DRAFT Agenda: Agricultural Nonpoint Source Subcommittee
December 16, 2013
10:00 am—3:30 pm
Illinoi Farm Bureau, 1701 N. Towanda Avenue
Bloomington, IL 61701-2050

SUMMARY POINTS:

- Presentations:
  - ***Soil and Water Conservation Districts Initiatives (***Lonnie Wilson***)***
  - ***Illinois Department of Natural Resources, CREP Enhancements and other Initiatives (***Wade Louis***)***
  - ***USDA-Natural Resources Conservation Service (***Kerry Goodrich***)***
  - **IL Department of Agriculture (**Warren Goetsch**)**
  - ***Illinois Council of Best Management Practices Initiatives (***Jean Payne—IFCA and Howard Brown—GROWMARK, Inc.***)***
  - ***Wetland Restoration (***Doug Blodgett ***–*** *TNC****)***
  - ***Illinois Buffer Partnership Program (***Debbie Fluegel ***–*** *Trees Forever****)***
  - ***Watershed Scale BMPs (***Maria Lemke ***–*** *TNC****)***
  - ***The Balance and tradeoffs between Regulatory and Voluntary Programs (***Dr. Jonathan Coppess***,*** *University of Illinois****)***

- ***Discussion: The balance between regulatory and voluntary approaches***
  - Fertilizer record keeping requirements
    - Would provide useful data for scientific understanding of nutrient pollution
    - Producers would be hesitant to share this information
    - While it shows where fertilizer is applied, it does nothing to address the loss of fertilizer or nutrient reduce runoff—is a limited tool
    - Would ensure that fertilizer application is adapted to needs of soil
      - A means to optimize inputs
  - Licensed fertilizer applicators
    - Much of this idea already exists within the certified crop advisor program
    - Would ensure a base level of competency in fertilizer application
    - The training and education involved in this measure would be helpful, but it's doubtful that certification itself would result in significant reductions
  - Prescription approach (required for fertilizer application)
    - Much of the ability to write these proposed fertilizer prescriptions is already available in the certified crop adviser program
      - Adding an incentive, such as the opportunity to trade nutrient credits, would be pivotal in moving this idea forward
  - Consolidated Nutrient Management Plans
    - Need baseline nutrient data to implement such programs

        - Nutrient management should be a systems approach, rather than one BMP or one number
    - Mandatory Practice Changes
        - All proposed regulatory approaches are good tools for managing nutrients, but they may not be appropriate as regulations
        - Need more research on BMPs and these ideas to be able to say if these strategies will be effective
        - Regulatory approach is the only thing that will ensure quick, statewide change
    - Other ideas
        - Different types of phosphorus fertilizers
        - Need to conduct a cost-analysis on these possible regulatory approaches—they might destroy any profit Illinois farmers are making
        - Things change from year to year in farming—an operation may do everything effectively for 90% of the time and have BMPs and nutrient plans ruined by drought or flooding. Need to maintain flexibility in nutrient management to allow for those situations, and need more research to address the outliers.

- ***Prioritization of BMPs for inclusion in Scenario Analyses and nutrient reduction strategy:***
    - See notes on individual practices

COMPLETE NOTES:

When a PowerPoint presentation was given, only audience questions were recorded in the notes. For a record of the presentation, please see the appropriate PDF affiliated with these notes. Summary notes are included for presentations without accompanying PowerPoints.

10:00 am — Noon: Long Standing, New, and Emerging Programs/Practices

10:00 am — 10:40 am Long Standing Programs Panel (Warren Goetsch*, Illinois Department of Agriculture – Moderator)*

- ***Soil and Water Conservation Districts Initiatives (***Lonnie Wilson*)*
    - ***No PowerPoint***
    - *Wetland restoration, buffer strips, cover crops*
    - *Education for nutrient management*
    - *Great watershed results with multiple practice programs (i.e. no till, etc.)*
    - *7 million/year for entire state—1.1 million for actual practice*
        - *Funding continues to be a challenge*
        - *Funding slightly over 50k per district for operations, and 50% from program grants*
        - *Work with partners (NRCS) and other fundraising activities*
        - *CREP is an important partner and a place for moving forward with strategies*

