
To: Josh Griffin, Ohio EPA; Julianne Socha, USEPA

Cc: Paul Gledhill, Ohio EPA; Melinda Harris, Ohio EPA; Kirk Hines, ODA; Tiffani Kavalec, Ohio EPA; Christina Kuchle, ODNR; Matt Lane, ODA; Eric Saas, ODNR

From: Kevin Kratt (author); Barry Toning and Meg Moosa (reviewers)

Date: April 7, 2022

Subject: Notes for March 29, 2022 Stakeholder Meetings

Notes from the two outreach events are compiled herein:

- **Section 1.0:** Ohio Northern University (March 29, 2022; afternoon)
- **Section 2.0:** Bowling Green State University (March 29, 2022; evening)

The notes focus on the questions asked by attendees and the responses from the agency personnel. Abbreviation and acronyms used throughout the stakeholder meetings are listed below.

Abbreviations and Acronyms

BMP	best management practice
CFS	cubic feet per second
CSO	combined sewer overflow
DRP	dissolved reactive phosphorus
HSTS	household sewage treatment system
HUC	hydrologic unit code
HUC12	12-digit hydrologic unit code that represents a 6 th level hydrologic unit (“subwatershed”)
I/I	inflow and infiltration
LEARN	Lake Erie Aquatic and Research Network
ODA	Ohio Department of Agriculture
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
NMP	Nutrient Management Plan
NPDES	National Pollutant Discharge Elimination System
P	Phosphorus
PMR	Preliminary Modeling Results (for the Maumee River Watershed Nutrient TMDL)
POTW	publicly owned treatment works

SSO	sanitary sewer overflow
SWAT	Soil and Water Assessment Tool [watershed model]
SWCD	Soil and Water Conservation District
TMACOG	Toledo Metropolitan Area Council of Governments
TMDL	total maximum daily load
TP	total phosphorus

1.0 STAKEHOLDER MEETING AT OHIO NORTHERN UNIVERSITY

During the stakeholder meeting in the afternoon of March 29, 2022, presentations were made by the following individuals:

- Josh Griffin, Ohio EPA, PMR Management Choices
- Matt Lane, ODA, Source Assessment Updates
- Josh Griffin, Ohio EPA, Climate and Weather Impacts
- Christina Kuchle, ODNR, Exploration of Implementation Options
- Josh Griffin, Ohio EPA, What Can TMDLs Do?

Attendees were given the opportunity to ask questions during and after each presentation and the following notes capture those questions and the associated answers.

1.1 PMR MANAGEMENT CHOICES

There were no questions following this presentation.

1.2 SOURCE ASSESSMENT UPDATES

Attendee: Are the estimated number of cattle units for the Maumee River watershed based only on permitted facilities or do they include non-permitted facilities?

ODA: They represent all cattle whether they are regulated under either the Division of Livestock Environmental Permitting or the Division of Soil and Water Conservation.

Attendee: Are the animal numbers for a specific date or are they averages for the entire year?

ODA: They represent a particular date and might be overestimated because ODA permits for a total capacity of animals and the producer might not always have that many animals. These estimates are considered useful for assessing long-term trends, but have some error associated with them for reasons such as this.

Attendee: How accurate do you think these estimates are?

- ODA: The Environmental Working Group estimated the number of animals in the watershed using aerial imagery that counted the number of barns and made assumptions about the number of animals based on the square footage of each facility. These estimates were within 20% of ours.
- Attendee: Were there algal problems in Lake Erie before 2002 when livestock numbers were about as high as they are now? Are you trying to make the case that the increase in animal numbers is leading to the recent problems in Lake Erie?
- ODA: Conditions in Lake Erie before 2002 were not as bad as they are now and I am not trying to make the case that the increase in animal numbers is leading to the recent problems in Lake Erie.
- Ohio EPA: Ohio EPA asked ODA to present this information on the number of animals in the watershed because we have gotten a lot of questions from the November listening sessions and the previous webinars.
- Attendee: Your one slide shows that as the use of manure for fertilizer has increased, the use of commercial fertilizer has decreased. Is that analysis done for the entire watershed or for specific locations?
- ODA: That analysis is based on an aggregation for the whole watershed.

1.3 CLIMATE AND WEATHER IMPACTS

There were no questions following this presentation.

1.4 EXPLORATION OF IMPLEMENTATION OPTIONS

There were no questions following this presentation.

