

## **Nutrient Reduction Workgroup Meeting #2**

**September 18, 2013**

**Asmark Agricenter, Bloomington, Illinois**

**Meeting Commenced:**

**1:34 pm**

### **INTRODUCTION:**

**Marcia Willhite of the Illinois EPA introduced herself to the audience. Willhite asked others to introduce themselves and their occupations to the rest of the workgroup.**

**After each group member's introductions, Willhite then directed the work group's attention to Brian Miller of the IL-IN Sea Grant (part of the University of Illinois), which will help facilitate meetings going forward. He explained his group's purpose, especially its intergovernmental agreements.**

**Under this facilitation, Miller explained that he is working with IEPA and IDA on formulating a statewide nutrient reduction strategy. Miller pointed the workgroups attention to the Stoner memo, with its numerous frameworks on nutrient reduction in priority watersheds identified early.**

**This will included looking at the Stoner memo, especially its first part in prioritizing watersheds. Miller is going over the facilitation plan with the workgroup.**

### **PRESENTATION:**

**Miller then turned the floor to Dr. Mark David of U of I. In his presentation, David revisited when he presented current conditions last, including the estimates of point and non-point source (NPS) pollution and looking at agricultural practices across the state In his presentation, David compared N and P loads between 1980-1996 and 1997-2011.**

**David then reiterated the goals of a 45% reduction of nitrate-N and total P from 1980-1996 loads. He also showed nitrate-N and Total P targets relative to actual loads between 1980-1996.**

**The next step David said is identifying HUC 8's with highest nutrient yields and loads into Gulf of Mexico. That also entails looking at watersheds with nutrient impaired waterbodies (vis-à-vis 303(d) list). He then showed the audience a map of Illinois's HUC 8 watersheds, noting some are monitored and others are not (therefore he is confident that he has the best available data gathered from multiple sources).**

David showed total N yields NPS in HUC 8 watersheds, from '97-2011 time period. He noted that for some watersheds he did not have any data. Total N yields are not surprising, according to David. Southern Illinois...not too many...not too much tile drainage...lot less N yield. Central and Northern watersheds have high N-yield and are tile-drained).

Next he brought up a map of point source N yields, and David showed that they are high in Chicago. He then compared PS N yields to that with NPS N yields as a contrast.

David moved onto a HUC 8 map with Total P. He then proceeded to a NPS Total P map, where P is higher in agricultural areas compared to those in urban area. The opposite is true for point source data with Total P.

Next, David showed two side-by-side maps of Illinois; one showed impaired streams because of Dissolved Oxygen (DO). With regard to DO, David presented data that showed DO may not be due to nutrients. He found a positive best correlation on point source N, but a negative correlation with NPS N.

#### **PRIORITY WATERSHEDS DISCUSSION:**

**Summary of Policy Workgroup's recommendations for Additional Considerations for Watershed Prioritization:**

- **In addition to nutrient loads, criteria for identifying priority watersheds should include: local benefits to water quality and biodiversity and possibility of success**
- **Participants requested that priority watersheds should be presented in a table format listing nutrient loads, local benefits, and chance of success**
- **Urban non-point source pollution should be included in analyses**

Miller then spoke, reminding the workgroup that this was offered as a starting point for a dialogue about priority watersheds. David concurred, adding that the workgroup can rank the priority watershed anyway they want.

Miller then asked the audience if there are other watersheds for priority with high N yields, and if there are any surprises for point source and NPS.

Willhite said that David is focused on flowing waters, and wanted to know how to account for lakes on the 303(d) list. Willhite points out that we see high impairments with lakes. David concedes he did not include lakes, but can try to link the lakes.

In addition, Willhite wants to know if the Science Team looked at waters that are algae impaired. David wanted to know if it was listed. Bob Mosher then further clarified about offensive conditions in lakes.