- ***Illinois Department of Natural Resources, CREP Enhancements and other Initiatives (***Wade Louis***)***
    - ***See PowerPoint***
    - Voluntary, incentive-based
    - IL increased easement options
    - Questions:
        - Overall goals of program have nutrient percentages: what is baseline and progress?
            - Don't have progress numbers. Lots of programs in the watershed we work in, and know we have some success, but don't know exactly what is due to CREP.
            - Goals set in 1989. Trying to figure out how numbers were determined
        - Percentages of Easement lengths
            - 93% are permanent. 15 years doesn't really make a lot of sense. Incentives are more enticing the longer the easement length
        - Modeling software have projections?
            - Mainly working on BMPs and what works best
            - Still working on that

- ***USDA-Natural Resources Conservation Service (***Kerry Goodrich***)***
    - ***See PowerPoint***
    - Prioritization and where do nutrients contribute to priorities?
        - Ranking Process—3 levels: National, State, Local
        - WQ—303d, other lists—weights decision. If sediments, look at practices, and then look at practices that generally affect water quality. Also ask: is the producer willing to input nutrient management plan, and this adds points, too.
        - National water quality, farmland, pesticides, endangered species, state—can focus concerns more, and local—bring focus even closer to the end goal of the projects?
    - Who formulates those questions, and how do nutrients come to fore as a state priority?
        - Assistant to the State Conservationist
        - Other staff members contribute to developing questions, and district conservationists, partners contribute and comment
        - In terms of nutrients, specifically: water quality a higher priority, in the past soil erosion was, and now little funding to that area, mostly water quality and technical practices. 60% equip funding going to livestock, a very high percentage going to water quality

- MRBI and National WQI, focus on local watersheds, any discussion on which watersheds changing as priority watersheds?
    - Haven't heard anything, yet. One of those programs that rolled out very quickly, and may have selected different watersheds if had more time. Whole project designed to get a watershed project with multiple practices implemented, and hope that change shows up in monitoring on water quality. HQ hesitant to designate more watersheds, because trying to see results. Immediate horizon, probably not changing those watersheds.
- Landowner submits proposal—is the ranking objective or subjective: will landowner have an idea?
    - No, not until work through process, but we do sit down with landowner and identify things that would give them a higher score if implemented

- **IL Department of Agriculture (**Warren Goetsch**)**
    - **See PowerPoint**
    - **No questions**

10:40 am — 11:10 am New Programs

- ***Illinois Council of Best Management Practices Initiatives (***Jean Payne—IFCA and Howard Brown—GROWMARK, Inc.***)***
    - ***MOM (Minimize Environmental Impact) + (Optimize Harvest Yield) + Maximize Input Utilization)—see PowerPoint***
    - ***Howard Brown—see PowerPoint***
    - ***No questions***

11:10 — 12:10 Emerging Programs

- ***Wetland Restoration (***Doug Blodgett ***–*** *TNC****)***
    - ***See PowerPoint***
    - Lessons learned:
        - Reconnecting floodplains to rivers results in:
            - Measurable reduction in nutrient loads in Illinois River
            - Floodwater storage and delay of flood pulse
            - Wildlife habitat
- ***Illinois Buffer Partnership Program (***Debbie Fluegel ***–*** *Trees Forever****)***
    - ***No PowerPoint***
    - Empower communities by building community, stewardship, and care for natural areas
    - Started as water quality initiatives: in 1997 research from Agroecology Center at Iowa State University looked at buffers, and then expanded to Illinois
    - Handout: since 2001 had ~200 projects in IL—grant program for landowners providing 50% cost share, up to 2k
        - Riparian plantings, livestock buffers, windbreaks, etc.

