

# **Agriculture Water Quality Partnership Forum (AWQPF) Technical Subgroup**

## ***Meeting Notes***

Meeting 1: August 26, 2015, IDA, FFA Room, Springfield, IL

### **Summary**

John Lawrence, Iowa State Associate Dean and Director, presented their Measures of Success Committee information.

- Interface between land practice group and water monitoring group:
  - Practice based strategy. Don't have to have water monitoring and BMPs line up. But, ultimately they do.
  - 2 groups communicate.
- When determining IA's Baseline year, they looked at 2008-2011 and estimated load at that time. But, currently looking at 1987. Others want them to look at 1980-96. John believes that N use and tillage practices have improved, but land use practices have changed and N use may be higher.

### **This group decided to adapt Iowa's Measures Logic model to Illinois**

- Go back to strategy and pick the practices and track these. Add BMPs when scientific literature indicates they are effective.
- For 2 year report, might be more practical to select certain priority watersheds (HUC 8).
- Could compare cover crop data to ensure FSA covers USDA and IDA data.
- Could use USDA layers to find grasslands/land use changes.
- Need to query FSA, etc before NASS survey to farmers. NASS Survey could be most valuable for measuring attitude. The survey could ask questions about attitude, which could be resurveyed later. Examples could include: "How much impact does your farm contribute to Hypoxia? How much impact does your farm contribute to local water quality? Are you concerned about losing nutrients?"
- How to get to a win-win on putting low yield acreage in wetland or CRP? Farmers have yield maps. Analyst (such as David Muth) could determine where this is. This takes advantage of precision farming for nutrient loss reduction.

### **Next Steps**

- Contribute information to 3 tables: Land Measures, Water Measures, and Baseline Year. IWRC to send electronically. Due Sept 11.
- IWRC to schedule call to discuss information on 3 tables as they pertain to the upcoming NASS survey. Call scheduled for Sept 21.

### **In attendance:**

Trevor Sample, IEPA  
Steve Chard, IDA

Kevin Rogers, IDA  
Mark Schleusener, USDA-NASS  
Lisa Beja, IDNR  
Mike Chandler, IDNR  
Jennifer Tirey, IPPA  
Eric Gerth, NRCS  
Natalie Prince, FSA  
Kim Martin, FSA  
Warren Goetsch, IDA  
John Lawrence, Iowa  
Eliana Brown, IWRC  
Brian Miller, IWRC  
Katie Hollenbeck, IWRC

Brian Miller: We also have John Lawrence here from Iowa and he worked on the Iowa Nutrient Reduction Strategy. He will talk about some of the problems they encountered, and give us some background.

#### Subgroup Charge

Brian Miller: Let's start with the 3 things the subcommittee is charged with. At the end, there is an adaptive management section. You have to measure activities you put and place and see if there is a difference. What other additional steps might we need to take? There has to be a starting point. What do we want to use as your starting point?

- a. Determine the best way to share BMP implementation data across agencies (so we can track our progress in accomplishing the Illinois Nutrient Loss Reduction Strategy)
- b. Determine what BMP implementation parameters will be tracked (e.g. cover crops, wetland, buffer strips, etc. ) and how it will be aggregated (e.g. per watershed, statewide, lump practices into categories like edge of field, etc.) This includes identifying future data parameters required from producer surveys or transect surveys to track progress in accomplishing the NLRs.
- c. Assess existing BMP implementation data availability over time to advise the policy work group as they select a BMP implementation baseline year.