**Gregg Good of IEPA then said that a process is in place to identify offensive conditions in lakes and streams, and that includes determining whether or not aquatic algae is an impairment.**

**One participant asked if Gulf hypoxia is a main concern, then should lakes be considered, since not transporting nutrients?**

**Kay Anderson of American Bottoms commented that she and her group were excited about this information being presented, but was disappointed information was not provided for review beforehand. Miller reiterated that things will be available on the website and her group will have an opportunity to provide comments through her as we move forward on the watershed prioritization process.**

**Attorney Albert Ettinger questioned the units by acre. David clarified that is identified by person per acre, NOT crop per acre. David went on to give the method of how they calculate it. He makes the point that he is not presenting this data under the pretense as a “critical watershed,” but that it is up to the workgroup to determine what they would be.**

**Miller then displayed the slide showing the difference between N yields in PS and NPS, and asked the working group if there were surprises. Albert Ettinger wanted clarification on how a point source was categorized. He pointed out that construction creates pollution, but implies that there was no consensus on how to categorize it accurately.**

**David and another workgroup participants concurred that it is harder to calculate NPS urban discharges compared to PS pollution in urban areas because it is not measured and recorded.**

**David also said that the Upper Fox River, with its dams, likely helps with NPS nitrogen loads, and therefore makes point source loads much more noticeable.**

**Willhite went on to say that the IEPA does not have a way to accurately determine NPS loads, and then Good reminded people of the old 208 program, encapsulating water quality management vis-à-vis the National Urban Runoff Program (NURP) back in the late 1970s to ‘80s.**

**Miller then asked the working group if there were surprises about PS and NPS P yields. A workgroup participant suggested that fertilizer application was high among homeowners. David quoted research that said that the losses from fertilizer runoff are not quite high, therefore not showing up as a huge source.**

**One participant asked David if an area of Illinois (from Alton north to around Macomb?) has the correct amount of NPS P yields.**

**Ettinger asked if David was including Combined Sewer Overflows (CSOs) as part of the point source, and David said that he did not include that in his research. Ettinger said that CSOs, especially runoff from those sewer systems, are a big**

problem in some communities. David said that even with this data, the point source P is still higher compared to NPS (which would include CSOs).

Another participant asked where the sources of the P came from, and David said that while Nitrogen was limited to one source (i.e. tile-drained agriculture and sewage) P came from a multiple sources like industry and agricultural.

Miller directed the working group to consider the Stoner framework step 1 to identify priority watersheds. He asked workgroup participants to for additional considerations in prioritization.

One participant asked if there was a statistical difference between stream miles assessed (303(d) list and the total stream miles. Good pointed out that IEPA assesses some 15,000-16,000 miles every two years.

Trevor Sample of IEPA said that some streams will have monitoring stations.

One participant said that the 303(d) list of steams is more evenly spaced than the nutrient loading, with which David agreed. While the participant said that there was a higher N yield in the state, the correlation does not make sense (the 303(d) lists are not just limited to one area). If we are to prioritize a problem, then the N or P yields do not do that.

Miller asked clarification from Willhite on what else goes into stream impairments. Good said that stream impairments are based on fish, macrovertebrates, habit and water quality all together, then they make an assessment for aquatic life use. A stream can also be on the 303(d) list for other use impairment such as fish consumption, primary contact swimming and public water supplies.

Ettinger stated that the workgroup is focusing on hypoxia in Gulf of Mexico and nutrient loadings, even if they may not have a local impact. He wants a strategy that has both benefits. One participant said that he wants local problems to be tackled first.

Willhite suggested that once they identify priority watersheds, that they also implement a “filter,” to figure out what top parameters for priority watershed. Miller noted the participant’s suggestion of tackling local first, and that includes drinking water.

Another participant asked about targets related to costs, and Willhite said that things like an available TMDL would serve as a good guide map for 45% reduction in N and P loadings.

Warren Goetsch of IDA reminded the group that the Stoner framework directs states to use high loadings as a guide towards prioritizing watersheds. He said that the USEPA should not totally dictate the plan, but he agrees that considering local benefits should be a cornerstone of the plan.

Miller then again asked the workgroup for their impressions with a side-by-side map of Illinois's PS and NPS yields.

### **PRESENTATION:**

Miller then re-introduced David to talk about practices. David estimated field-level effectiveness of various agricultural management practices, using Iowa or Lake Bloomington as guidelines.

