

Water Quality Board (WQB) [Manure Management Report](#) By-Invitation Webinar Government and Regulators Audience (June 26, 2020)

Summary of WQB panelist responses to webinar questions

On June 26, 2020 a by-invitation webinar was held with participants from Indigenous, federal, state, and provincial governments and relevant agencies to obtain targeted feedback from this audience. Below is a list of questions posed by webinar audience members with the responses from the WQB panelists (beginning below on page 1). The list also includes responses to questions that were not able to be answered during the available webinar time (beginning on [page 5](#)).

WQB Member Panelists: *Gayle Wood (Ontario Conservation Authorities – Retired CAO)*
 Mark Wales (Ontario Federation of Agriculture)
 Joe Tomandl III (Dairy Grazing Apprenticeship)
 Sandy Bihn (Lake Erie Waterkeeper)

QUESTIONS ANSWERED DURING THE WEBINAR

Question: **The Ontario NMP recommendations stated that overhead irrigation of manure is prohibited. Why was this the decision? In Wisconsin we have seen many farms using irrigation of manure to expand their application season and reduce the liquid in their manure lagoons.**

Response: **[Mark W.]** I’m not sure if anyone has ever seen liquid pig manure run through an overhead irrigation system, but traditional systems used here [Ontario] would take that manure at about 120 pounds per square inch of pressure and run it through a gun system, sending out a stream of liquid manure 2 inches wide and arc it 100 feet into the air. That is how liquid overhead irrigation is done here. That ensures that you will share the aroma and some materials with your soon to no longer be friends and neighbours. It was a very bad practice and there was a lot of public opposition to it. The move was made to ban it and practices have advanced, with manure injected into the soil. This keeps the smell and bacteria and everything else in the ground and gets it working for crop production. It is simply a bad practice and is no way to make friends and get along with neighbours.

[Joe T.] I think what we are seeing in Wisconsin, is more of a transition to injection and immediate incorporation of manure. When irrigating out, it makes it tough. When we’re extending the seasons, we are not able to incorporate it right away. There is a push for ensuring holding capacities, so manure can be distributed and delivered when it can be immediately incorporated or injected. I think this is the direction the industry is going toward in general.

Question: **The report recommends that Ontario be used as a model framework. Is that model something that could be easily applicable to the states?**

Response: **[Sandy B.]** No not easy, but we can go through the process and look at how they [Ontario] did it and the way they did it. They put together a committee that included the agricultural community and they then determined, along with the other communities, what they wanted and what they thought was feasible. I think Mark said that in the beginning, the first set of recommendations were unacceptable to the agricultural community, but eventually there was compromise, where they came to agreement and found common ground. I think it has to be a consensus building process that has to happen. We have the Ontario model and it has succeeded there. It gives us hope that we can get there, but there needs to be a process to come to agreement on what exactly will work in the states, along with the agricultural community and those who work to protect our waters.

[Mark W.] As you mentioned Sandy, the agricultural community asked the provincial government to create a piece of legislation that would sort out some problems and issues. The first version of the Nutrient Management Act was a bit of a failure, so we had to go back to the drawing board. It was a good consensus building exercise and as a result the Act has been well accepted by the agricultural community. It's worked well for 17 years, with no major incidences. Along the way, the greenhouse sector in the Leamington area, who are in the contributory area of the [Lake Erie] western basin, have asked to come under the Act. This would help them deal with their surplus nutrient solutions, so that they could land apply them, but under a proper, regulated system. The Act, when it was originally created, was designed to encompass all agriculture. In the day, the priority issue was the larger animal operations, those that were 300 nutrient units or more and new or expanding operations. Even today new livestock operations may be less than 300 NU, but if they are a new operation they still need to do a Nutrient Management Plan. Whereas, existing operations of 300 NU or less still don't. Cost-share funding went a long way to getting full implementation of everyone under the Act quickly and made it easy to do. Audiences who attended our previous webinars thought they were great ideas, but were skeptical about the ability to get funding to do so. However, cost-share funding split between many parties is a proven method to get agriculture to advance practices and get them to a better place.

Question: **Would irrigation using pivot equipment with low hanging drop nozzles be considered as an option for either very low solid liquid manure OR process wastewater like flush water from feed storage areas. This way it can be applied on growing crops when equipment (like injection/incorporation toolbars) cannot be used. Wisconsin has increased setbacks when applying this way, like wind speed restrictions, setbacks to dwellings and rate restrictions.**

Response: **[Joe T]** I think it could be used when looking at very low solid manure. From a mechanical standpoint there is only so much that can be pushed through the pivot head irrigation systems. So, for wastewater/flush water there is potential for using drip irrigation or pivot irrigation. With the denser or heavier nutrient materials, it is going to be more difficult to do that. Ultimately, the application needs to be able to fit into what the nutrient capacity/needs are and so that we are not overapplying and so that it is not running off. Those are the key things. A lot of this would be fleshed

out as we work through developing a consistent standard. A lot of these Great Lakes states really need to get together and figure out what is this consistent standard among the states to have better control over the impacts to the Great Lakes system.

