

Phosphorus Task Force-Phase 2 Meeting
October 3, 2012 (10:00 AM -3:00 PM)
Ohio Department of Agriculture

Attendance

Task Force

Larry Antosch, Mike Bailey (for Karl Gebhardt), Doug Busdeker, Dan Button, Steve Davis, Libby Dayton, Denise King (for Kevin Elder), Gail Hesse, Kevin King, Amy Klei, Greg LaBarge, Joe Logan, Jeff Reutter, Peter Richards, Mark Scarpitti, Jeff Tyson, Rick Wilson, Ron Wyss

Observers

Remegio Confesor Jr., Tom Fontana, Chris Henney, Jack Kramer, Gene Philips, Brad Moffitt , Linda Merchant-Masonbrink, Trinkka Mount

Handouts

Agenda

Minutes from September 5, 2012 Meeting

Announcements

- The December 5 Task Force meeting date will conflict with the No Till day event in Plain City. Kevin King and Mark Scarpitti probably will not be available. The Millennium Network meeting is also looking to move to December 4-6 that may involve Jeff Reutter and others.
- Gail identified some “nuggets” emerging from the Task Force discussions that she wants to discuss with the co-chairs:
 - Soil health
 - Indicators of progress, both programmatic and environmental
 - Phosphorus solubility: are new products or industry practices affecting solubility?
- Wyss suggested we consider the Farm Bill and farm insurance on how they influence how farmers manage risk.
- Antosch suggested we consider other sources of phosphorus other than agriculture. What about point sources? The three directors talked about a 3-leg stool. Point source is one leg. We need to discuss the Point Source report and recommendations for point sources.
- The Nov. 14 Nutrient Forum will address all sources, including point sources. Let’s wait to see what is reported from that meeting and discuss at another Task Force meeting.

LaBarge asked about what the International Joint Commission (IJC) is saying about economic impacts of algae blooms. They are about 1 year away from producing a draft report. They considered economic impact of BMPs. A loading or concentration target is being developed.

Brief Check-In on 2012 Algae Season

There is a small bloom in western basin. This year, the lake-wide bloom size was about one fourth of last year's bloom. The 2007 bloom was about one tenth of the 2011 bloom. The 2012 bloom was slightly larger and similar to the bloom size in 2004. Maumee Bay still had some significant blooms in 2012. However, the island area had no significant blooms. Lake Erie water levels this year are very low. The decreased runoff this year has resulted in long retention time in the Western Basin. Winds stir up the sediments in the Western Basin. But this year, with a reduction in phosphorus loading by 90%, there was still a significant reduction in algae blooms.

A public health advisory was posted at Euclid beach on Sept. 19. Microcystin was just above the threshold. Beach clean-ups by the Alliance for Great Lakes in early October are being canceled because of this posting. An upwelling event is suspected as the cause of that bloom.

What about tributary inputs and WWTPs still operating? Did that reach Lake Erie or were there algae blooms in the tributaries?

The Lake Erie Commission (LEC) decided at their September meeting to target internal phosphorus loading in Lake Erie for funding from the Lake Erie Protection Fund. Submittals for a small grant to address internal phosphorus loading are due in February. A decision will be made in March at the Lake Erie Protection Commission meeting.

Summary of Key Points from Kevin King presentation from September meeting

Hesse asked if the framework of five strategies included in the presentation (link) provide a way to discuss topics and structure recommendations:

- Upland management (4Rs, interruption of connection to surface)
- Structural hydrologic control (water table management, blind inlets)
- Filtration (end-of-tile and in-stream enhanced bioreactors)
- Edge of field buffers (vegetated and saturated, wetlands)
- Ditch design and management (2 stage, natural, over-wide, dredged vegetated channels)

Discussion

- Phosphorus does move through tile.
- What would move through the surface if we didn't have tile? This is unknown. Concentrations would be different. (Referred to Schwab study; King trying to obtain data.)
- We can address P transport at the tile outlet and upland.