#### Iowa's Experience – John Lawrence [see PPT]

John Lawrence: I have been working on this project since the beginning. I'm the Associate Dean and Director from Iowa State. The Water Resource Coordination Council and I were asked to lead the measurement committee. I will share how we measure things. It was a voluntary science based program to reduce the nitrogen and phosphorus impact on water. This includes cities, industry and agricultures. It is a practice based approach to show meaningful and measurable progress. The policy section was developed by IDALS and IDNR with input from point and nonpoint source stakeholders. The practice part required to implement technically and economically feasible process changes for nutrient removal. Agriculture is greatest contributor to N and P by a long shot. Non-point source goals were to implement

science-based practices to achieve 45% reduction. It had to be based on science and research. SP 435 is the publication number of practices we could link. Nitrogen moves primarily with water and phosphorus moves primarily with eroded soil. There has to be measurements and it's not what feels good, there has to be proof. If there was peer reviewed research or data that could be reviewed, we could link that to water quality. A logic model – academia, etc. requires this in grant proposals. We know some logical steps to go through even though it may take a long time. We want to see a change in the water, but before we see a change in the water, we have to see a change in the land. In order to see a change in the land, we have to see a human change. Before we expect to see a change in human behavior, we have to see a change in inputs. So the order goes inputs-humans-land-water. If we can't see change in input and human behavior, why would we ever see change or progress in land or water? In an annual progress report to the governor, we include the 4 components with a 2015 public investment and NGO investment. We can track Ag organizations year to year and see if they are giving \$\$ to NGO to improve water quality or bridges, etc. Education and awareness is measured every year. What about humans? Iowa has learning farms fields and Nutrient Reduction Strategy farmer surveys (knowledge in behavior) that measures farmer knowledge, attitude, and behavior of strategy. We also measure what is causing attitudes to change. We received a 44% and 40% response rate on survey. Point source procedures are the hare in this race (15 year schedule) and the tortoise is agriculture which shows a 4% vs. 40% reduction. There is weekly monitoring for non-point sources with land use and FSA data is used to measure land use. Farmers are committed to report so that they can have availability to crop insurance. Not every office counts cover crops the same way. Cover crops, buffer strips, etc. are available reportable data. How do you account for the private investment? Non-point source public data – what are you measuring and is everyone measuring the same thing? And are you duplicating counts? Iowa has a proposed funding-reporting plan. There is a water quality monitoring summary, with nitrogen completed and we are working on phosphorus. The load calculations are calculated based on practices and the change in practices produced an estimated change in loads. We can measure everything we can now and improve as we go.

So with that, questions?

Brian Miller: We have 40 minutes for discussion.

Mark Schleusener: Can you provide the list of practices and % reduction change?

John Lawrence: Yes, you can have it. It is a 4 page document. For example, anhydrazine has a 6% reduction with 4% standard deviation. So that's what the table has. The % shows the percent reduction you will get on a PER ACRE BASIS. There is no one practice that will reach every goal.

Mark Schleusener: Annual progress report? Can we share this in the minutes?

Brian Miller: Can you talk about survey data a little? A slide showed human factors. So most of that human information was collected via 2-3 kinds of surveys?

John Lawrence: Implementation of that is "what is it that we can survey?" Not surveying the partners, but what action you can take. We can talk about the number or the acreage they cover. Something we

can enumerate and show people are on board. We want to show a dashboard with needles or a bar to show visible tangible achievements.

Mark Schleusener: So there are lots of organizations working together. Who is the project manager?

John Lawrence: We are all pulling in same direction, but there is no project manager.

Mark Schleusener: The decision process is complicated then?

John Lawrence: Yes. The champion in agriculture is Bill Noarty, the Secretary of Agriculture. Iowa Soybean is jockeying for position – Roger Wolf. 10-12 people are on the water quality team.

Brian Miller: Under land, how did you arrive at those kinds of answers?

John Lawrence: Those are the lists of practices that count. How are we measuring this? FSA data. Look at wetlands, bioreactors, buffers, saturated buffers, etc.

Warren Goetsch: Do you feel confident that what's being cost shared between organizations? You have to understand what people are doing voluntarily without government organizations? Do you feel your survey is giving you answers?

John Lawrence: What percent of your work is done via government assistance? About 50%. There is a lot of private spending. Select tax credits for private spending.

Steve Chard: What support from EPA?

John Lawrence: Full partner. IDNR is affiliation with the Federal EPA. IDNR did point sources, IDALS did nonpoint sources, Iowa State University brought nonpoint source science.