[Mark W.] As someone who has been irrigating for the last 40 years as a vegetable crop producer, I have had experience with pivot head irrigation systems, both in Canada as well as during some time I spent in Africa. Yes, pivot irrigation systems with low hanging drop nozzles could work. Are they the best option? Obviously, it must be low solid material in the manure to go through the system and pity the staff person who has to clean the nozzles on a regular basis. Generally, this would work on hay or alfalfa crops, fairly large scale. More difficult to use on corn crops. Depending on how hot is, applying liquid manure on a growing corn crop could cause burning issues. You would need to do research on that one, but you could. When injection/incorporation doesn't work, because a crop is too tall, pivot irrigation with drop nozzles is an option. When the Ontario Nutrient Management Act came into place the goal was to get everyone to 240 days of storage, for whatever type of manure they had. If you look at the 2019 growing season you couldn't get manure applied on land in the Spring, pre-crop. A lot of crops couldn't get planted that year in Ontario. The reality is, with the climate extremes we are experiencing, may need to get closer to 365 days of storage. Again, drop nozzles could work, but there can be challenges with it.

Question: Does the report recommendations consider a definition for frozen and snow covered ground or strictly a range of months that that application is prohibited?

Response: **[Sandy B.]** That is a million-dollar question. In Ohio, we have both. We have a ban on frozen ground and restrictions on months depending on the area you are in. Recently, in Michigan, they have put in an actual month ban, as opposed to frozen ground. The purpose is not to apply manure in times when there will be no nutrient value to the crops/soil, because it just runs off. This is a debate in the US that needs to be vetted out in the agricultural and water community to figure out how to best make those recommendations.

[Joe T.] I think these things, in terms of what the definitions are and what the parameters are, will come out in the conversations to make more consistent guidelines for the Great Lakes states and exactly what this looks like. The report didn't go into that level of detail in terms of how its defined, but these are general guidelines on what has been seen out there.

[Mark W.] he reality is picking a range of moths to prohibit application is not the model that works best. It must be related to the current conditions and the upcoming weather conditions. The challenge will be that within the Great Lakes basin our seasons are changing. I've been farming for 40 years. I know that the frost-free fall period is a lot longer than it used to be. Spring is still iffy. We have droughts, floods, too much rain, too little rain. Frozen or snow-covered ground is probably the best way to go and whatever regulation or definition is used, it will have to work for local conditions. Given the climatic extremes that we are seeing, it will also have to be somewhat flexible. I still talk to farmers here [Ontario], who should be incorporating within 24 hours if going out in colder, poorer weather. I remind them that spreading

manure in a snowstorm does not equate to incorporation within 24 hours. Plus, you're not hiding anything – snow is white and what you are spreading is not - it is pretty easy to see when you are trying to get around the rules.

Question: **A comment on defining winter: In Ontario, the discussion was around defining conditions because the range of timing of winter conditions across the province.**
[Follow-up comment from previous question]

Response: **[Mark W.]** The weather across Ontario can vary from county to county at times and certainly in different parts of the province. Our weather is changing.

Question: **Did the team do a systematic look at all the US State AFO/CAFO programs and identify the strengths/weaknesses of each? is this analysis reflected in the Report?**

Response: **[Sandy B.]** We did an analysis of Great Lakes states, such as soil phosphorus and other components; however, there were limitations on the scope and resources for this project. We didn't go into the strengths and weakness. I'm not sure if there is a system available to evaluate that –but that would be good. What we have been getting is an increase in the counts of animals and manure, that keeps growing in Great Lakes states, especially the western Lake Erie watershed. The USDA agriculture census [United States Department of Agriculture] and other numbers provided by the federal government are reported by state and by county. What is becoming interesting is the location of the CAFOs generally cluster around a processing a plant, which makes sense, and generally they can cross state lines. It then becomes more of a watershed issue than a state-by-state issue. We are not looking at it from this perspective. That is something that needs to happen in the future. If there are too many of these in a watershed that are causing excess nutrient runoff – that is something we need to look at differently. In answer to the question we did look at things such as soil phosphorus aspects and compared them among Great Lakes states. We did not evaluate strengths and weakness. We looked at the number of permitted facilities as well. Indiana seems to have more permitted facilities, the being they have a lower threshold for permitting. There are other factors that can influence the numbers and perception of numbers. We looked at other states as well where there are CAFOs, but weren't able to go much beyond that. This has been a very good educational process and it would be good to share this with a committee to flesh all of this out.