        - Planted 4000 acres of buffer projects in Illinois between 2010-12
    - Many landowners are alerted to program by publicity, but many referred to SWCD and NRCS
    - Common theme from landowners in natural disaster events—wish my neighbors would get involved/do something
        - Follow-up after the heavy flooding
            - 95% said riparian buffers worked—reduced erosion, encouraged wildlife, etc.
            - Also found that ~91%--the riparian systems were part of farm conservation strategies—others included things like no-till, windbreaks, etc.
    - Follow up with landowners to see how projects holding up and information about additional conservation programs
    - Each year fund about 10-15 projects
    - Fall application in Dec.
        - Field coordinators visit in Jan-Feb.
        - Early March landowners notified
        - Have until Dec 31st to complete project
        - Follow NRCS standards for planting, designs, and maintenance
    - Why landowners putting these projects in? Each has a different story
        - Some want to minimize erosion, attract wildlife, etc.
        - Wide variety of projects—no minimum acreage
        - Don't only do trees—prairies and shrubs as well
- ***Watershed Scale BMP's (***Maria Lemke ***–*** *TNC****)***
    - ***See PowerPoint***
    - Lessons learned:
        - Treatment wetlands at the base of tile-drained fields:
            - Effectively treat nutrients in runoff
            - About 40% of farmers receiving targeted outreach implemented these methods

12:10 pm — 1:00 pm: LUNCH (IFB Cafeteria)

1:00 pm — 1:30 pm Lunch Talk - The Balance and tradeoffs between Regulatory and Voluntary Programs (Dr. Jonathan Coppess***,*** *University of Illinois****)***

- Mississippi River and Nutrient Management: how do you look at the tradeoff between voluntary and regulatory
    - Financial incentives for voluntary—starting to see a shift in the current version of the Farm Bill
        - Regional Conservation Partnerships—how to address environmental areas around large areas, such as Chesapeake Bay, Great Lakes

                - Shifting money out of certain programs and moving it into regional efforts
                - Looking for outside, private partners to increase funding
                - Unique and new way of pooling all these efforts
                - Federal and state government, industry, private landowners/farmers to work on regional problems and fund them
    - Farm Bill—budget cuts
        - General opinion: Cutting funding to farmers to balance budget
        - In agriculture circles, there is political benefit to showing that we can work together, don't need regulatory hammer, can solve these issues with voluntary programs
        - Will help across the aisle, showing progress being made
    - Public Perception
        - Food Stamps, SNAP, Farm Assistance
        - Look at numbers of farmers, compared to those who don't farm—who and how many—need to cultivate public support and tell the farmers' stories to the general public
            - If people bring up damage to Gulf of Mexico Dead Zone—can describe what we're doing, how we're changing things, can show development, reframe the public discourse
    - Questions:
        - Partnerships enabling growers, frustration from industry: farmers wanting to make decisions quickly, but decisions needed to be made earlier. Many of these programs are very complicated and must be planned months in advance. See programs become more fluid?
            - Tentatively, yes. No matter what, federal programs always are going to be a struggle to get through the paperwork. So some improvement, but not promise that will become smooth and fluid. Regional Program will help a lot. Big incentive at NRCS to improve this. They understand that private partner also unexcited about all the paperwork. But trying to work through federal programs will still be difficult; would help if can go back to federal government with concrete requests on what to change.
        - Regional Conservation Partnerships: coming, or exists presently. One constructed for Upper Mississippi?
            - As is designed, does not exist yet. In Title 2 of the Farm Bill—then jump into implementation fairly quickly. Shouldn't take too long, because combining existing authorities—i.e. already Great Lakes Program, and then uses existing programs to address problems. Still a regulatory process so may still be slow. Not there yet, needs to pass with Farm Bill?
        - Pre-defining the regions?
            - Yes, critical conservation areas, which are not defined. But are some criteria, such as what are these areas and how to prioritize. 6-8 across the country. Will be big, like Chesapeake

Bay watershed size. But don't have to be critical areas to apply for funds. States can apply. Are priority dollars. Question for Illinois—how to get Upper Mississippi involved.

