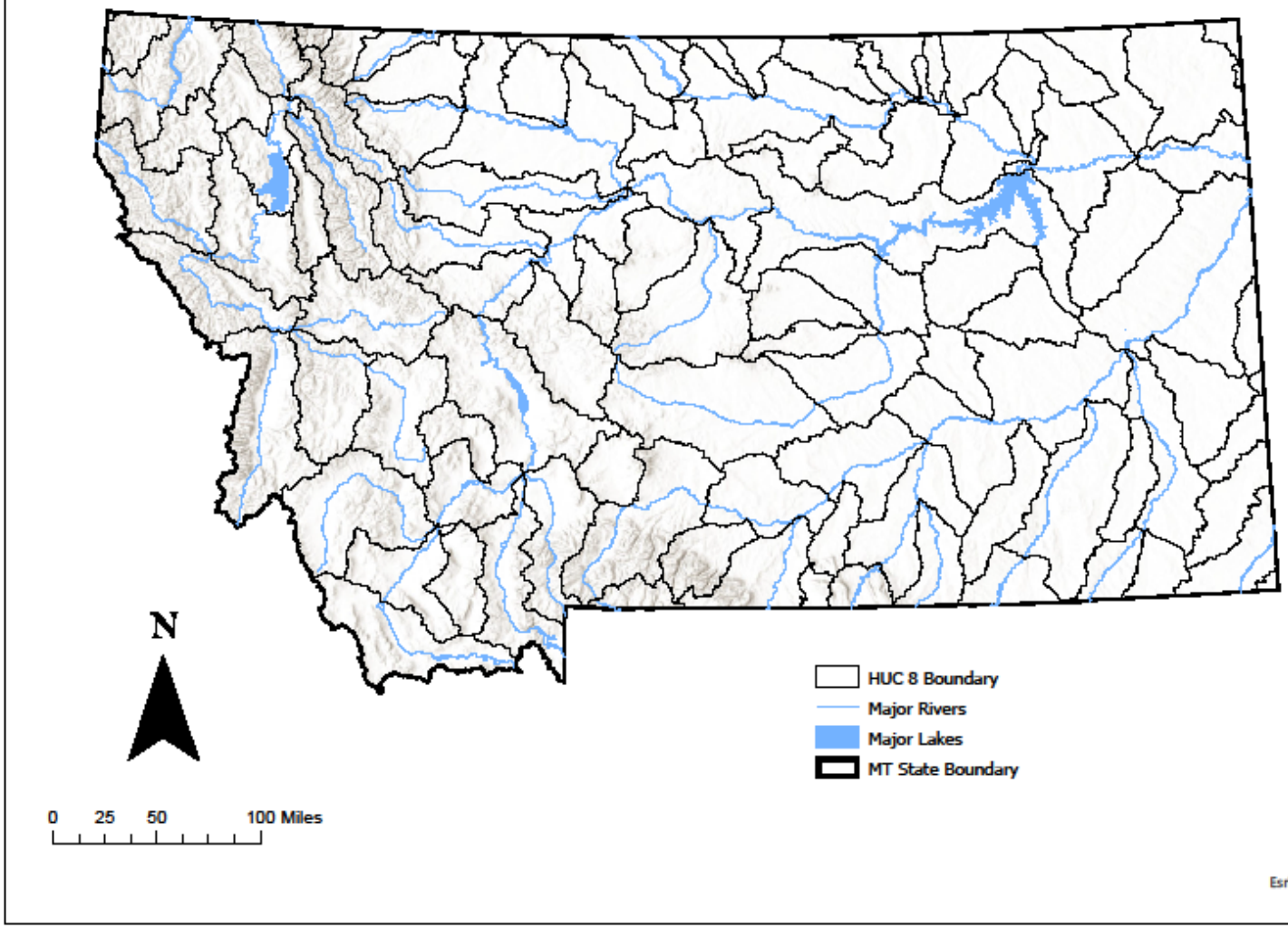
HUC 8 Boundaries in Montana



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Discussion / Questions

Montana's Large Rivers

Large river segments within the state of Montana.

River Name	Segment Description
Big Horn River	Yellowtail Dam to mouth
Clark Fork River	Bitterroot River to state-line
Flathead River	Origin to mouth
Kootenai River	Libby Dam to state-line
Madison River	Ennis Lake to mouth
Missouri River	Origin to state-line
South Fork Flathead River	Hungry Horse Dam to mouth
Yellowstone River	State-line to state-line

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Medium Rivers

- *Examples*:
  - Marias River
  - Blackfoot River
  - Smith River
  - Clarks Fork Yellowstone River
  - Bitterroot River
  - Jefferson River
  - Big Hole River
  - And many others…
- Not as clearly defined as large rivers
- Department sampling methods for these waterbodies developing

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Wadeable Streams

- Common throughout western and eastern Montana
- Department sampling and assessment protocols well developed

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Waterbody Size Definitions- *Draft*

Note: we could add "for AMP purposes" to any of these, if needed

Large river means a perennial waterbody that is unwadeable by a person during baseflow conditions

Note: DEQ has a table of defined large river segments.

Medium river means a perennial waterbody in which much of the wetted channel is unwadeable by a person during baseflow conditions.

Wadeable stream means a perennial or intermittent stream in which most of the wetted channel is safely wadeable by a person during baseflow conditions.

Note: The wadeable stream definition is adopted in rule in Circular DEQ-12A (which the department is required to repeal per SB-358).