Question: **How has feedback from the ag community been solicited, and are you getting sufficient participation? The survey results showed N=10 for the ag orgs and N=70 for the public. that implies far more feedback from public than from ag...is that true?**

Response: **[Sandy B.]** We have gotten fairly balanced feedback from the different sectors. Agriculture has the greatest interest because it affects them, and it is their financial and operational programs that we are looking at. There also is a huge interest from the public communities who have facilities in their areas and the NGO communities. The fact that there were over 300 people on the public webinar reflects well. Could it be better? Sure, you can always improve on things. The workshop that was held [as part of the report development process] included agriculture communities from different states and farm bureaus. The reality is, people came out of that and no one was happy, which is kind of a simple statement. We had a balance of agriculture

Questions answered during the webinar

community and NGO community participation and having them weigh-in on the recommendations to make them doable, feasible and viable for the waters. We heard from both sides to try and make them palatable, but it's not perfect. We really tried to do this. For the most part I think we succeeded

[Joe T.] The agriculture representation, in most cases although a single person, represents a much larger group of people or an organization.

[Mark W.] In Ontario we grow over 200 crops and commodities, not all of them have anything to do with manure. So as a vegetable grower I grow many different types of crops, some of which has associated organizations. The major livestock organizations, representing animal livestock farmers, such as the Ontario Federation of Agriculture, has over 38,000 farm members. They were involved in the report development process - review of the contractors' report, review of the draft report and participated in the workshop. We had agriculture community participation along the way, not just on the recent webinar. I think there are a lot more public agencies out there than agricultural organizations that relate directly to animals and livestock manure. That is probably part of the disparity in the numbers. The organizations that needed to be involved, were involved along the process.

Question: Can you provide a list of the 10 ag organizations who provided feedback?

Response: **[Responded in chat]** The list of all the organizations participating in the webinar is in this document: https://ijc.org/sites/default/files/2020-05/WQB_ManureManagementReport_Apr15Webinar_QandA.pdf - the survey responses were anonymous.

QUESTIONS ANSWERED AFTER THE WEBINAR

Question: Per our discussion on irrigation, do you think this type of subjective classification of "bad" practices across diverse systems might make this recommendation impractical?

Response: A bad practice is a bad practice and since everyone in Ontario agreed that overhead irrigation was bad this was a no-brainer. There is no cost effective, practical, neighbor friendly way to irrigate liquid manure.

Question: One of the problems with general restrictions such as, no application of manure on snow, no irrigation of manure effluent, limits on acreage per animal unit, is that you limit the ability for technology solutions to the actual problem. It is much better to put in regulations that allow flexibility to implement technical solutions to address the problems. For example, there are ways to limit odor from irrigated wastewater, there are BMPs that can be implemented to address nutrient movement from manure application on snow, and agronomic need for nutrients varies greatly based on crop production, soil type, split applications, and other BMPs. By implementing

broad based restrictions, you are limiting flexibility to address the problem rather than technology that just meets the rule.

Response: Technology has its place, which can be accounted for in a Nutrient Management Plan. At present there are few if any cost-effective methods (BMPs) to limit the movement of manure off land during the winter months. Since the vast majority of phosphorus movement occurs between November and April it makes sense to focus on reducing the practices that allow this movement during these months.

We need to consider that this opens the door for quantitative edge-of-field monitoring requirements, which rather than give general guidelines would give an accurate measurement of actual runoff or lack thereof. That type of quantitate, required assessment could easily lead to financial incentives to reward less runoff, which is achieved by general restriction guidelines or technology. It could also lead to fines for systems that do not meet the minimum runoff guidelines. It may be best for the agriculture industry to operate within general guidelines and make sure that the effective technology is created and fool proof first.

Question: **How does this report, in evaluating policies and regulations, connect to the IJC's 2018 report, Fertilizer Application Patterns and Trends and Their Implications in the Western Lake Erie Basin? That report indicated that nutrient losses from manure on a per acre basis is a bigger contributor in Ontario than in the U.S. share of the western basin.**

Response: In February 2018 the IJC published a report by its Great Lakes Science Advisory Board, "Fertilizer Application Patterns and Trends and Their Implications for the Water Quality in the Western Lake Erie Basin and provided a supplemental analysis with more data in 2019 (for the report and supplemental, see: <https://www.ijc.org/en/fertilizer-application-patterns-and-trends-and-their-implications-water-quality-western-lake-erie>). It considers primarily commercial (or synthetic) fertilizer and manure, and secondarily other nutrient-containing materials applied to agricultural lands. The WQB report does not exclusively focus on the western Lake Erie basin, but looked at livestock feeding operations throughout the Great Lakes basin. The available data to analyze is a moving target as increases in the number of animals and facilities is always changing. The WQB report references USDA census numbers, which are based on permitted facilities. It is estimated that there are nearly double the number of confined operations ([2019 Environmental Working Group report](#)) in what is commonly referred to as 'one unders.'