- Suggestions that the current Farm Bill really favors grain over grass. Do you see change in this scenario, and do you agree with that?
    - In Illinois markets are strong and favor grain. Interesting potential, perennials, especially feedstock. Lots of issues there. Program follows production. Providing assistance based on market. Cover cropping, finding alternative solutions for the farmer. Farm Bill is looking to step down the acres in the CRP program. Rent CRP isn't going to compete. If going to put CRP ground back in production, then what else should be done to balance production needs with conservation needs? Can be done, seeing a lot of farmers doing it. Starting to see shift from statutory vs. technical issues. Market driving this, not going to change. So how do we address and work around these problems?
- Status of Conservation Compliance?
    - Get Title 1 assistance, have to comply with highly erodible ground, Senate put it in crop insurance, passed Senate, and might pass conference. Strong support of Senate, some resistance with House. Language was built to work in the insurance setting. Designed to prevent crossing wires with insurance. Shouldn't be too difficult a position. Has at least been tentatively agreed to.

1:30 pm — 3:30 pm Agricultural Subcommittee working meeting

Facilitated Discussion:

1:30 — 2:15 Discuss balance between regulatory and voluntary approaches

1. Fertilizer record keeping requirement
    a. Similar to USDA private applicator pesticide record (regulatory requirement for a restricted use pesticide) amount applied, area, crop, rate, date
    b. Comments:
        i. Counting for input, but not output, and not for anything that happens in-between, and often beyond applicators' control. Only useful if part of a whole. Could follow a Nutrient Management plan perfectly, but still have everything messed up by a drought
        ii. Question: to what extent do fertilizer applicators/farmers keep records on application?
            1. Many producers pay for a service to keep track of applications. Soil testing on about a 60% basis of lands, pay for ag retailers to keep records.

2. On my farm, we're mapping everything. Not everyone does this, but I overlay maps with more maps to keep track.
3. We're a smaller operator, and we do the same. Even when doing application ourselves we keep records.
4. Information rich, and interpretation poor. Finally starting to pull these pieces together and create scenarios of solutions at the field level, and that might address the problems.

iii. Would a mandatory requirement to maintain records on a per field basis—would this do us any good?
1. From a scientific point of view, it would help to know what is applied, helps us understand what is happening in each watershed. Right now our data is county-level sales twice a year. Lots of uncertainty. Better information on when and where would be helpful in interpreting what happens to waters.
2. USDA requires spot check, and those records aren't sent anywhere. Just stored.
    a. Typical approach to records. Often IEPA doesn't want to maintain these records, but if we have a question we can go check with whoever is required to keep records.

iv. In analyzing this requirement, it would be important to understand that if 60% of producers are currently doing this, what are the others doing, and why aren't they keeping records?
1. Talk about % customers, will be a disparity. Looking to make a profit.

v. A lot of apprehension in farm community—watching what occurred in Chesapeake Bay, voluntary record keeping in 90s, then was forced, and then made public. So may be a lot of resistance. Farming is competitive. Making information like this public would create issues in keeping these types of records. Things have changed a lot since 2006. Fertilizer is much more expensive, and so producers are using it more carefully. Also, farmers are making money, so they are investing in a lot of equipment, like GPS. We will see these changes showing up in the future. USDA hasn't done baselining.

vi. In general, better managers keep records, recordkeeping is the most important things a farmer should do. But if it becomes a regulatory requirement, some people will make it up. Second conflict: information rich, and interpretation poor. Thought of someone using records for compliance and resulting in a penalty, that would be a failure, especially among producers. Think should be more voluntary, incentive-based.

vii. Neighbor who does no-till, grass waterways, but also not running technology on his farm. Not going to be collecting data, doesn't want technology, yet still a good farm, but won't be running the technology that will tell him how many $/acre. Need to keep those people in mind as discuss regulatory approaches.