David uses MLRA's, turning 15 of them into 9. He showed a map of the MLRA's overlaid with HUC 8's. He showed a table of these MLRAs, such as their corn and soybean acres, drained acres, corn and soybean yields etc.

David then showed estimates of agricultural N management (MLRA 5 d Claypon 5 has a 180 lb estimated corn fertilizer load). On the same table, he also explained that the N yield per crop acre are larger in the northern sections of the state, and get smaller moving south.

David then used estimates of what Iowa used for BMPs with regard to Corn Fertilizer N. He explained the MRTN (Maximum Return to N) (see PowerPoint for more information).

David delineated the MLRAs further, pointing out its drained cropland and Nitrate-N yield per row crop acre. He says that the numbers are important because when the practices are implemented, then you can use the numbers as a baseline.

One participant was worried about if you would have to sacrifice certain practices; David said you do NOT need to sacrifice some things. They calculate the data knowing losses have already occurred.

David looked at Lake Bloomington and Iowa, examining example statewide results (these are practices, not final scenarios, David emphasizes). He explained to the workgroup the columns, like the percent reduction of nutrient load, the nutrient reduced, total load and nutrient reduction percentage (from baseline). This sample, according to David, derives from the Iowa analysis for nutrient reduction.

David said a realistic scenario would be cover crops on 20% of land, not 100%. One can calculate the baseline number by taking nitrate-N divided by total load. He broke these down by in-field and edge-of-field.

David went on to say that tile-drained regions do not go through a buffer. They could not calculate Nitrate reduced for buffers (in edge of field) because it is complicated; he tried to get in touch with Iowa officials on how they calculated it, but they have not told him.

At the end of the practices evaluations, David did a simulation of a point source reduction of 6 mg Nitrate-N/L, and he showed that it reduces Nitrate-N by 35 million lbs, with an 8.5% Nitrate-N reduction. He said that while the number of pounds sounds big, the percentage is actually quite small.

David then moved onto Agricultural P Management, with the same kind of data (i.e. fertilizer data). One thing they are using is an IDA Transect Survey Median Soil Loss Estimates, with help from Greg McIsaac of the U of I. He showed data that explains that Southern Illinois has higher P loss from heavier rains and bigger slopes.

David says that erosion research has been done for 80 years, and while strides have been made, the loads in MLRAs (especially in Southern Illinois) are higher than the 5 ton/ac.

Similar to the N simulation, David showed a table with in-field, edge of field and point source (among others). David admitted that the data is not as complete as it is for N reduction. David said he finds buffers to be tricky estimate, assuming one can put a buffer everywhere with 60% Total P reduction, one would reduce the load 7.2 million pounds.

One participant wanted to clarify on where buffers could be placed, such as small streams. David mentioned that the buffers would take away acres of land.

Focusing on point source, David noted that if total P is reduced by 1mg total P/L, a 10.6 million pounds reeducation would be achieved (28.3 percent reduction).

One participant pointed out, looking at Iowa, if you look at something from a statewide basis, the best management practices will be implemented on a watershed basis. That is, it might not stand out significantly on a statewide basis, but on a watershed by watershed basis.

Ettinger asked whether the 37.5 total P load is Illinois is the actual total load, which David affirmed. David then told Ettinger that Illinois's would need to reduce the total P load by 50% to meet its nutrient reduction goal.

A discussion ensued over how to calculate the Total P reduction % from baseline. David explained that to calculate it the total P load reduced is divided by the total P load.

One participant made the comment that "buffer zone" is just an umbrella term, similar to word "car." In a rural setting, a BMP might be a riparian buffer with trees and shrubs, while an agricultural best management practice's buffer zone would be a grass strip. Therefore, the buffer zones need to be clarified depending upon the management practice emphasized.

