

NOTES

Phosphorus Loading Subgroup

Friday, January 24, 2020

10:00 am – 12:00 pm

Dane County Building, 5201 Fen Oak Drive, Room 208

Members: Matt Diebel, Laura Good, Dale Robertson, Dick Lathrop, Paul Dearlove, Mark Riedel, Jake Vander Zanden, Greg Fries, Todd Stuntebeck, Kyle Minks

Lead/Spokesperson: Matt Diebel

Recorder: Paul Dearlove

Charge: From 12/6/19 Steering Team Notes: *“The group [will] focus on the biophysical side of the issue, and not social impacts. It would address questions such as: How does the system work? What kind of lake responses can we expect with different [phosphorus] reduction scenarios? What models and assumptions should we be using? The process will start with a system inventory and focus on the science and technical aspects of the problem. The subgroup would not get into the recommendation of specific strategies.”*

Attendance: Matt Diebel, Laura Ward Good, Dale Robertson, Dick Lathrop, Paul Dearlove, Mike Sorge (for Mark Riedel), Jake Vander Zanden, Greg Fries, Dave Merritt, Todd Stuntebeck, Kyle Minks

Specific request(s) from Steering Team or Executive Committee:

Define the charge and recommended membership of the subgroup, and assign follow-up tasks as they relate to assessing phosphorus loads and developing reduction targets.

Recommendations/Proposals:

- The subgroup will summarize existing knowledge and prioritize further work based on the following objectives:
 1. **Evaluate the effects of phosphorus (P) loading on lake water quality.**

NOTES: The purpose of this objective is to assess lake-response scenarios for purposes of setting P-reduction targets. While P is the current focus, it is recognized that nitrogen is also of concern when it comes to cyanobacteria blooms and changes in algal communities. Maintaining a focus on P builds on prior efforts by targeting the primary driver of poor lake conditions. It also represents a pollutant that affords a higher level of potential control through management action and Clean Water Act permitting tools.
 2. **Estimate P loads to the lakes.**

NOTES: The purpose of this objective is to characterize the current and historic P loads in terms of sources and relative amounts. Prior estimates came from modeling and in-lake P concentration data. The strengths and weaknesses of the models will be evaluated, including how well they estimate loadings from different sources. In addition, consideration will be given to the watershed-scale mass balance of P, particularly how this balance relates to P loading to the lakes and potential lags in response to changes in management practices.

3. Estimate management effects on P loading.

NOTES: This objective seeks to refine methodologies used to estimate P reductions associated with any given practice, project, or strategy that may be recommended, including methods for estimating P delivery from the locations where practices are implemented to the lakes. These methodologies will be used to track progress toward P-reduction targets. It is recognized that “progress” can and should be evaluated in multiple ways. These include the nature and extent of practices implemented and their associated P-reduction impacts, changes in measured P loading to the lakes as measured through stream gaging, and in-lake metrics (P concentrations, clarity, etc.). While measured in-lake conditions and stream gage data are ultimately the determinant of whether or not any effort is successful, they are also associated with high inter-annual variability due to weather and other factors. This is why efforts to track and report practices and their potential phosphorus-reduction impacts will continue to be important. The group felt this is probably the most important objective, and that we should spend most of our time here.

4. Recommend a means for completing the work priorities identified by the subgroup.

NOTES: This objective recognizes that the needed data wrangling, modeling and analysis is likely to require a sharing of work between subgroup members and paid consultants. The subgroup will identify what work needs to be completed, as well as who is most qualified and/or in a position to best complete those tasks within desired time frames. Whenever consultants are recommended, the subgroup will help scope out the work and guide the development of any related Requests for Proposals.

Action items:

- Subgroup members decided to try to meet every three weeks to monthly going forward. The group estimated it would take two months to determine consultant needs, and that it could take until the end of the year to complete all the work.
- **Next meeting:** 1:30-3:30 on Thursday, February 13th at the Dane County building.
- **Next meeting agenda:** Identify where/how the work will get done to meet stated objectives. Need to think about what data we have and how we account for recent climate variability. It was noted that we only have really good loading data to Lake Mendota since 2013, and that zebra mussel impacts are a recent phenomenon. Need to eventually be able to explain why we're seeing today's lake conditions given all the project work that's being done.

- Todd Stuntebeck will attempt to recreate P-loading history back to the 1990s. He will start assembling numbers on magnitudes, timing, speciation, etc. for gaged tributaries.
- Matt Diebel will take the Yahara CLEAN 2.0 document and do an accounting of how management effectiveness is determined (delivery factors, etc.).
- Dick Lathrop will summarize the history of in-lake water quality.

Supplementary notes:

- In-scope: Assess P loads and what lake responses we can expect with different load reductions. Describe how the system works using existing data and knowledge. Provide guidance on how to clearly and effectively communicate goals and annual progress to the public.
- Out-of-scope: Setting the overall goal and coming up with the actual management strategies to get there.
- Gauging lake response based on different P-loading scenarios will be difficult given the impacts of daphnia grazing, zebra mussels, and other biological changes that are not yet well understood and may not have reached a new equilibrium.
- Don't want to reinvent the wheel or "promise" a certain lake response. The group will review what's known and make proposals on priority topics to address. It can also provide guidance on how needed reductions might be accomplished, how, and over what time frame.
- Messaging to-date is based on the need for a 50% load reduction (compared to the 1976-2008 annual average) in order to reach drought-load levels represented in pounds. While according to practice accounting we're making process toward the goal, loads are increasing which is causing a messaging problem. Speaking in terms of pounds and percent reductions continues to cause confusion among the public.
- Everything we've done to-date to estimate P loading is with respect to total phosphorus (TP). However, 60% of the early spring loading is dissolved P, and annually it's closer to 40%. We need to start looking beyond soil erosion which is where most of past efforts have been focused and where most of our progress has been made. We may need an explicit objective to focus more on dissolved P.