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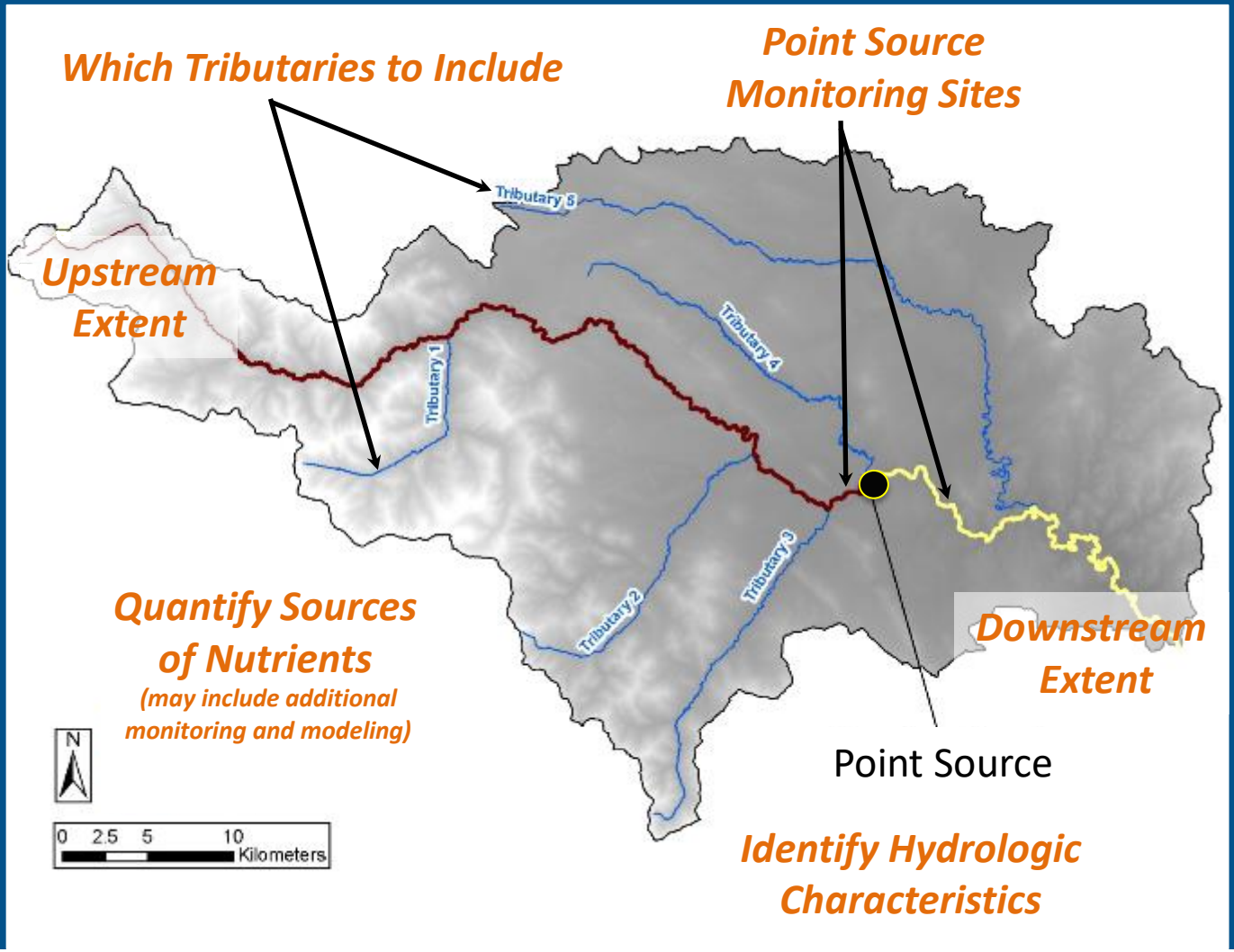
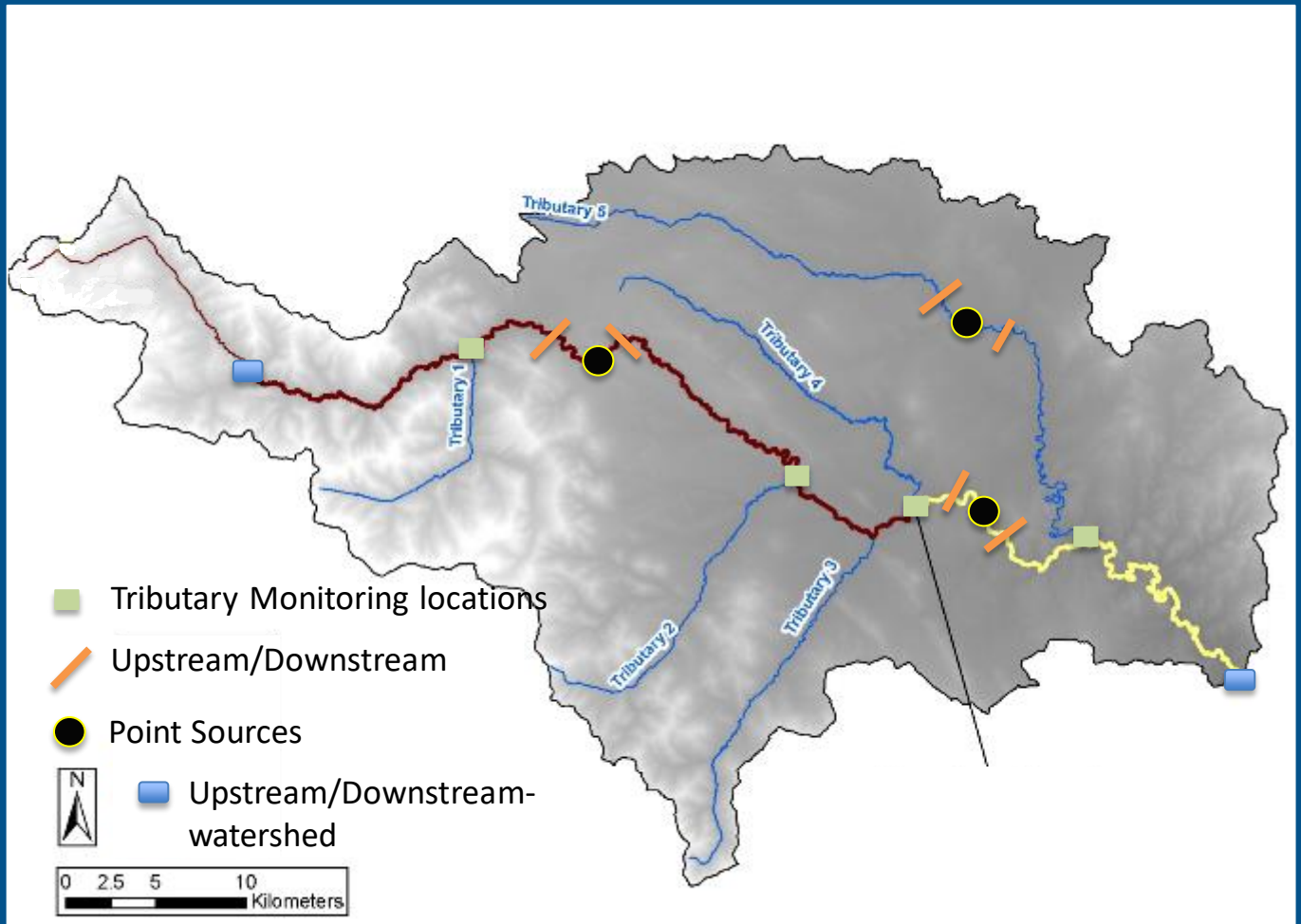
Discussion / Questions

Limits of an AMP Watershed & Watersheds with Multiple Sources

Key Considerations When Defining an AMP Watershed



Example Watershed with Multiple MPDES Permittees



Note: This map demonstrates monitoring locations upstream and downstream of point sources. The locations shown are for illustrative purposes only. In addition to upstream and downstream, monitoring downstream of the confluence would be required to demonstrate cumulative effects.

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Watersheds with Multiple MPDES Permittees

- DEQ will identify each watershed (likely Hydrologic Unit Code 8) that requires a watershed monitoring plan
- DEQ will notify point sources in the watershed and may provide a preliminary watershed inventory of sources based on DEQ records
- DEQ will provide a deadline for submission of the watershed monitoring plan

Draft Approach for Determining Watershed

- Under an adaptive management plan the watershed must be defined, at a minimum, by its upstream extent, its downstream extent, the principal tributaries included, and the main sampling locations to be monitored for purposes of assessing sources and the direct effects of the point source.

- Proposed watersheds will be reviewed by the department. The department will (a) approve the watershed as described, or (b) make recommendations for an alternative layout. The department will have final review and approval on all AMP watersheds.

- For purposes of monitoring and assessment, the point source receiving waterbody will be identified as a wadable stream, medium river, or large river.

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Discussion / Questions

Today's Discussion

Response Variables & Harm-to-use Thresholds

Among dozens of water quality variables, DEQ will focus here on those best for evaluating eutrophication (nutrient over-enrichment)

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1. Wadeable Streams

- DEQ uses regional response variables with associated thresholds
- DEQ sampling/assessment protocols well developed
- Sampled by a wading field team, and small deployed instruments

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Response Variables & Thresholds for Wadeable Streams