## **PRACTICES DISCUSSION:**

### **Summary of Workgroup's suggestions for Additional Practices to be Included in Scenario Analyses:**

- **Nitrogen considerations: Livestock and manure management (incorporation, application timing, injection), Voluntary land retirement, Drainage water management, Large-scale wetland restoration, Nutrient trading**
- **Phosphorous considerations: Livestock and manure management (incorporation, application timing, injection), Streambank stabilization, Point source reductions (using 0.3 P/L actual values rather than 0.7)**
- **Both: split applications of fertilizer, timing of fertilizer applications**
- **Consider watershed analysis in addition to statewide analysis in determining the effectiveness of practices**
- **Consider urban nonpoint source reduction strategies**

Miller said that the workgroup is moving at light speed, and that in December, he would like to have breakout groups to go into greater detail. He then asked the audience to think about the two tables (of total P and N load reductions). He asked the workgroup what additional practices they would like to see added to the analysis for consideration in scenario development?

Ettinger said he would like to look at agricultural best management practices, but one participant wanted further clarification (land-based, like cover crops?) Ettinger alluded to some practices, but David conceded that on those practices he does not have the data (i.e. manure, which may not be a large nutrient source in Illinois).

Goetsch and David discussed what would provide the best return in terms of nitrogen reduction.

One participant wanted to know how the Science Team got their land retirement estimate. David said that he got the calculations from the MLRA level.

Miller asked for more input, and Rick Manner of the Urbana-Champaign Sanitary District wanted to look at wetland restoration, and asked David about wetland restoration beyond small, edge-of-field options. Willhite said that there was no data that documents the N reduction through that method (large scale wetlands restoration), and David noted that no one builds 1000 acre+ treatment wetlands.

One participant wanted nutrient trading added to the list, pointing out that in order for wetland restoration and side stream nutrient removal to be feasible, a funding source, like trading, would be necessary.

One participant asked David if 50/50 baseline reduction is a good number. David says that there are no yield measurements of that, and they are not common.

**Brown said that they [the agricultural community] are working on spreading out Nitrogen applications over time, instead of at one point. Brown says that he is basing his information off data, and that workgroup participants (i.e. Brown) could add an addendum. With that said, Brown does not want to change anything (the 50/50 or conversion to spring).**

**Good wanted to know whether manure was injected or not.**

**One participant wanted to focus on soluble reactive phosphorous (SRP), but David said that he can only focus on total phosphorous.**

**David mentioned that streambank stabilization and an associated reduction cannot be determined in Illinois, although it has been done in Minnesota. Willhite asked Sample if IEPA uses streambank stabilization data to find a reduction, and Sample said they have not. Good said that it has been done in the past at the IEPA.**

### **FUTURE MEETING DATES:**

**Miller moved on to discussion about future meeting dates:**

**For October, Miller asked if the 21<sup>st</sup>, 22<sup>nd</sup> and 23<sup>rd</sup> would work (the 7<sup>th</sup> and 8<sup>th</sup> are set in stone). Some folks will have conflicts, so then he moved on to the 17<sup>th</sup> (where the meeting could be held in Champaign).**

**Miller then moved on to November, and David said the 19<sup>th</sup> and 20<sup>th</sup> is when a National Academy of Sciences meeting in St. Louis will be held.**

**One participant then suggested November 22<sup>nd</sup>. Miller said that people do not seem to have problem with that date. One participant asked what would be planned, and Marcia pointed them to the document in front of them.**

**Between January-May, Miller said the workgroup will have a meeting a month. Does the idea of having a set date make it more amenable (predictability?)**

**Starting in December, the workgroups will have small groups, to which participants can nominate themselves to advise writing teams on specific sections of the nutrient management plan.**

**Miller asked if Tuesday (i.e. the third Tuesday) is a bad day (in general). He then went to Third Mondays, and found conflicts there. He then solicited requests for the third. Wednesday of the month, asking them if they had recurring conflicts.**

**Goetsch said that there are big Ag conferences Monday-Wednesday.**

**Willhite and Miller asked if the third Friday worked. One participant suggested Fourth Friday of every month. Miller then suggested a Doodle Poll.**

**The following kinds of dates could be put up for a poll: Third Wednesdays or Fourth Fridays.**

**Meeting Adjourned:**

**3:52 pm**