

# NOTES

## Phosphorus Loading Subgroup

Thursday, January 28, 2021

10:00-12:00

Virtual Meeting

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**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 will 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 will not get into the recommendation of specific strategies.”*

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**1/28/21 Meeting Attendance:** Matt Diebel, Dick Lathrop, Paul Dearlove, Kyle Minks, Dale Robertson, Laura Good, Todd Stuntebeck, Mark Riedel, Greg Fries, Dave Merritt, Jake Vander Zanden

### Meeting Objective

Review and discuss metrics used to gauge lake health and progress toward goals. Those metrics can be broken down into three categories:

1. Landscape (i.e., phosphorus reductions from practice implementation)
2. In-Stream (i.e. phosphorus concentrations and loads)
3. In-Lake (i.e., phosphorus concentrations and loads, clarity, cyanobacteria bloom frequency, beach closures)

### Presentation

Dearlove presented an overview of the State of the Lakes reporting process. The overview included a high-level description of the methodology used to annually track, calculate, and publicly communicate P-reduction progress by implementation partners. Highlights:

- The State of the Lakes is used to distill a lot of complex scientific and technical data related to the lakes so it is consumable by the general public.
- Major objectives: 1) communicate our community’s progress in carrying out the 14 action priorities outlined in CLEAN 2.0; 2) recognize significant partner efforts

- occurring around the watershed; and 3) help general audiences understand the science behind changes in water quality conditions.
- Primary focus is on phosphorus, but also speaks to other lake-quality metrics, such as water clarity and beach-closure information related to *E. coli* and cyanobacteria. Tries to communicate linkages between what is happening on the landscape with what we might be experiencing in our lakes and streams.
  - Annual project and water quality information is gathered from a number of sources, such as UW Center for Limnology, municipal partners, Public Health, Dane County, USGS, and Yahara Pride Farms – among others. These partners are also credited for performing a lot of the data analysis and interpretation.
  - Differs from Adaptive Management progress reporting via Yahara WINS in at least two major ways. The State of the Lakes focuses on the Yahara “Lakes” Watershed (upper stream reaches of the Yahara “River” Watershed, and applies “delivery factors” to reported practice performance. Delivery factors are used to credit only those estimated, upstream phosphorus reductions that have the potential to actually impact the lakes.
  - In-lake condition assessments ranging from “poor” to “excellent” follow DNR’s WISCALM guidance based on the type and characteristics of each lake in the chain. Summer median clarity and phosphorus concentrations are used as the primary Trophic State Index (TSI) metrics.

## Discussion

- A point was raised that Lake Mendota should be classified as a two-story fishery due to the historic presence of cisco. Two-story fishery lakes have a lower phosphorus criterion than deep drainage lakes, which is the current classification. It was noted that Wisconsin DNR would not remove a lake from the 303(d) impaired waters list for phosphorus improvements alone. Rather, the lake would need to attain all of its designated uses to be delisted.
- Positive feedback received on the areas of progress reporting that involve landscape, in-stream, and in-lake metrics. Landscape and in-stream metrics relate more directly to actions, while in-lake metrics start to tell the more complicated story about how the lakes are responding to those actions among other variables. Recommendation to focus on measuring changes in P concentrations and loadings in streams since they tie best to eventual changes in in-lake conditions.
- Concern expressed about “valuing” P reductions by individual Best Management Practices (BMPs) for progress-reporting purposes. Suggestion to instead use a relative point system. P numbers can then be used to describe what we do and how practice decisions are made, but not to communicate overall lake-cleanup progress.
- For agricultural portions of the watershed, changes in the average Phosphorus Index (PI) over time might be a useful metric. Dane County has a good enough sample size of farms with PI information to make this a practical consideration. However, the effects of structural

practices, such as barnyard runoff controls, are not reflected in the PI. There is also a strong disconnect between what we see in a PI and what we see in the lakes or in-stream water quality. Dissolved P loss can be differentiated from total P loss in the PI, but this information is only available in nutrient management plans (NMPs) submitted as SnapPlus files, which is only a subset of plans. Also, NMPs are plans and do not necessarily represent actual conditions or observed outputs.

- Concern was expressed about pounds of phosphorus reduced on the landscape not being a realistic indicator of corresponding changes in the lakes. Using a relative point system associated with generic BMP categories may be a better approach. That said, it was noted that phosphorus tracking is still happening and will continue to happen as required in stormwater permits. Phosphorus-reduction progress by practice will also continue to be tracked and messaged by Yahara WINS.
- The metrics communicated to tell the story will need to resonate with our CLEAN 3.0 audiences. Any metrics, once determined, can potentially be communicated through a dashboard that relates each metric to the particular stakeholder group. Updated understandings we should communicate include: 1) practices we know are having an impact; and 2) the relative importance of the late-winter and early-spring loading period.
- There are no monitoring data characterizing what is getting into the lower lakes through direct drainage areas. This is important since we may need to look at outflow volumes and concentrations to better evaluate loads from those areas. Also related to monitoring, urban SLAMM outputs are not comparable to agricultural numbers like PIs, creating messaging challenges. The value of SLAMM numbers was questioned as it relates to this effort.
- We will need to address or recognize the fact that internal loading (phosphorus recycling from the sediment) is also playing a role. Internal loading is more important in the short-term because phosphorus is either flushed out of the system or gets bound to the sediment. The speed with which the lakes respond to low-runoff drought conditions is evidence of the short-term effect of internal loading.
- Points of consensus around metrics and related progress messaging: Audience is important; keep it simple; and multiple metrics will likely be necessary
- Two new concepts that will affect BMP selection are: targeting practices to locations where a large fraction of runoff is delivered to the lakes, and emphasizing practices that limit P loading during late winter and early spring, when the majority of P is delivered to the lakes.
- Preferred messaging vehicles: State of the Lakes (#1 method); and an interactive web dashboard. The dashboard allows for multiple layers of information and reporting. Challenge is in integrating data coming from multiple sources.