3 Major Pieces:

1. Identify geographic zones where specific response variables linked to eutrophication will be applied

2. Understand and establish "harm to use"

3. Characterize the response variable in regional reference sites (they provide relative point of comparison)

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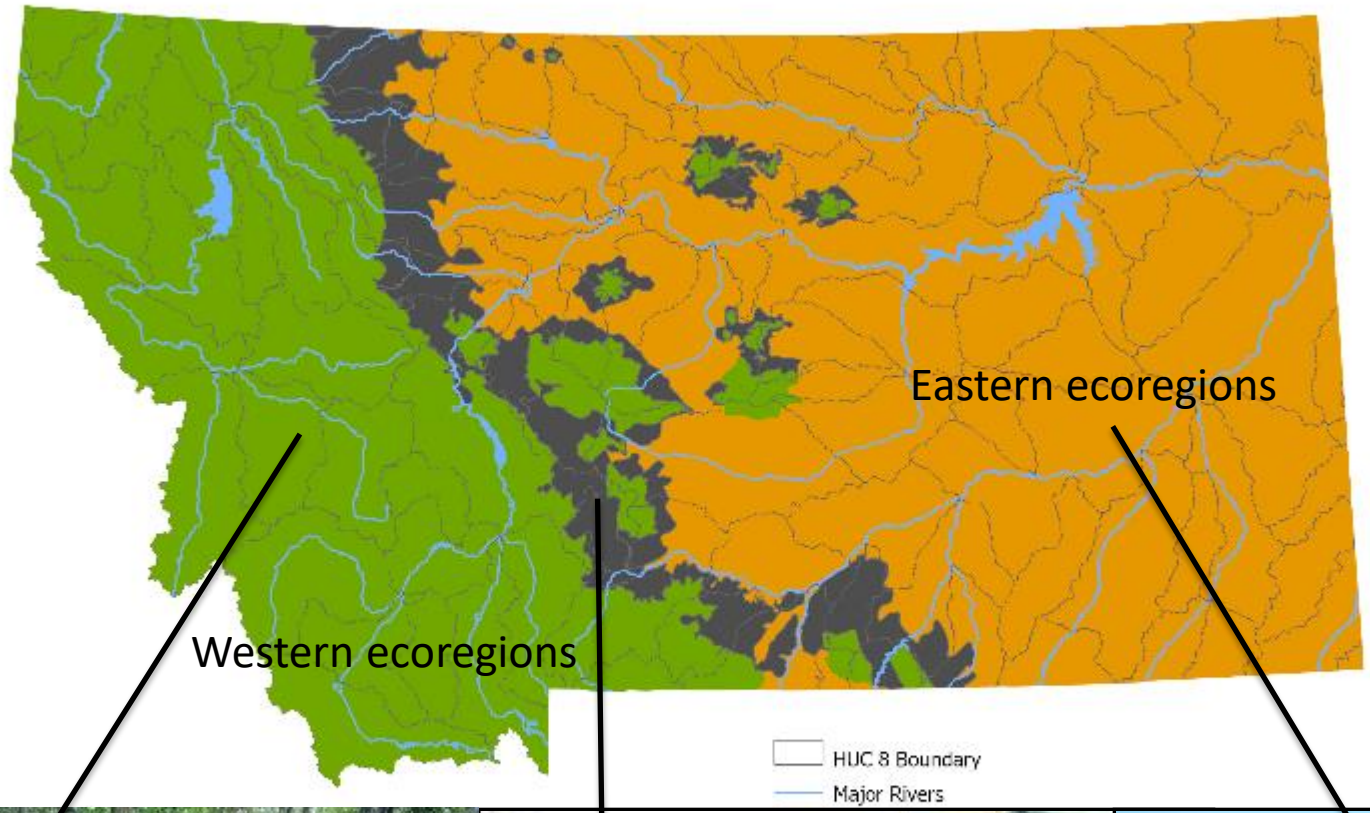
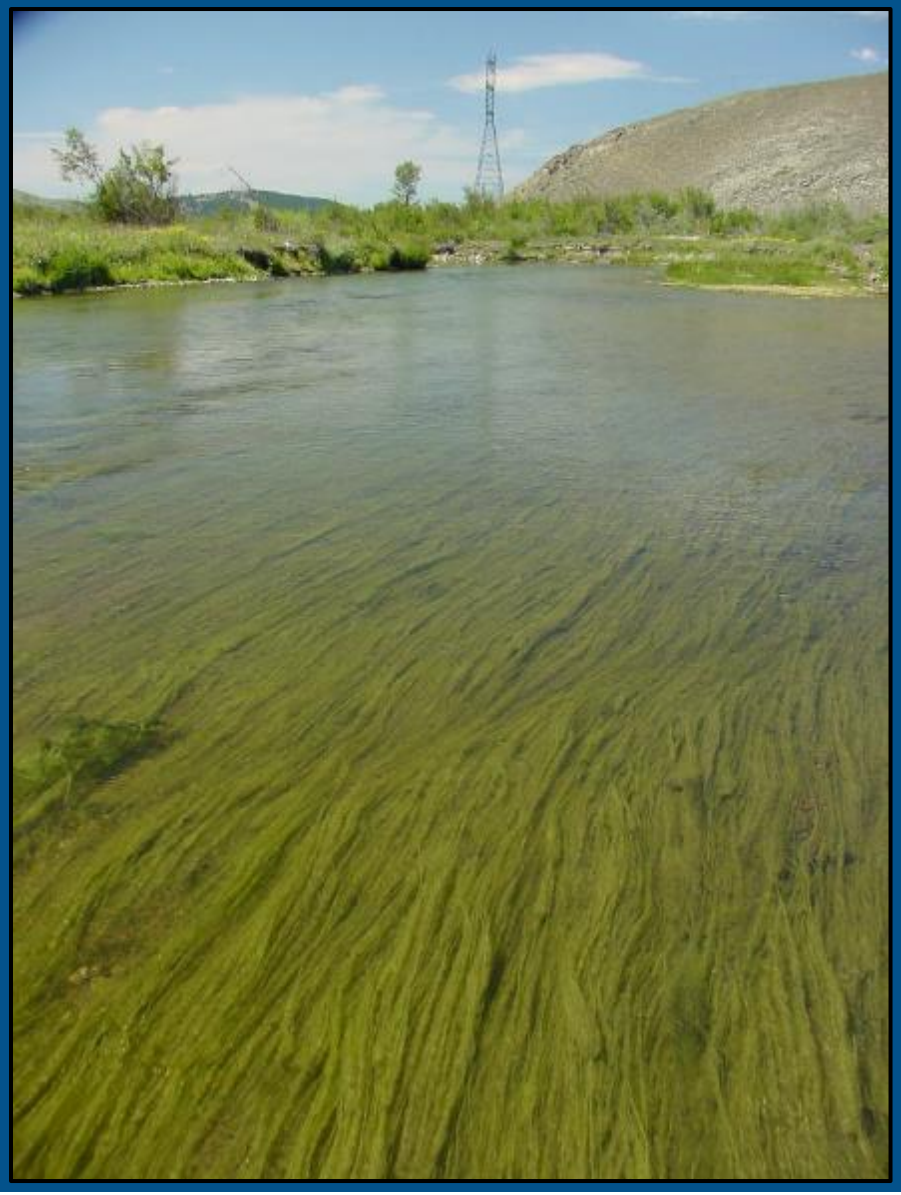
HUC 8 Watersheds and Ecoregions

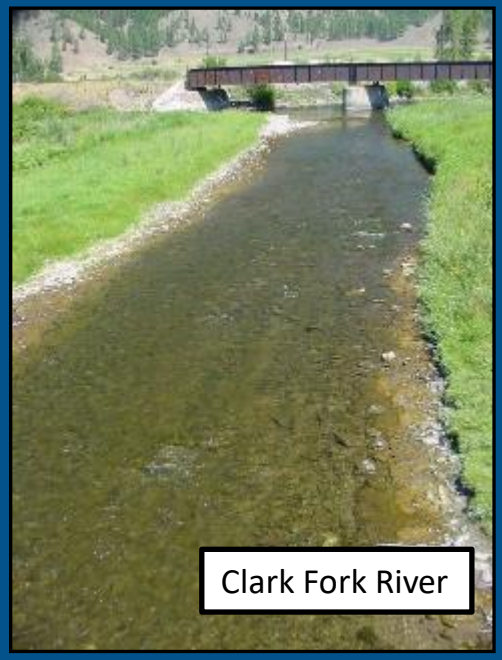




Nuisance algal growth,
Western MT streams/rivers

Attached algae quantified as milligrams of chlorophyll *a* per square meter of streambed (Chl*a*/m^2), AFDW (g/m^2), and % cover