1.5 WHAT CAN TMDLS DO?

- Attendee: We have observed that practices that trap nutrients become a source over time (i.e., the sink becomes a source). For example, P can be stored by buffer strips but will slowly release it over time unless you harvest the vegetation. How is that phenomenon going to be represented in the TMDL? Also, there is recent research in Iowa that demonstrates that agricultural fields are not a large source of P. It concluded that streambanks contributed approximately 31% of the riverine TP export of TP.
- Ohio EPA: Do you know if the Iowa research included DRP?
- Attendee: No, I do not believe that it did.
- Attendee: When will the impacts of the TMDL on NDPES permits be known?

Ohio EPA: We hope to have proposals to share with stakeholders in April or early May.

Attendee: Addressing SSOs and extending local sewers to HSTS areas in Allen County has made a big difference in cleaning up the Ottawa River. In the last 33 years we have extended sewers to approximately 6000 homes and businesses, many of which were failing or straight pipe dischargers. I encourage Ohio EPA to include that type of effort as part of the implementation of the Maumee River TMDL and the associated funding should continue or be increased. Additionally, the eligibility to use that funding should not be based on income levels. It is very expensive and cost between \$15K and \$20K to get sewage from a home to a POTW.

Attendee: We are having a hard time hiring certified operators for our POTWs. The new requirements have made it very difficult to find and keep good candidates. I would encourage Ohio EPA to revisit these requirements.

Ohio EPA: Thank you for the comment. TMACOG recently received a grant to help certify operators so that might help with this issue.

Attendee: Are you planning to leverage the previous work done to develop cost curves for each of the various types of implementation practices that are available? I realize that one shortcoming is that it only addressed TP rather than DRP, but a lot of work went into that effort so hopefully it can be used.

Ohio EPA: Yes, we plan to build upon the previous cost curve analysis and we also recognize that this information will change over time. For example, we expect to have better information on the effectiveness of practices as research continues in the watershed (e.g., the LEARN analysis of wetlands). It might also be possible to validate the cost curve results using watershed modeling where the effectiveness of multiple practices working together can be assessed.

Attendee: Is the LEARN group going to be studying the export of nutrients from wetlands over time? How soon will their results be available?

ODNR: Yes, definitely, that is one of the primary goals of their effort. We are probably going to see different levels of effectiveness each year depending on weather, pre-existing site conditions, etc. and so their goal is to study that year-to-year variability and long-term performance. We aren't sure yet when their first monitoring reports will be available.

Attendee: The Lake Erie Foundation is doing a small paired watershed study in Hardin County. The goal for one watershed is to achieve 75% participation by landowners to install management practices and the other watershed will serve as a control. Heidelberg has already been studying both watersheds so we have a good baseline of data, and we want to see what happens over a five-year period. We are in the first year.

Ohio EPA: We are aware of that study and it is a great example of the kind of research that is happening in the Maumee River watershed. We are always amazed at all the different activities that are ongoing and the good research that is being performed.

Attendee: Which agency is going to take the lead with the floodplain reconnection practices?

- ODA: There are several examples of floodplain reconnection practices that have already been accomplished and multiple agencies might need to be involved. For example, ODA would need to be involved with the installation of any two-stage ditches. These will require maintenance so it is important to work with the local county engineers and SWCDs.
- ODNR: ODNR will be coordinating the construction of floodplain reconnection projects on larger streams and rivers, and we have already seen a number of these in the first batch of the H2Ohio projects. ODNR has also already utilized some of our H2Ohio funds to accomplish stream restorations in addition to floodplain reconnections. We have had the opportunity to capture subsurface drainage and route it through restored headwater stream restorations for the purpose of improving water quality, capturing sediments and providing nutrient reduction. We also need to keep in mind that increased precipitation is causing a lot of erosion problems throughout the watershed. Back in the 1920s the Maumee River average annual flow was around 3,000 cfs and that has more than doubled to around 7,000 cfs. The streams are still in the process of adjusting to those increased flows.
- Attendee: We have observed that fixing storm drains in Allen County has led to a significant improvement in I/I. An experienced engineer said that would be the case years ago and I didn't believe him, but I do now. That should be a component of the implementation, too.
- Attendee: Ohio took the lead in re-writing the Tri-State Field Crop Fertilizer Recommendations a couple of years ago. The work we did showed that we need a lot less nutrients than we thought. A national group is now trying to do a similar analysis nationwide. It doesn't make sense that the fertilizer guidance in Illinois would be so much different than what is in Ohio. This is an example of how what we're doing here to help Lake Erie is having a positive impact elsewhere.
- ODA: Yes, the fertility guide is a great example and we are already starting to see the benefits because we have soil test P levels that are decreasing even as crop yields are increasing.
- Attendee: Is there any direction on the new biosolids rules?
- Ohio EPA: NRCS has published new nutrient management rules (code 590) but Ohio EPA hasn't yet adopted those. We plan to address that within the next couple of years. We know that permit holders are already starting to trend in the direction of adopting the new rules.