Similar to the WQB report, the IJC report also noted the challenge of getting accurate data on non-permitted livestock feeding operations in order to accurately estimate manure generation; an increasing consolidation of livestock (i.e., larger facilities) in the US; and that improper application techniques can lead to excessive transport of nutrients .

Question:	The western Lake Erie harmful algal blooms have been mentioned a few times, as an example of how manure threatens water quality ... is there evidence that the current manure regulations & policies in the U.S. are not protecting water quality, but that the Ontario regulatory framework is working?
Response:	Ontario's manure management is restricted to the agronomic amount for phosphorous that reportedly is a factor in reducing the maximum number of animals in a Confined Animal Feeding Operation (CAFO) facility because it costs more to haul the manure to fields meeting the agronomic amount. The 2016 binational phosphorus load reduction targets , committed to by the US and Canada, places responsibility for 94% of the Phosphorus reduction on the US states and only 6 % on Ontario. Clearly authorities recognize what is working and what is not.

Question:	Do you have any thoughts on how consensus building on definitions and thresholds across state lines could be facilitated?
Response:	Consensus building could be achieved through a facilitated process with the appropriate state and provincial officials. Once the definitions and thresholds are agreed upon, a process for gaining state and provincial approval could be developed.

Question:	Does the ag industry or certain sectors have a greater or lesser role leadership/consensus building in some geographies?
Response:	In both Canada and the United States the Ag industry, especially livestock associations, have a big role to play in consensus building and implementation of better methods. The industry has a very large role in consensus building and influence in most areas especially areas where larger scale animal agriculture exists

Question:	PA uses an animal density (greater than 2 AU/acre) calculation to include those moderate size operations that don't qualify as CAFO's and may have limited land resources. They are regulated/required to have NM plans through our state law.
Response:	Pennsylvania does have lower thresholds for number of animals required for nutrient management plans. The PA phosphorus soil P Mehlich-3 allowance is via the phosphorus index and is 200ppm or more. Also PA allows winter applications under certain conditions. This will come to light under recommendation 1 when the assessment each Great Lakes state and Ontario conducts an in-depth assessment of permitting rules and requirements and of the actual implementation of each state/province's respective manure management framework and considered in the developing of consistent guidelines for all of the states. The concern or unintended consequence may be that the states which have stricter or more effective ways to manage manure may have more relaxed oversight when a "great lakes standard" is created.

Question:	It is mis-characterizing the Ontario approach to say it reduces farm size, UNLESS the farm size greatly exceeds the available land to utilize the nutrients. In an ideal world, farm size would optimize the economies of scale with the trade-offs of managing large volumes of manure.
Response:	There is nothing in Ontario's NMA that restricts farm size. It merely requires farms over a certain size to have an approved plan to manage their manure. The act applies

Questions answered after the webinar

to all operations greater than 300 NU plus new and expanding with a minimum of 5 NU. The act requires all of these farms to have a sufficient land base to handle the volume of manure that they produce.

Question: **Has Equine production been included in this study?**

Response: No. Equine production was not included in this study. This study focused on livestock feeding operations for meat, poultry and dairy, in large and medium-sized concentrated animal feeding operations (“CAFOs”), not all agriculture operations with animals.

LIST OF ORGANIZATIONS THAT WERE PRESENT ON THE WEBINAR

A total of 34 participants from Indigenous, federal, state, and provincial governments attended the webinar.

Agriculture and Agri-Food Canada	Ontario Ministry of Natural Resources and Forestry
Chiefs of Ontario	Pennsylvania Department of Environmental Protection
Environment and Climate Change Canada	Pennsylvania State Conservation Commission
Great Lakes Commission	Saginaw Chippewa Indian Tribe
Indiana Department of Environmental Management	United States Department of Agriculture Natural Resources Conservation Service
Michigan Department of Agriculture and Rural Development	US Environmental Protection Agency (USEPA) Great Lakes National Program Office
Michigan Department of Environment, Great Lakes and Energy	USEPA Region 2
New York State Department of Environmental Conservation	USEPA Region 5
Ohio Department of Agriculture	United States Geological Service
Ontario Ministry of Agriculture, Food and Rural Affairs	Wisconsin Department of Natural Resources