40 mg Chl*a*/m^2
10 g/m^2
~5% bottom cover



120 mg Chl*a*/m^2
~32 g/m^2
~30% cover

300 mg Chl*a*/m^2
~120 g/m^2
>60% cover

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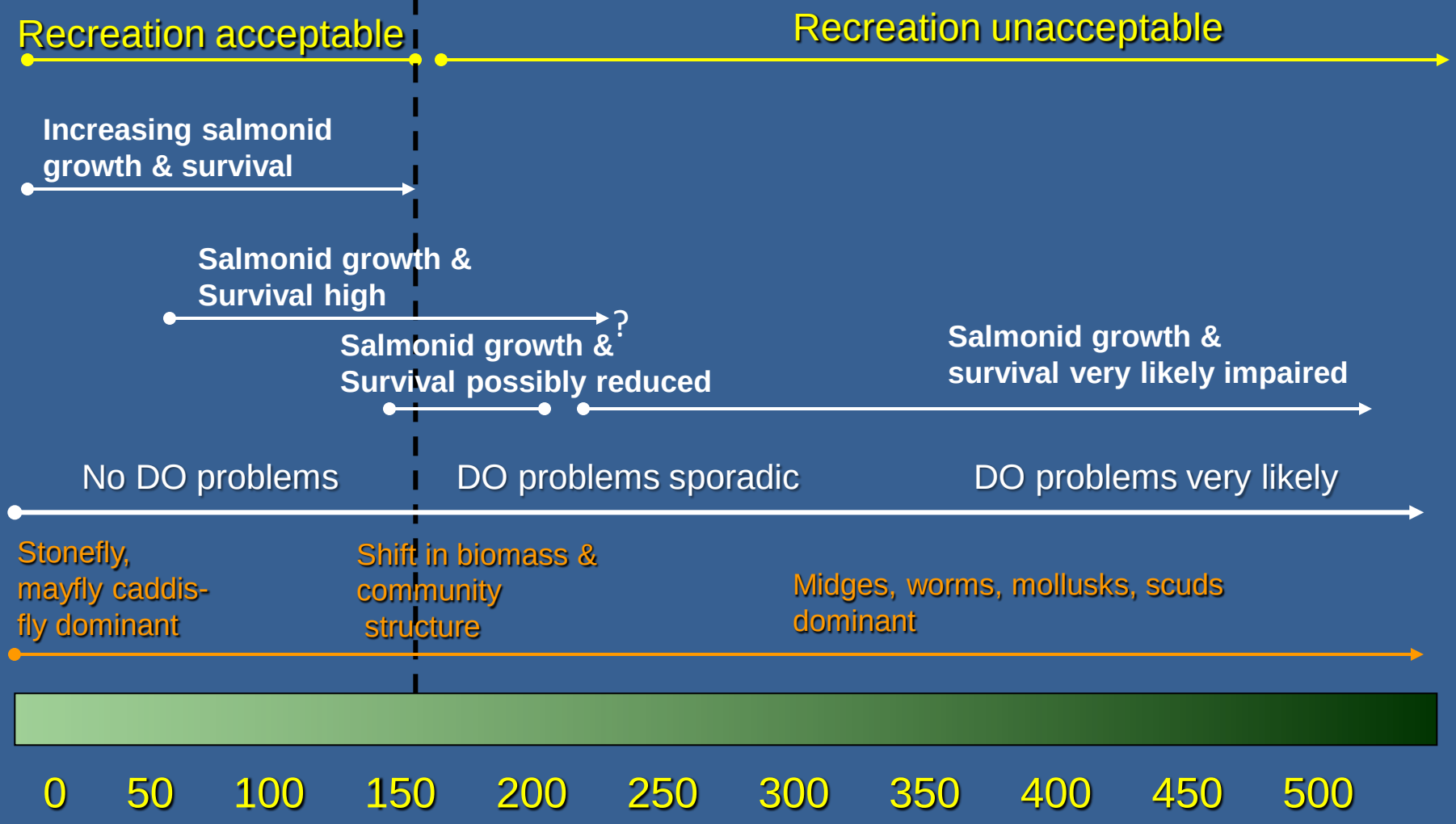
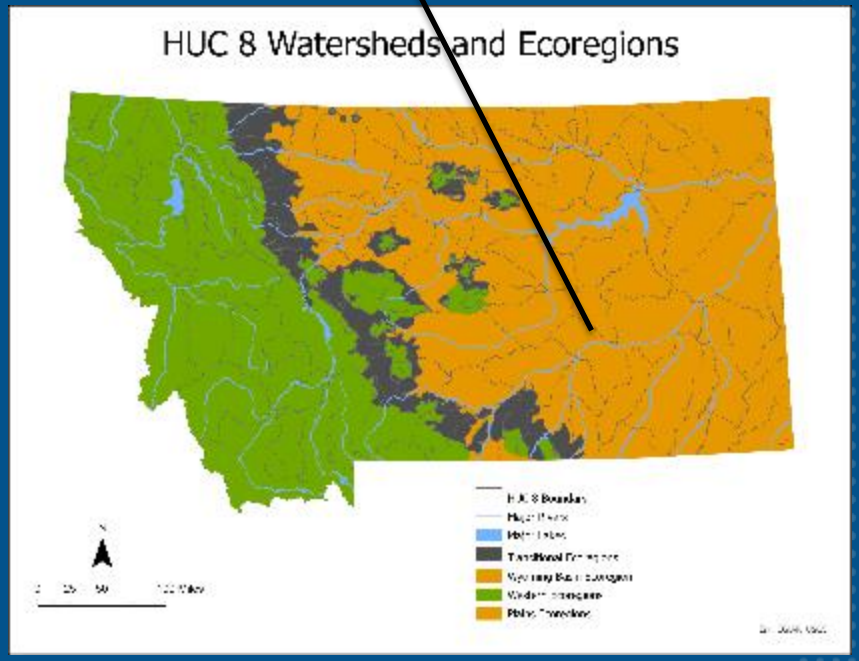
Known or Likely Effects on Wadeable Streams at Different Algae Levels (Western Montana)



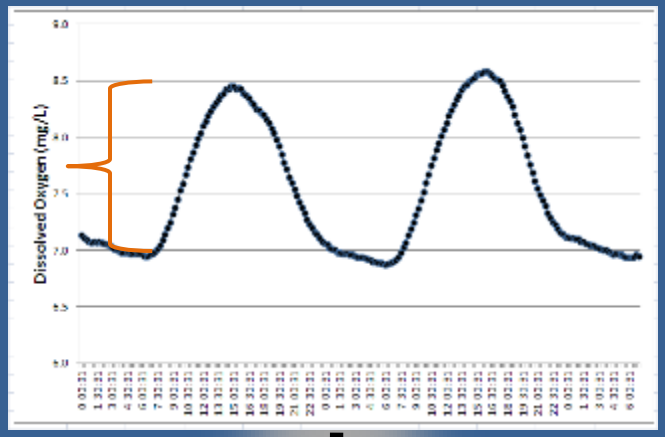
Eastern Montana Wadeable Streams

Recommend Dissolved Oxygen (DO) Delta for this Region



Known or Likely Effects on Wadeable Streams at Different DO Deltas (Eastern Montana)

DO Δ



Diverse fishery including sensitive species (e.g., smallmouth bass, silvery minnow)

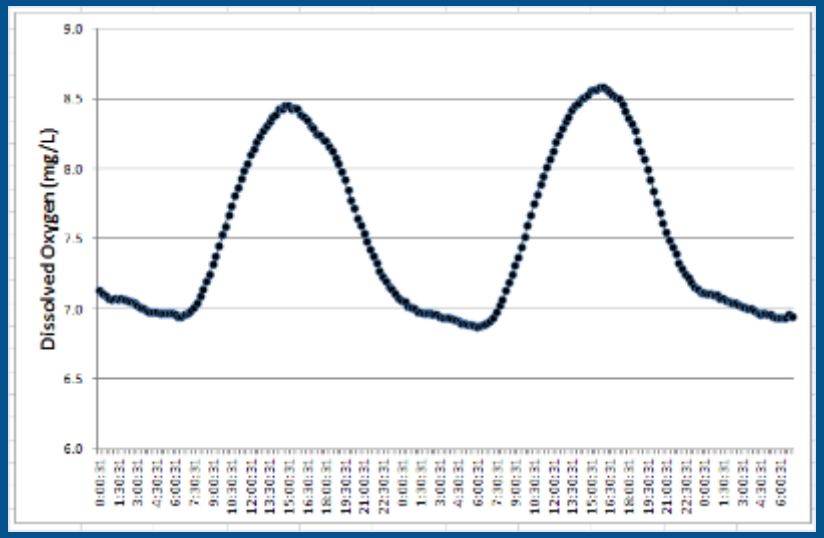
Loss of sensitive species, dominance by tolerant ones (e.g., carp)