2.0 STAKEHOLDER MEETING AT BOWLING GREEN UNIVERSITY

During the stakeholder meeting in the evening of March 29, 2022, presentations were made by the following individuals:

- Josh Griffin, Ohio EPA, PMR Management Choices
- Matt Lane, ODA, Source Assessment Updates
- Josh Griffin, Ohio EPA, Climate and Weather Impacts
- Eric Saas, ODNR, Exploration of Implementation Options
- Josh Griffin, Ohio EPA, What Can TMDLs Do?

Attendees were given the opportunity to ask questions during and after each presentation and the following notes capture those questions and the associated answers.

2.1 PMR MANAGEMENT CHOICES

- Attendee: Will the slides from these presentations be available to the public?
- Ohio EPA: Yes, we will post these slides to the project website.
- Attendee: You have identified a dozen or so management choices that will need to be made as part of the TMDL development process; how much are you planning to get into the direction of each management choice and what data are available to support your decisions?
- Ohio EPA: Today we are going to present more information about some of the sources of phosphorus in the watershed and we are also going to present information about the role of hydrology on nutrient loading. We are also going to start the conversation about what implementation options are most cost effective. We are not making any decisions yet, because we are still gathering input especially on implementation opportunities.

2.2 SOURCE ASSESSMENT UPDATES

- Attendee: What data did you use to estimate the amount of fertilizer that the crops in the Maumee River watershed need?
- ODA: We used the most recent Tri-State Fertility guide for fertilizer amounts and then we used the available information about the total acres of each crop grown in the watershed.
- Attendee: If I understand your analysis correctly, this analysis is based on looking at the watershed as a whole and it concludes there is not an excess of P from manure if you assume it is spread out evenly over the whole watershed. Does ODA have a mechanism to ensure that individual fields are not over-manured?
- ODA: You are right; this analysis is for the watershed as a whole and does not mean that certain fields might receive excess manure/P. ODA does require permitted facilities to have NMPs. Unpermitted facilities are not required to have NMPs but we have incentive programs like H2Ohio and the Manure Application program to provide incentives for NMPs and manure incorporation.
- Attendee: Does anyone have more granular data showing which fields might be over-fertilized?
- ODA: We do not have data down to the field level because of producer concerns about releasing that information. We could attempt to scale it to the HUC12 or county scale, but there will be issues because the data are not all at the same scale and therefore it would be difficult to fold it all together.
- Attendee: What metrics do you use to assess the success of the voluntary programs?

ODA: Our primary metric is the number of acres that have been enrolled in different types of programs (e.g., NMPs). I don't have those data with me today, but that is how we measure it.

2.3 CLIMATE AND WEATHER IMPACTS

Attendee: Are there any plans to get more granular data to find out what fields are creating the excessive P loads? It seems like that is a critical data need, especially with the potential impacts of climate change.

Ohio EPA: We have a robust network of stream monitoring sites. They are strategically placed in different regions of the watershed to detect spatial trends in loading. We also have a number of monitoring sites on smaller watersheds with different characteristics so we can infer information about loading patterns from those. Modeling can also help with answering this question, although one needs to be careful with the questions you ask the model.

Attendee: Have you explored the correlation between rainfall intensity and DRP loading (i.e., not just total rainfall)?

Ohio EPA: We do often see the highest concentrations of DRP at the highest flow events which often occur after high intensity precipitation. Given that relationship, it is likely true that DRP loading is greater during high intensity events but we haven't done a detailed analysis. There is also some subjectivity about what is considered "high intensity".

2.4 EXPLORATION OF IMPLEMENTATION OPTIONS

Attendee: Is your slide titled "H2Ohio By the Numbers" for just the Maumee River watershed or for the whole state?

ODNR: It is statewide, but as you can see on my next slide the bulk of the investment (about 60%) has been in the Western Lake Erie Basin drainage area.

Attendee: What is the status of LEARN? When will you have data?

ODNR: The LEARN effort is up and running but it is going to take a couple of years to have good data. We want to see how these wetlands perform for two or three years before we start to make any decisions. We have performed some modeling to assess the effectiveness of the wetlands and there is also a long-term monitoring program of the wetlands at Grand Lake St. Marys. They publish an annual report that is worth reviewing.