Brian Miller: Go back to the logic model, to land and water. For the monitoring committee, the Nutrient Monitoring Council is ours. How do you handle interface between measuring land and water?

John Lawrence: Practice based strategy and we don't have to have them match up. Year by year, we are not claiming they will match up. It will be difficult to measure downstream concentration.

Brian Miller: So there could be a group working on land vs. working on water.

John Lawrence: There are gage stations to answer if we are getting the practices changed for long term reduction in nutrients.

Kevin Rogers: I'm sure the monitors are expensive.

John Lawrence: Until the kinks are worked out, all was at the discretion of the Flood Center of Iowa (priority watersheds).

Kevin Rogers: Why isn't point sources part of the feasibility study?

John Lawrence: We are measuring weekly samples and measuring inflow and outflow. It's a new concept, what is going in and what is coming out. If a plant is doing a good job, they can't get much better, but a bad plant can increase significantly. Also there is biological vs. chemical removal. What can you get us with a modest investment via biologically?

Trevor Sample: Nitrate vs. phosphate problems?

John Lawrence: Nitrate and maybe nitrite.

Kevin Rogers: Are yours real time?

Trevor Sample: Yes, in a small area. USGS comes out with them.

John Lawrence: Flood Center at University of Iowa has a network that measures phases and are now adding nutrient components in select locations.

Warren Goetsch: Did you look at conditions in 2010?

John Lawrence: We looked at 2008-2011 for best estimate of practice data and estimated load. We are trying to go back to 1987, but 1980-1986 is when the hypoxic zone began. 1987 is when we chose. We had fertilizer tax, sales by county, midpoint on CRP acres, water stream data, so we had a full set of data to calculate a load like 2008-2011. Pool going on if number was bigger or smaller! Nitrogen, tillage practices improves. Land use changes of land receiving nutrients are higher.

Brian Miller: Take a quick break and then start exploring data metrics and what are we using to measure them.

BREAK

Brian Miller: We do have some practices identified in the strategy, but those may change over time. For the practices that we have, we want to have some way to measure these. If we list things, we have to talk about how we are going to capture these.

John Lawrence: Fertilizer sales are reported to the county (in Iowa).

Brian Miller: The first 5 have to do with fertilizer application rates.

Mark Schleusener: We have total tonnage application rates on corn and soybeans in 2014 for NASS.

Warren Goetsch: For each level of data organization, can we narrow it down to county, or HUC. Is it a new or old activity? What are data limitations for the best base date to be using? Once we figure out what we have, then the gaps we identify, what potential to plug gaps with NASS survey works.

Mark Schleusener: It's complicated. We have a 20 year data series, not every year by state, not by county from the mid-1990s. There are numerous measurements in 2010. Average application per acre, TKN, and we collect date of fertilizer application. There is state level N, P, and K. And there is a long macroinvertebrate level data series.

Jennifer Tirey: NRAC dollars.

Mark Schleusener: A nickel per pound.

Warren Goetsch: In Iowa, a dealer may be reporting on county line, but application may be in another county.

John Lawrence: And they report when they bought it and might prepay to avoid taxes in December. So it is reported in one year when it is to be used for the next.

Mark Schleusener: Level of data series.

Warren Goetsch: Nitrification inhibitor is only something to do by survey through Ag retailers.

Eric Gerth: Pay per acre, for different levels of nutrient management. Someone who was not following standards, there may be payment per acre for nutrient management, depending on management type. Scenarios change over the years. By policy, annual payment up to 3 years, certify what they are supposed to do and pay them. Practice lifespan for Ag practice is 1 year with no obligation to continue.

John Lawrence: Do you require 590 nutrient management plans?

Eric Gerth: Yes, can still do 590 if they still have a general plan.

Warren Goetsch: Does Iowa serve an agro business. Practice information directly?

John Lawrence: We have not; we will have statistical design that will survey 80 acres. We want to know on that farm, what has happened. Rates, but have not included this as part of measurement.