No known DO problems

DO below minimum state standards seasonally/episodically

0 2.5 5.0 7.5 10

Dissolved Oxygen Delta (daily MAX – daily MIN)



Small instruments can be used to measure DO, DO Δ, temperature

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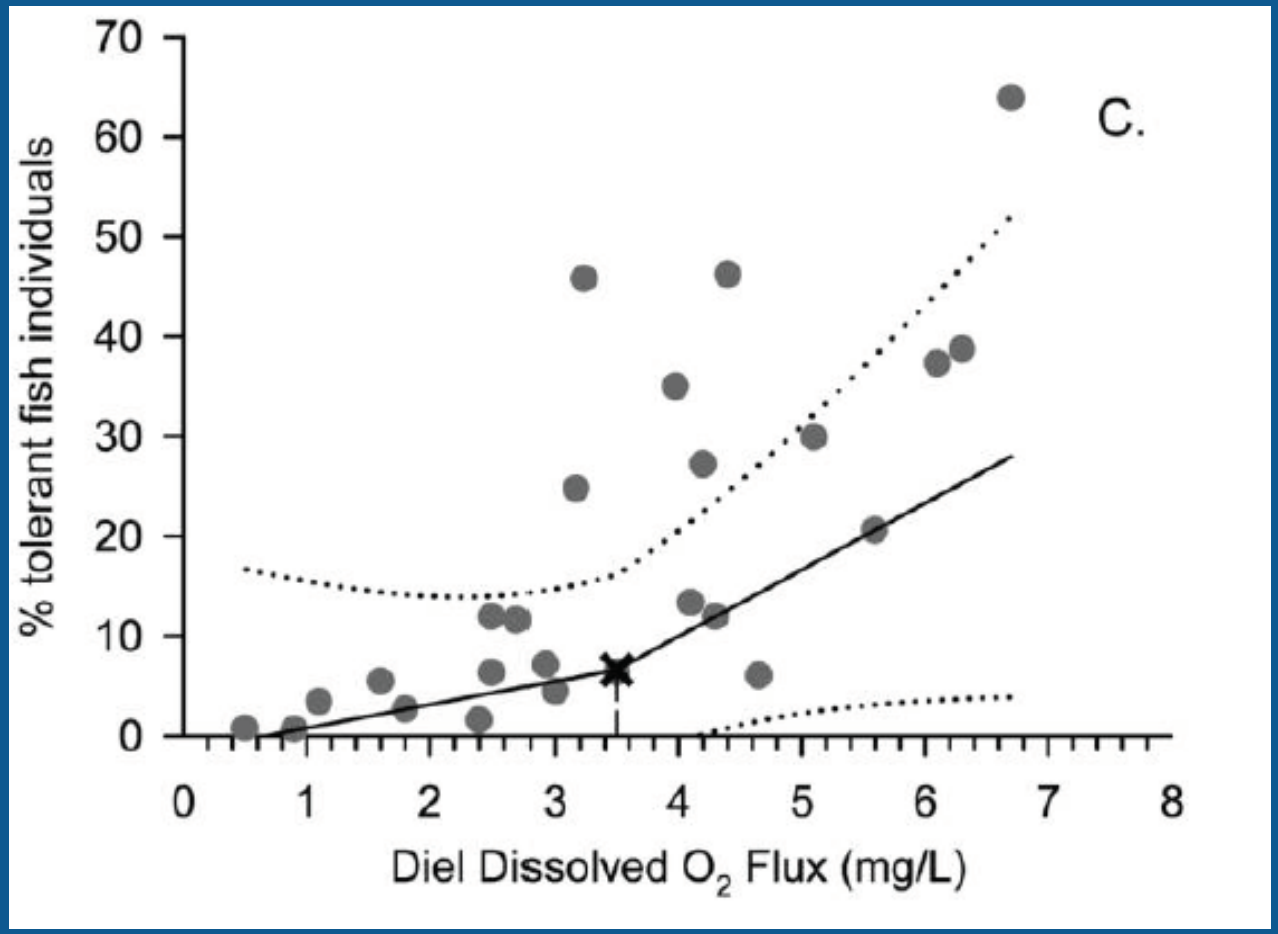


DEQ uses 5.3 mg/L as a threshold; Minnesota adopted 4.5 mg/L for their plains region

Figure from Heiskary and Bouchard (2015), river nutrient study.

Discussion / Questions

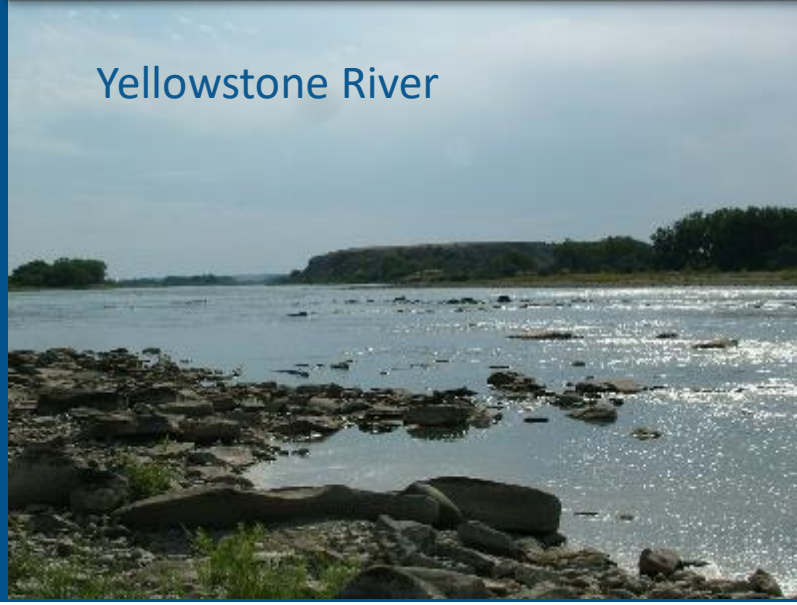
2. Medium Rivers

- Wadeable stream response variables can be used
  - Require sampling method modifications

- Modeling is also a good option
  - Discussed next for large rivers…..

3. Large Rivers

- Drain multiple large watersheds, water quality often different from local streams
- Longer runoff period
- Process nutrients over much longer distances due to deeper depths, higher velocities
- Do not lend themselves to wadeable stream sampling methods
  - Boats sometimes needed
  - Larger deployed instruments
  - Specialized data-collection methods
- Mechanistic water quality models best