Attendee: Have you looked at the opportunities for comprehensive wetland restoration?

ODNR: As mentioned earlier, we are not trying to restore the entire Great Black Swamp. We are trying to be strategic and to place these wetlands where they will be most cost effective. We also need to have landowners who are willing to have wetlands restored or created on their property.

Attendee: How do dikes and ditches factor into implementation?

- ODNR: We have a number of existing H2Ohio projects that incorporate drainage and we are trying to find win-wins where we can deliver drainage improvements and improve water quality. For example, we have a two-stage ditch project moving forward right now and other projects that involve drainage improvements and water quality benefits.
- Attendee: It seems like you should involve the county engineers when you are trying to implement these types of projects.
- ODNR: Yes, we work closely with county engineers. I spoke about H2Ohio at a conference for county engineers a few weeks ago.
- Attendee: Have you seen issues where landowners and producers aren't on the same page in terms of implementation? I have heard there can be tension between those who own the land and those who rent it for farming. There is a concern that there will not be enough land to farm in Northwest Ohio.
- ODNR: As I said earlier, we are trying to be strategic with implementation and only work with willing landowners. I can't speak directly to the question about tension.

2.5 WHAT CAN TMDLS DO?

- Attendee: In the TMDL will you be making recommendations on policy changes? Or will you only be working within the reality of today?
- Ohio EPA: The TMDL will rely heavily on adaptive management. We will implement the TMDL under today's policy environment but there is a recognition that some things will work and some might not. Those that do not could lead to policy changes.
- Attendee: Researchers in Illinois and Wisconsin have found that dam pools can be significant sources of DRP due to accumulated sediment and anoxic conditions. Does ODNR want to remove the dams? Could you dredge behind the dam to remove the DRP?
- ODNR and Ohio EPA: We have a good record of facilitating dam removal in Ohio where it makes sense. Dam removal is almost always a good idea in terms of overall water quality. In terms of the lowhead dams in the Maumee River watershed, they are definitely impediments to fish passage but most of them do not have a lot of storage capacity because there is so little topographic relief. Also, the flows and shear stress are often so high that all the fine particles are washed away and don't accumulate upstream of the dam.
- Attendee: Has there been much discussion about managing tile drainage? How can we effectively do that if each tile line has its own outlet?
- Ohio EPA: We are definitely focused on controlling drainage as a way to implement the TMDL. NRCS has also been promoting water management technologies. There is a group called Transforming Drainage that is publishing a lot of information on controlled drainage, saturated buffers, and drainage water recycling. I would encourage folks to check out their website.

- Attendee: The information being presented is very high level. What do you want from stakeholders? Going back to the management choices you mentioned earlier, everyone is going to have a different opinion and many of these are value judgments. How are stakeholders going to get involved when we get to that level? We want to be at the table when the rubber hits the road on these value judgment decisions because hard decisions are going to need to be made. These meetings are valued but are not a good forum for getting stakeholder input on the tough decisions.
- Ohio EPA: Everything we have done until this point has been building to the point where we can start making the tough decisions. We needed to compile all this information and data to have a good baseline. We have formed some workgroups to address certain issues and we anticipate those becoming more active as we move further along. Stakeholders can expect some of our proposals for these tough decisions to be released in April and May. With regard to implementation, we think that the implementation cost curves will be a good starting point for selecting which practices make the most sense. We will need to look at the most effective strategies and then compare them back to our allocations to plan for necessary load reductions.
- Attendee: Are the numbers going to add up in the end? For example, are we going to say we need X amount of stream restoration to get Z pounds of P removal?
- Ohio EPA: That aspect of the TMDL will need to be more nuanced than a simple addition of all the individual practices because many of the practices affect one another. For example, implementing a NMP affects the load of P delivered to a downstream practice. We anticipate that instead we will identify a certain level of implementation rather than a detailed accounting of each practice. There is some recent SWAT modeling that indicates the 40% load reduction is achievable, but will take a significant amount of implementation.
- Attendee: When you say that you will use the cost curves to inform implementation, whose perspective will you use to determine cost effectiveness? The state's? Or will you evaluate this from a larger economic standpoint?
- Ohio EPA: I think we need to view that issue through both lenses. The state of course wants to spend its funding wisely, but we recognize that, for example, if practices affect an individual permit that could affect that community in a particular way.
- Attendee: Is there going to be a cost associated with implementing individual BMPs or to implement certain permits?
- Ohio EPA: Yes, we will have cost information for the various types of implementation, but they will look different for different types of practices.