Warren Goetsch: Edge of field, CRP, etc. Fertilizer usage of those will not be helpful with.

Mark Schleusener: 2012 NASS census has cover crops to the county level, 2019 next year.

Steve Chard: What about number of crops.

Natalie Prince: We can query out cover-only intended uses, maybe not on HUC level, just county level.

Eric Gerth: Pull some data by idea, we are evaluating quality and figuring out how to look at data without extracting it manually.

Brian Miller: At what point can you aggregate without confidentiality level.

Eric Gerth: Has to be reap-certified for public use. County level, maybe, but probably state level. As long as data is reap-certified, issues arrive by individual farmer or watershed since you are starting to pinpoint.

Natalie Prince: We have a FOIA officer to ask, county would be fine. And will have to ask about HUC level.

Warren Goetsch: Maybe only pick a couple priority watersheds for data mining. It is impractical to take everyone's data at a HUC level to start, maybe just pick a few HUC levels to start.

Trevor Sample: All priority watersheds are HUC 8.

Brian Miller: Would FSA capture all NRCS and Dept of Ag?

Natalie Prince: It should.

Mark Schleusener: How many of people will report radishes, oats, etc.?

Natalie Prince: They are supposed to report it to us.

John Lawrence: Get the numbers of cost shared and compare from last year.

Brian Miller: Ok, edge of field, bioreactors, wetlands, and buffers.

Trevor Sample: 12 bioreactors by U of I.

Brian Miller: Ok, wetlands and buffers.

Steve Chard: For the annual cost share on buffers, contract to maintain for 10 years.

Eric Gerth: Most folks will go through CRP for annual payment because we just provide financial assistance.

Kim Martin: Buffers all kinds, by acre.

Warren Goetsch: So data would show that there is a change in crop land size.

Kim Martin: When he certifies his crops, he should report it. If he is signed up for CRP practice, it would be certified as a buffer.

Jennifer Tirey: So you can make a rule that anything is not a crop land, it is classified as a perennial and you follow that rule year and year after year.

Trevor Sample: USDA puts out cropland data layers that you can use to classify cropland, grass, etc. You can go through GIS to find differences in land use change. It would be an estimation since unsure of resolution or accuracy of distance. USDA cropland data layer and DNR would capture if it was under easements. Also, should land use changes be separated out?

Lisa Beja: I think it should be separated.

Eric Gerth: Wetlands would be NRCS and FSA would have riparian buffers. NRCS would have wetlands via Emiquon.

Trevor Sample: Saturated buffers did not make it onto the list.

Brian Miller: Land improvement contract association for bioreactors. Water table management. Land use change. Conservation tillage practices.

Mark Schleusener: Detail in field management practices. It needs to match the NRLS document. Table 6.1 and 6.2.

Brian Miller: Perennial energy crops?

Mark Schleusener: "Perennial" is the key, alfalfa, hay, miscanthus, doesn't have to be "energy" crop.

Brian Miller: Perennial crop that are eroding higher than T. Is there a way to tie practices to if they are highly erodible acres?

Eric Gerth: Just because they are a super slope, doesn't mean they are eroding. It is very difficult to tie.

Mark Schleusener: I don't know how to measure that.

Brian Miller: Calculating loads? You have to calculate what you think your reduction is.

Warren Goetsch: We have to come up with baseline. We could assign numbers/percentages or an algorithm.

Trevor Sample: Indiana report is crude, but they did a MOU with NRCS. It determines sediment loss, but very crude.

Eric Gerth: Department of Agriculture is gathering data and crunching numbers. It was an impressive effort but also a completely different situation.

Trevor Sample: It is capturing soil erosion practices, but isn't capturing tile runoff.

Brian Miller: We will have to go through and calculate a load for Illinois.

Warren Goetsch: How are we going to demonstrate progress? There is no rule or regulation to estimate a load. Where do you want to land? Measure human perception or land changes? Or what water quality actually is? it's up to us to choose.