- We have to have tile, otherwise we can't farm. Tile is beneficial in wet seasons and dry seasons. (aeration, promote root growth).
- There is increased runoff with increased tile density. How much has total tile density increased over the last 10 years?
- There is a reduction in P with the use of control structures.
- We have a soils problem. If there is good tilth and soil health we can override the dominant transport pathway- macropore flow. What's going out of the tile is both matrix and surface flow.
- Surface inlets are contributing surface runoff into tile systems. How many are there? Ohio does not currently promote inlet controls. Indiana is addressing this issue with blind inlets.
- The algae problem is being created by 1pound of P/acre (average annual over a long window) from the surface and tile. That is only 3% of what farmers are applying. Farmers do not perceive this to be significant. How do we get them, as an industry, to understand that it is significant?
- Not every acre is contributing phosphorus equally or consistently. Higher source areas move around. So instead of trying to target individual farmers, this is an opportunity for a policy recommendation that is tied to management instead, such as how fertilizer is applied. Then the P index , when updated, would ideally function to bring all this together. The current P Index is being used for all CNMPs being developed in Ohio.
- Proximity to water is not as important as connectivity to water.
- Not all rainfall events flush P through tiling. It depends when fertilizer is being applied.
- Wetlands only hold phosphorus for a few years. But they do provide a source for stream base flow, thus improving in-stream nutrient processing. They also reduce flashiness of runoff.

Policy Options

- Reutter offered that there are three or four areas where we can make recommendations that would influence policy.
 - Identifying which of the 4.5 million acres are the biggest problems,
 - Solubility of P applied
 - High % of acres are farmed by non-owners, so not much incentive to enhance soil health
 - Tile discharges.
- Link conservation/compliance and tie into Farm Bill programs. Also address crop insurance to encourage nutrient planning and end of tile P treatment.

- Stop placing fertilizer on frozen ground.
- Education, technology, and minimum standards can create policy. We can sell policy if we can show P coming through the tile and we can show how to treat it.
- Should there be no tiling until we figure out how to minimize P? Should we recommend no tiling until we figure out how to mitigate what is coming out of the tile? There is no agreement to do this. Consider property rights infringement. Or should we allow new tile, but only with treatment?
- Current policies encourage current practices. We now have a 25 year write-off to install tile. We have tax policies to encourage the way we do things. Current tax policy runs out by the end of the year. The more bushels grown, the more tax insurance received. So there is built-in incentive to maximize production.
- Can we tie conservation practices with rebates?
- Tile is not just an N and P problem. It changes hydrology. Cumulative impacts of the aggregate of drained acres contribute to water quality problems. Flashiness in streams is incredible. So since this is also a water management issue, it may be easier to link to policy development.
- Is there a policy that can address when P is applied? Should P application in the winter be prohibited?
- Farmers should be encouraged to keep P on their land. We should consider a combination of carrot and stick approach.
- Since runoff increases with increased tile density, should policy address this?
- Is there a policy that would incentivize improving soil health?
- How do we address crop residue that may contribute to the problem?
- Developing regulations may make things worse since we don't understand the entire problem. And we will never be able to regulate weather.
- The goal of the P index will be development of a multi-variate risk/score, which should be related to transport/runoff. All issues have been discussed in the revised 590 standards.

Tributary Loading Data from 2008 Forward - Pete Richards, Heidelberg University. Seasonal Differences in Dissolved Phosphorus Loading.

- P2 Task Force ended with 2007 data. So we need to consider what data is available since 2007.
- NOAA developed a report based on 9 years of data with respect to spring fertilizer application and cyanobacteria blooms. NOAA considers spatial extent and intensity in their interpretation

when P loads most effect the development of blooms in the western basin. Dr. Bridgeman also analyzed loading 4-6 weeks before the algae season using a different process.

- 80-90% of DRP loading comes from 20% of the time (in 4-5 heavy storms.)
- Loading that impacts hypoxia is not season dependent.