Yellowstone River

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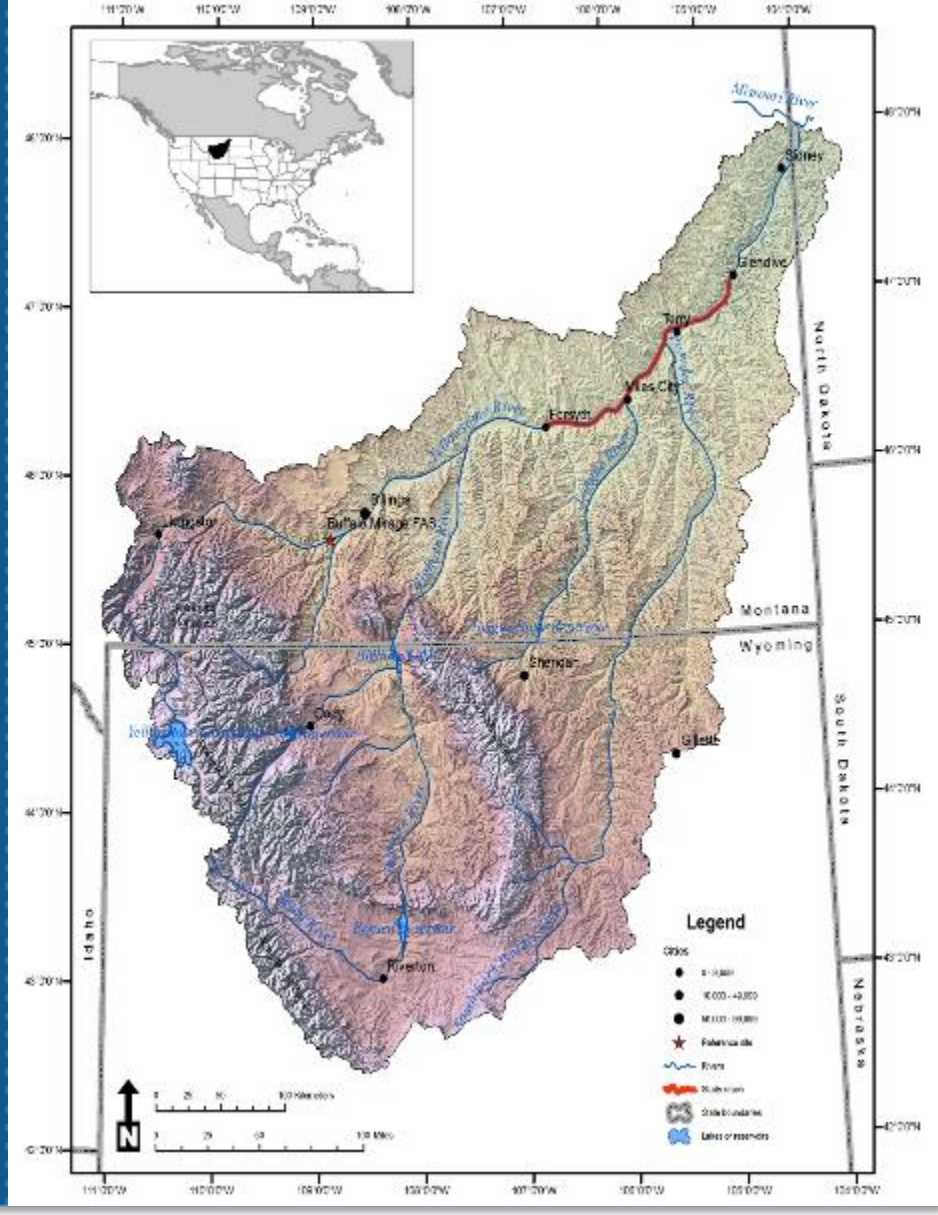
Response Variables Related to Nutrients that can be Modeled in Large Rivers

- Dissolved oxygen concentrations (DO)
- Benthic algal biomass (chlorophyll *a*, AFDW) in near-shore areas
- pH
- Phytoplankton concentrations (relating to DO, turbidity)
- Total organic carbon (drinking water)
- Total dissolved gas (as linked via DO supersaturation)



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Standards Endpoints / Ecological Response Variables

Segment Description	Use Class	Beneficial Uses
Yellowstone River mainstem from the Billings water supply intake to the North Dakota state line	B-3	**Drinking, recreation, non-salmonid fishery and associated aquatic life, waterfowl and furbearers, agricultural and industrial water supply**

<u>Standards for B-3 waters (i.e., lower Yellowstone River):</u>

1. **Dissolved oxygen levels ≥ 5 mg L^{-1} to protect aquatic life and fishery uses (early life stages; DEQ 2012).**

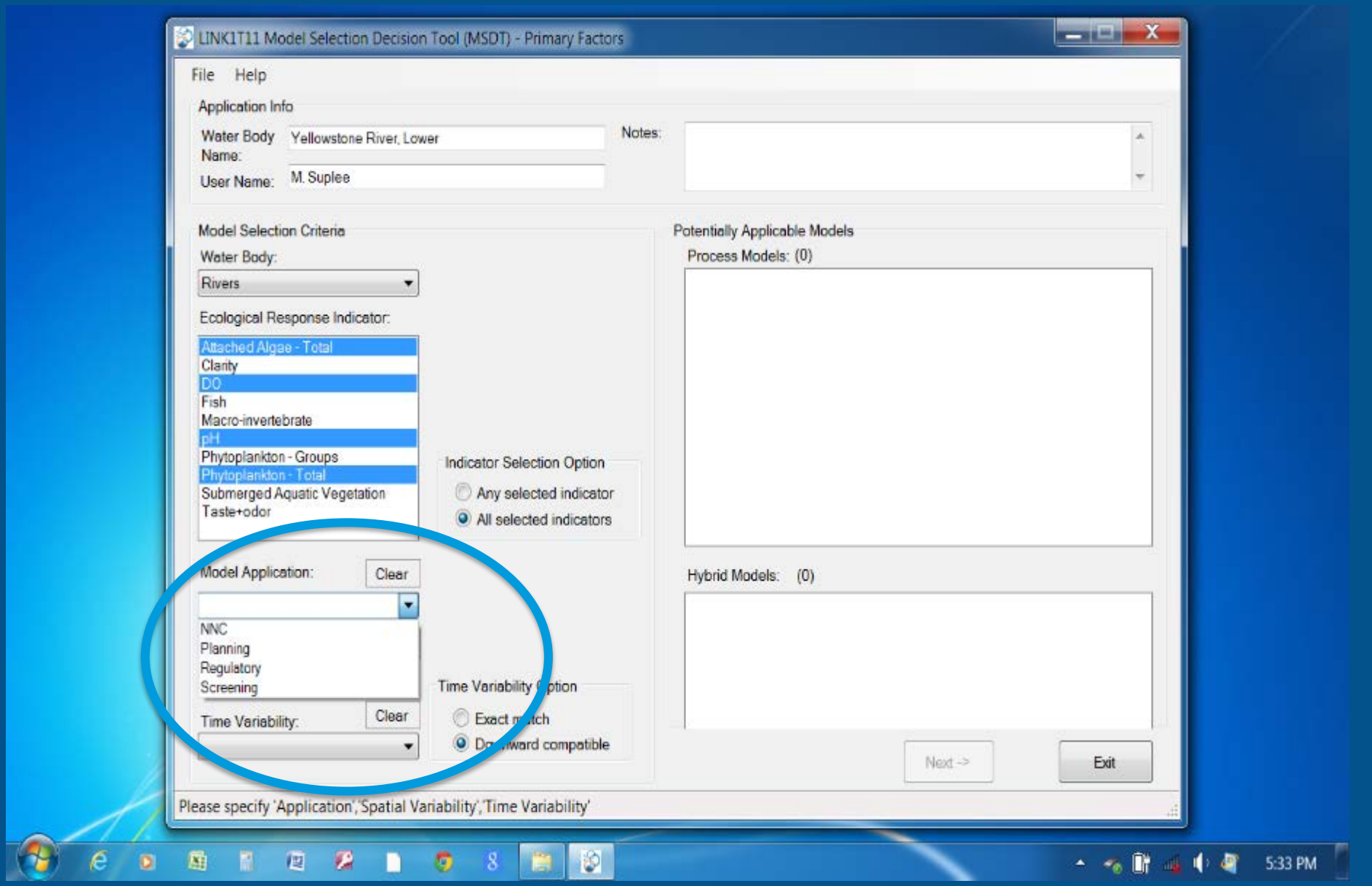
2. **Total dissolved gas levels, which must be ≤ 110% of saturation to protect aquatic life (Circular DEQ-7).**

3. **Induced variation of hydrogen ion concentration (pH), which must be less than 0.5 pH units within the range of 6.5 to 9.0, or without change if natural is outside this range [ARM 17.30.625(2)(c)] to protect aquatic life.**