NASS Survey – Mark Schleusener

Brian Miller: Mark, talk about NASS survey.

Mark Schleusener: Scribbled out concepts. Informative stages. Acres, knowledge, landlords. We need to query FSA, etc. before we survey farmers. Could ask about attitudes: Do you think your farm contributes to Gulf of Mexico? Unless they believe that, they won't change. Measure knowledge and attitude and how it changes. Measure what are farmers thinking as well as acreage questions.

Brian Miller: It was more important to concentrate of nutrient loss benefits than Gulf of Mexico questions when working on NRLS.



Mark Schleusener: It's your money (farmers) and it's going down the river. They want the nutrients in their crops since it is coming out of their pockets.

Warren Goetsch: A companion question – does your farm have an impact on local water quality?

Mark Schleusener: No impacts, average impacts, lots of impact. Scale of 1-5. For instance, farmers should do more to reduce nutrient reduction. Results would be x% of farmers feel strongly about this, etc. Lots of producers feel strongly about preserving and farming the land. Tailor it to what are goals are – prune it back. From my viewpoint, someone comes to me and says I want to do a survey and find this out. I don't think we know what we want to find out. This fall the content of the survey has been finalized.

Warren Goetsch: Benefit to include questions in a survey that adjusts for other questions in the survey is that legal to do.

Mark Schleusener: Calibrate something that is known with great confidence. Skeptics will find holes in that process. Tillage and fertilizer applications. Better to have one watch than 2 watches that disagree. NASS survey can be very valuable.

Brian Miller: David Muth – idea of using precision farming data. 1. Producing well. 2. Medium spots, sandy or dry – losing nutrients, back off on nutrients. 3. Spots that are losers, might as well call Pheasants Forever and put in a wetland.

Mark Schleusener: 11 different technology practices in that same house.

Mike Chandler: Put low risk crops in high risk areas.

Brian Miller: What percent of data to make profitability?

Mike Chandler: We are that close with the technology to convince them.

Mark Schleusener: An analyst to determine what to put there be it CRP or whatever. 2 general questions: 1. What are you doing and how many acres are you doing it on? and 2. How do you feel and think?

Brian Miller: Follow up meeting. Is two months too late?

Mark Schleusener: I would like to mail it out 3 months from now. It's a set of questions, not a questionnaire. A good time to mail this would be by Feb 1. Get table out by this week or next week. I just don't know how we finalize anything.

Warren Goetsch: I need to decide who is paying for this. That will decide who is telling you yes or no. I need to talk and find out how we are going to do this.

Brian Miller: What you can't knock off in a survey, we will figure it out some other way.

Establishing a Baseline Year for Adaptive Management

Brian Miller: Ok, now the baseline year, what data do we have and what data makes the most sense? These first few are what Mark David and Greg McIsaac used for the Science Assessment.

Mark Schleusener: 2002, 2007 were reference years, and go back every 5 years after that for census of agriculture.

Warren Goetsch: Check if FSA 2011 data could be aggregated and accessed.

Eric Gerth: We have access back to the 2000s locally. CFP from 2010 and WRP from when they started. Different programs and different timeframes is the problem. Not a bad data, just not consistent data throughout.

Trevor Sample: All for buffers, wetlands, cost share everything. IEPA has all data on their website, going back to 2011. The 319 grant was 1990. Phase 2 Clean Lakes projects. GIS 4 map. Also capture and support CPP to 2001. Stream banks stabilization, 2001. Is it one baseline for urban, Ag and point sources? Or different for all? One year for everything or source specific?

~~Sharing/combining multiple agency data to track BMPs~~

Next meetings

Brian Miller: Recirculate this baseline chart and turn it over to the agencies. Future meetings and frequency?

Eliana Brown: every 2 months?

Brian Miller: Mid-September? A conference call to consolidate issues is good.

Eliana Brown: I'll send out these tables for the group to complete. We'll do a Doodle poll for the call.