Maumee River Loading

- 1990s had the lowest DRP, and then started to increase.
- 2011 and 2012 had an identical dissolved P load. 2012 early loading. 2011 later loading.
- April-June-2011 (largest loading in the spring)
- 2012 (2.5% loading of 2011) Smallest loading ever recorded.
- Total P is down in all the seasons.
- Winter is highest loading for DRP. Summer is lowest loading for DRP. Downward trend in Spring.
- For all seasons there is an increasing discharge for the last 5 years. The biggest increase is in the fall.
- Nitrate loads have slightly increased.
- TN/TP ratio going up over time so it favors Microcystis (1975-2012)

Major Points:

- Loads and discharges were greater 2008-2012 than 2000-2007
- 2008 was record setting on a water year basis
- Loads : winter> spring>fall>summer
- Concentrations: Same as above, but less consistent
- Loads – When discharge is slightly up, TP slightly down, DRP significantly up, Nitrate and Total Nitrogen down slightly
- Concentrations – When TP slightly down, DRP significantly up, Nitrate and Total Nitrogen slightly down

2011 had extremely high spring loading

2012 had extremely low spring loading

Different Reduction Goals

GLWQA – September 17, 2012

The 11,000 metric tons TP reduction for the whole lake is still recommended, but on an interim basis until it can be updated. The document now includes a discussion on DRP instead of just focusing on TP. Parties to this agreement are to review and update concentrations and loading recommendations by Country within 3 years. The current whole lake TP reduction will be reviewed and updated to meet their objectives. The nutrients annex in the GLWQA has 6 objectives.

1) Narrative Goal

An example of a narrative goal is in the GLWQ agreement....algal biomass will be below nuisance conditions.

Pro: Narrative tells what we want. Easy for public to understand.

Con: Fuzzy. Language can be arbitrary and subjective. This can't be measured. We need targets to help us achieve the narrative goal. Narrative goals can't stand alone, but can be used to drive development of targets.

2) Dissolved Phosphorus Concentration

The GLWQA recommends a spring TP loading for the western basin similar to what is presented in the LAMP. But a number is a point in time. This does not address the expected variability.

The GLWQ Agreement is now final. Why not use those endpoints that everyone agreed with? Consider that those endpoints may not be realistic.

What about a flow proportional concentration - Tributary vs. open water?

3) Dissolved Phosphorus Loading

Can we consider a range of loads or concentrations instead of a specific number?

In 2010, GLNPO released the GLR Action Plan with targets to be achieved by 2014. There are 5 yr average annual loadings recommended for the Maumee River. The baseline is 623 metric tons /year DRP. By 2014 the load should be reduced to 592 metric tons/year DRP

Seasonal loading seems to be significant. Annual (not seasonal) load is important for hypoxia. Annual load contributes to in-lake re-suspension.

Detroit and Maumee river loadings are similar, but the concentration from the Detroit river is a lot lower because of more volume of water.

One possibility is to develop a 5 year average annual load target to no more than "X metric tons" discharged between March-June to address the western basin cyanobacteria bloom. This would address the variability between years. Pick a year to meet a specified target acknowledging a lead time. There

can be a goal loading number per year with the expectation of a target being reached at the end of 5 years. The target should be related back to the baseline data.

- Consider which designated use we are protecting – fish, PWS?
- Consider setting algal toxin targets
- Consider how much loading Ohio can control.
- Consider if we should develop a realistic target or a target we know will reduce the blooms?
- Consider that BMPs take time to implement.
- Consider tying incentives and dis-incentives to yearly targets on the way to the goal.

Discussion on 2014 Intensive Monitoring Year for Lake Erie

- Tabled until next meeting after a meeting with NOAA.

Additional Items to Discuss Next Meeting

- A comparison of 5 year seasonal averages for spring loading and whole year loadings. Richards will look into data to recommend possible targets.
- A one page summary of targets presented in the LaMP.
- A summary of 1990s OEPA nutrient benchmark index developed by Ohio EPA.
- A discussion of the P principles paper at next meeting.

<http://www.springerlink.com/content/mm74429553357060/fulltext.pdf>

- A discussion of NOAA's conclusions about the 2012 algal season blooms in Lake Erie. (A meeting is planned with NOAA , Ohio EPA and Sea Grant on Nov. 19)