4. **Turbidity levels, which a maximum increase of 10 nephelometric turbidity units (NTU) is acceptable; except as permitted in 75-5-318, MCA [ARM 17.30.625(2)(d)] to protect aquatic life.**

5. **Benthic algae levels, which DEQ interprets per our narrative standard (ARM 17.30.637(1)(e) should be maintained below a nuisance threshold of 150 mg Chla m^{-2} to protect recreational use.**

Tools are available to help you choose a model



Discussion / Questions

Action Items

Nutrient Work Group Action Items

	Action	Who*	Status
1	Provide documents in advance of NWG meetings	DEQ	On-going
2	Get Microsoft Teams up and running for NWG and TSC members	DEQ	Complete
3	Address the question of nonpoint source participation in the AMP process	DEQ, NWG	Complete
4	Consensus opinion of farming and nonpoint source community on this process and what they think is possible or realistic	Nonpoint source representatives	Comment Noted
5	Add timeframes to the Adaptive Management Program flowchart	DEQ and TSC	On-going
6	Indicate responsibilities for adaptive management program in flow chart	DEQ and TSC	Complete
7	Summarize the process for determining a wadeable stream vs large river	DEQ	Complete
8	Add groundwater to the adaptive management program framework	DEQ and TSC	Complete
9	Summarize and provide training on SOPs for sampling nutrients	DEQ	On-going

*** NWG = Nutrient Work Group, TSC = Technical Subcommittee**

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Technical Subcommittee Action Items

In-Progress Action Items			
#	Action	Who	Status
1	Provide feedback from the TSC about the time component in the flow chart	TSC	In progress
2	Update the flowchart and supporting materials based on TSC feedback	Rainie DeVaney, Mike Suplee	In progress
3	Receive feedback from TSC on time component of each flowchart step.	TSC	In-progress
4	Receive written comments from League	Amanda McInnis	Complete
5	Define what phosphorus prioritization means	DEQ and TSC	Pending
6	Define roles and responsibilities of DEQ and permittees for AMP process	DEQ	In-progress
7	Identify and define what is needed to determine how far upstream and downstream monitoring should occur for a point source	TSC	In-progress
8	Medium rivers definition	Mike Suplee	In-Progress

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Technical Subcommittee Action Items

Complete Action Items			
#	Action	Who	Status
1	Distribute the flowchart and supporting materials to the TSC in a format to provide comments/track changes	Rainie DeVaney, Mike Suplee	Complete
2	Consider other measures that may trigger action (Box 7 of flowchart)	TSC	Complete
3	Clarify in the supporting documents that the narrative standards are those referenced in the Administrative Rules of the Montana of the State of Montana.	Rainie DeVaney, Mike Suplee	Complete
4	Define the overall work for the AMP by the June 23 Nutrient Work Group meeting	TSC	Complete
5	Provide information to the TSC on how to get on the agenda for a future meeting	Rainie DeVaney, Mike Suplee	Complete
6	Schedule two TSC meetings between each Nutrient Work Group	Rainie Devaney, Mike Suplee	Complete
7	Set up Teams TSC collaboration site. Send invite email. Post comments received from TSC members and draft DEQ documents	Moira Davin, Christina Staten	Complete
8	Update AMP definition based on TSC feedback. Share out to TSC.	Rainie DeVaney, Mike Suplee	Complete
9	Decide whether medium sized rivers should be broken out	TSC	Complete
10	Add the draft approach for determining watersheds to Teams for feedback from TSC	Mike Suplee	Complete
11	Reorganize technical subcommittee Teams folders so they are more intuitive	DEQ	Complete

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Public Comment

Public Input

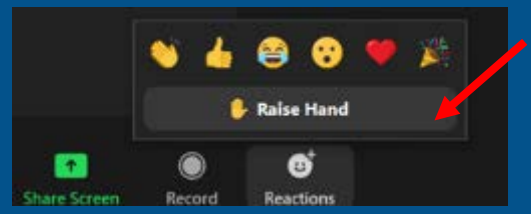
- Future listening session
- Website question submittal button

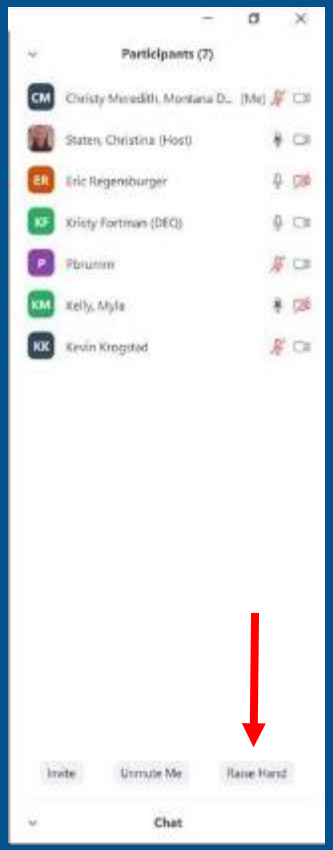
  Deq.mt.gov/water/resources

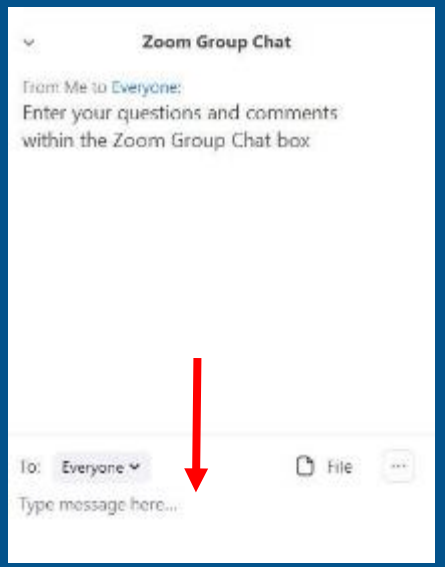
  https://deq.mt.gov/water/resources
- General Questions

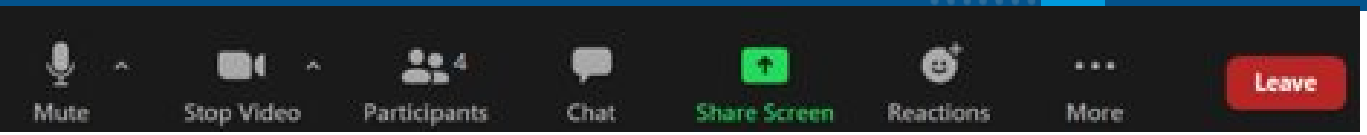
Questions/ Comments

- 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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As Time Allows:

Nonpoint Source Program Overview

Nonpoint Source Program Overview

Partners | stakeholder involvement

Assessments | how streams get listed

TMDLs | data analysis and source assessments

Nonpoint Source Program | plan and process

Implementation | voluntary participation

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Partners

Watershed Advisory Groups

- 75-5-704, MCA
- Partners from assessment through implementation
- Could carry through AMP implementation

- Local conservation districts
- Livestock-oriented agriculture
- Farming-oriented agriculture
- Conservation or environmental interests
- Water-based recreationists
- Forestry industry
- Municipalities
- Affected or potentially affected point source dischargers
- Mining
- Existing local watershed groups
- Federal land management agencies
- State trust land management agencies
- Tourism industry
- Hydroelectric industry, if applicable
- Fishing-related businesses

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Assessments

DEQ's Water Quality Monitoring and Assessment Section assess whether state waters meet water quality standards and support beneficial uses.

