

NOTES

Phosphorus Loading Subgroup

Thursday, February 18, 2021

10:00-12:00

Virtual Meeting

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.”*

2/18/21 Meeting Attendance: Matt Diebel, Dick Lathrop, Paul Dearlove, Kyle Minks, Dale Robertson (arrived late), Laura Good, Todd Stuntebeck, Greg Fries, Dave Merritt, Jake Vander Zanden

Meeting Objectives

- Assessment of effectiveness of actions to date
- Recommended actions, including what is needed to accomplish them

Discussion Highlights

- March 5th is the delivery date to SmithGroup on the subgroup’s key conclusions and recommendations
- **Reflections from Diebel’s presentation to the Steering Team last week:**
 - The presentation indicated that 43% of the annual P load (Yahara @ Windsor gaging station) is occurring Feb-Apr. Lathrop made the case that Jan-Mar is probably a better time period to use since that is more representative of the frozen ground period when runoff represents the biggest problem. Prefers we use the analysis he did last September from data provided by Stuntebeck. He offered to provide high-resolution files to Diebel so the figures can be used in the report.
 - Diebel: Good with using the Jan-Mar time frame as a quarterly period of focus. This raises the percentage from 43% to 55% of annual loading into Lake Mendota (Note: most of the runoff-driven P loading happens in February)

and March). That will help keep the Compact's focus on finding practices that address runoff and the movement of dissolved P during that frozen ground period. Main message is still the same: runoff on frozen ground is contributing the largest share of the total annual loading.

- The map showing watershed areas that are not as hydrologically connected to the lakes sparked a lot of interest and commentary at the meeting. This idea of being able to target efforts and resources to where they will have the biggest impact was well received.
- Landowner incentives are currently based on voluntary signups. Internally-drained depressional areas do not necessarily line up with field boundaries or operations. This presents challenges when trying to match financial incentives with identified hotspots.
- Perhaps ways can be found to sweeten the incentive pot for lands that intersect these more critical areas.
- We can take this modeling and mapping outputs to the farmers and ask them directly what it might take to get practices applied to these areas.
- We will want to start looking beyond the traditional, farm-conservation practices that address soil erosion but not dissolved P (i.e., runoff stay-on requirements for development – see page 9 of [Dane County's TAC report](#)).
- **Criteria/priorities for strategies are:**
 - Reduce sources of P (mass balance) – highest priority
 - Reduce runoff volumes through infiltration and storage
 - Emphasize strategies that are functional during the frozen-ground period (*Note: More focus has to be on controlling dissolved P, but particulate-P contributions from fine-textured soil is still important during this period*)
 - Target areas that are the most hydrologically connected to the lakes
 - Target areas that have high soil P
 - Continue promoting and implementing traditional conservation practices that are working (*Note: Most of the 14 priority actions in CLEAN 2.0 are still valid and should continue to be promoted. What matters most is where these practices get located on the landscape.*)
 - Increase portion of landscape covered by year-round vegetation (*Note: Recommendation is dependent on the type of vegetation and how it is managed so it does not act as a source of P during die-off and decay*)
 - Emphasize strategies that yield benefits that are ancillary to P control (i.e., improves soil health)
- **Public messaging, future research, and incentive models:**
 - If someone asks how CLEAN 3.0 is different than CLEAN 2.0, the concise response is that we are moving more toward practices that: 1) address this winter P loading issue, and 2) are targeted to areas where they will make the biggest difference. A cost-share funding auction may be one way to get traction on these priorities.
 - Move past a detailed P-accounting system that can give the perception of progress that may not be happening.

- Using the standard toolbox of practices is not going to be enough. We need to take a big swing for the fence if there is hope of making a big difference.
- There are future research needs to communicate. Messaging the relationships between what is happening on the landscape and how that is likely influencing first what we are seeing in the streams and then in the lakes is important. Some of these connections are well understood, and others less so.
 - The Dorn Creek subwatershed is a potential BMP-demonstration area since it is gaged, relatively small in area, and has high P loading and runoff with a downstream wetland. (Counterpoint: the reason Dane County did Suck the Muck project is because the low-hanging fruit had already been picked in that subwatershed when it came to practice implementation).
 - The Pheasant Branch Creek subwatershed has seen a lot of success. The Confluence Pond (built in 2002) is probably a contributing factor, but a lot of the observed load reductions began happening in the late 1990s. Development started happening in early 90's which paved over high-P soils and led to the addition of stormwater ponds to capture and treat runoff.
 - A significant change in land use has been shown to significantly impact water quality (like removing livestock or going to perennial cover). Q: Does Dane County have the digester capacity and manure storage to be able to keep manure off the landscape? A: Manure is only being held in storage at the digester for 30 days before it gets processed and reused on the fields.
- Q: What is the feasibility of the Pay for Performance model to incentivize more farmland conservation practices? A: This concept is gaining interest in the ag community. It has potential but is administratively complex to implement. Using a third-party broker may be able to bring new adopters to the effort, but the ask is pretty steep in terms of reducing the Phosphorus Index (PI).

High-level concepts to convey to SmithGroup:

- Is there value in recommending a subwatershed demonstration pilot to test the implementation effectiveness of specific actions? This can be pitched as targeted implementation rather than just a future research request.
- Remove "harvest wetland plants" from the original 14 actions due to low potential for implementation and limited impact on predicted P-loading control.
- Somehow lump digesters, nutrient management systems, and manure/nutrient management action priorities into an interrelated category.
- Add a column to the 14-actions table that gives the "present-condition load" to the lakes that we can compare to today's reduction progress.
- There is continued value in tracking lbs. of P, but we should communicate that it doesn't directly correspond to in-stream loading.
- The 2010 SWAT analysis looked at converting all ag to perennial cover in the upper watershed. It showed it would still take many decades to attain the desired water quality changes because of slow drawdown of soil P.