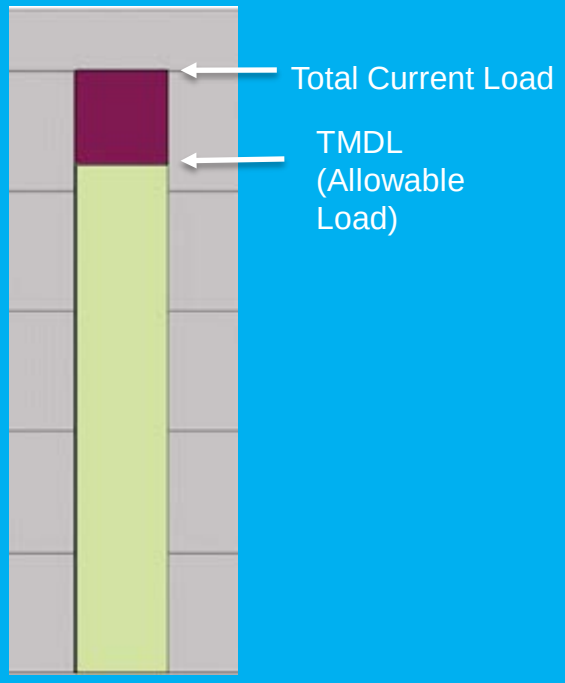
- Pollutant specific
- If listed as impaired for a pollutant, a TMDL is written

TMDL Development

TMDLs address cumulative impacts, incorporating both point (regulated) and nonpoint (non-regulated) sources

How a TMDL is Developed:

- Define the water quality targets
- Define the allowable loading rate
- Determine the sources of pollutant loading
- Allocate to the significant sources
- Develop water quality improvement recommendations



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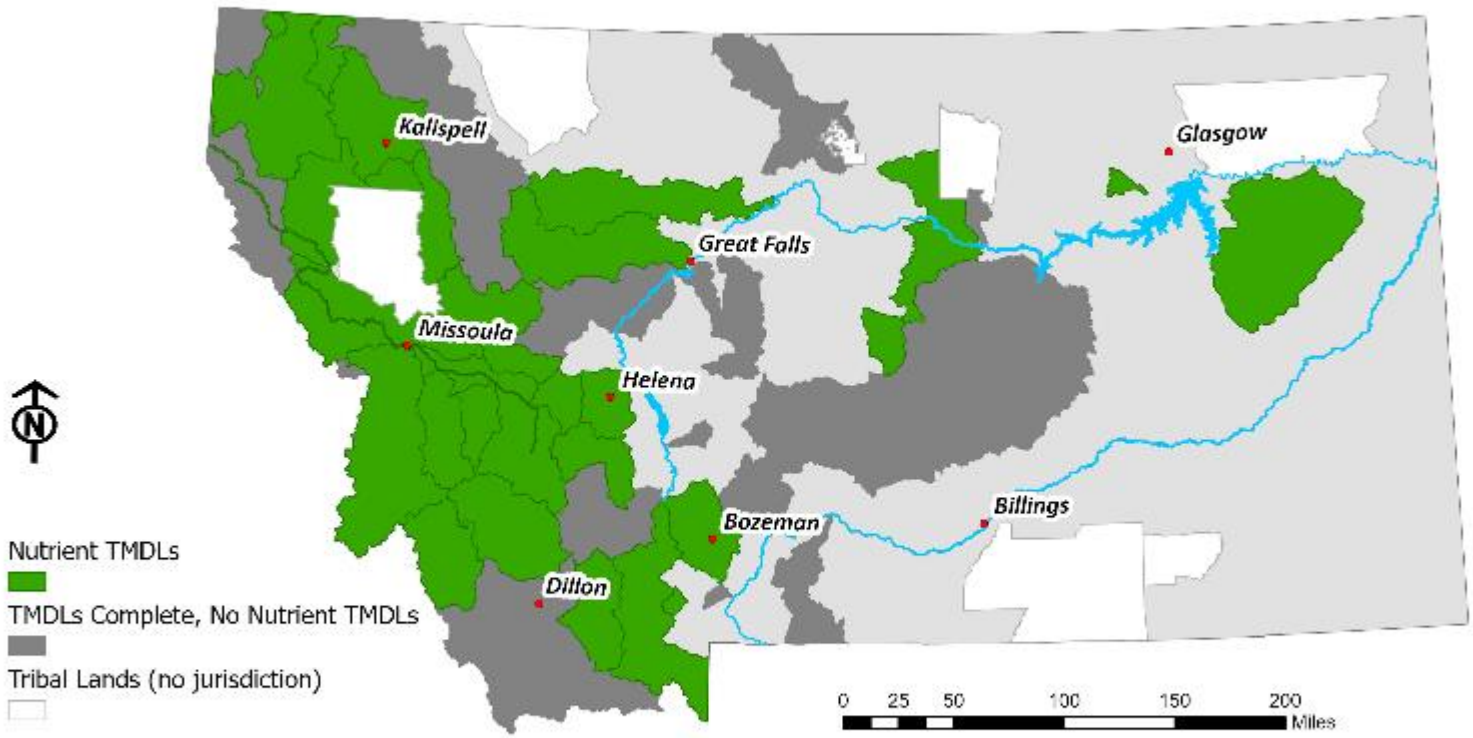
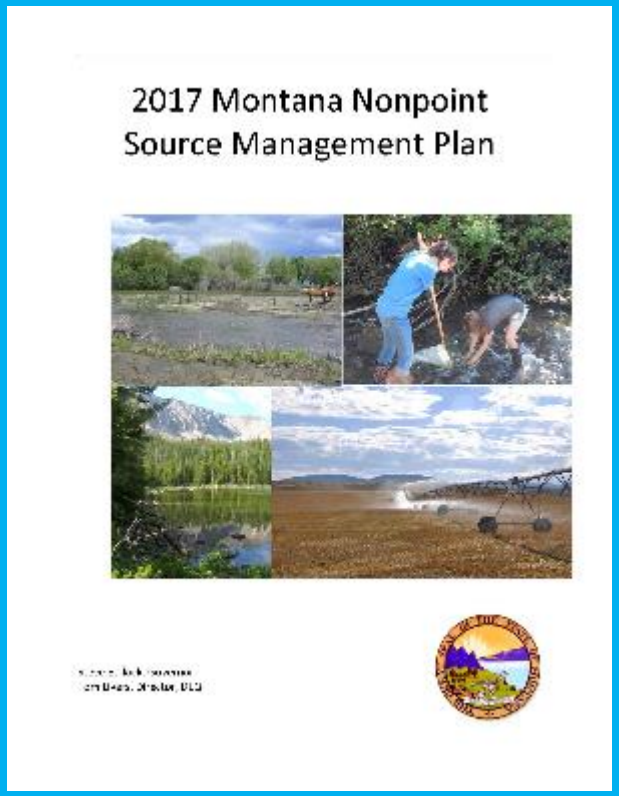
TMDL Project Areas With Nutrient TMDLs



Nonpoint Source Program

Statewide management plan

- Assists watershed groups, CDs, and other organizations to incorporate TMDL information into their watershed restoration plans
- Implement voluntary restoration and protection
- Effectiveness
- Education and outreach — create awareness
- Technical assistance — source identification



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Nonpoint Source Implementation

Funding

- 319 — Limited funding (~1 million a year)
- Funds roughly 5-10 restoration projects
- Average project costs for recent contracts per streambank mile range from $50,000 for small streams to $1,000,000 on medium/large streams/rivers
- Funding partners — Grant working group

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Summary

- TMDLs with nutrient source assessments may be complete
- Stakeholder lists may be available
- Partnerships may be in place
- Watershed Restroation Plans may be complete or in-progress
- A DEQ AMP Coordinator will be available

https://deq.mt.gov/water/Programs/sw

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Next Meetings & Public Comment

DEQ MONTANA

Next Meeting

- Wednesday, August 25 from 9 – 11 a.m.
- Next meeting topics:
  - Wrap-up from today's meeting
  - Outstanding questions
  - Point source long-term nutrient targets
- Technical Subcommittee meeting
  - Tuesday, August 3 from 1:30 – 3:30 pm

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Thanks for Joining Us

Contact:
Galen Steffens
Galen.Steffens2@mt.gov

To submit comments or questions

Submit Comments or Questions

http://deq.mt.gov/water/resources

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