viii. From a science view, need to know what's being applied to develop BMPs, so having this info would be really helpful. Could develop nutrient management plans that work. Purely scientifically, we need to know what's there. Having a small trial field doesn't give the correct answers, because we want a watershed perspective.
    1. Why not? Aggregate error in watershed areas. Need a field-by-field solution.
ix. Don't have the data on field basis, and won't get it in current farming culture today. Fear that data will be shared. Can we accomplish what we want if we don't have this information? I don't supply application records, but do provide yield statistic, but don't have a place to provide application on a per acre basis. Might get closer in a farm business, is economic, not input driven. Is a competitive environment out there, and no farmer wants to share that information.
x. Requirement not the application, but the assurance in knowing that the farmer knows he/she is optimizing inputs. That is critical question. Not just what applied, but ensuring that application is meeting needs.
    1. How to quantify that?
    2. Whole thing about regulatory is assurance. What we want for assurance is that the producer knows what the crop needs and is putting their inputs according to what needs are. A critical piece to minimize losses. How go about knowing producer limits inputs—how do you construct that? Maybe a whole different construct?
xi. Intent isn't to generate data—just to provide some level of assurance that farmer A knows what he/she is applying and doing so at an appropriate rate. So does that do us any good in a nutrient management plan?
    1. Not without other pieces. Just knowing data won't provide water quality benefits.
xii. Summary: data alone doesn't help, how use data, and practices based on those data.

2. Licensed Fertilizer Applicators (Indiana)
    a. Similar to pesticide applicator program – (licensing by state, education by ext.)
    b. Complete a test/training
    c. Following appropriate rates
    d. Interpreting soil test information
    e. How to calculate rate
    f. Safety
    g. Calibration
    h. Environmental protection BMPs
    i. Comments:

i. A lot of what this is about, such as the certified crop advisor program, probably already exists. Can certify people, but won't necessarily result in changes.
ii. From a regulatory standpoint: something like this for wastewater treatment plant operators, does provide base level competency, but also provides a tool if someone continues to do things incorrectly.
iii. Training and education involved with this might go a long way, but certification itself might not get us there.

3. Prescription Approach (required to apply fertilizer)
    a. Prescription written by credentialed individual. Options include:
        i. Build off an existing program like certified crop advisor (CCA),
        ii. Start your own, build into licensed applicator process
    b. Comments:
        i. All in a mandate path—but in CCA program, there are specialists, could add a nutrient management planner, establish competency area, give license, all need to drive this is an incentive. Driven by market, and it already exists. But typical farmer doesn't pursue because there is no reason to do this.
        ii. Master farmer program—Louisiana and Florida used this program. Takes the good programs and translates them to one program, continuing education program, educate first, and bring up to level to certify. Provide an incentive. Need to educate producers first
        iii. USDA under NRCS has lots of training programs. CCA program would do all the administrative work, tracking, testing, etc. we would just create the curriculum, the exam, and the continuing education requirements.
        iv. What is the incentive?
            1. Farmer or someone—needs that professional sign-off. So if sign-off on program, get incentive.
                a. What kind of incentives?
                    i. Nutrient Trading—if certified, can show operation certified, could have opportunity to trade credits. Running a larger operation that has regulatory obligations
                        1. Commodities—could work with that. There are federal and state programs, too. Could always ask legislature what can do.
                b. Regarding financial incentives: what about costs to themselves?
                    i. Would like to see all driven by its own merit. Would like it to sustain itself without incentives, just because will minimize costs and better for environment. Just need to give it the push to start.

4. Consolidated nutrient management plan (SWCD, NRCS, extension) Could include:

a. Soil sampling
b. Limits on levels of nutrients maintained in field
c. Practices needed to achieve target: eg. Tillage practices, buffers, cover crops, etc.
d. Existing programs include:
    1. Comprehensive nutrient management plan (Federal Farm Bill participants)
    2. Waste management plan (Livestock Management Act)
    3. Nutrient Management Plan (NPDES permits for CAFO)
e. A comprehensive plan that would cover everyone. In this discussion, we started talking about the simplest possible regulatory requirement and added to the concepts. This ties it all together, but has potential to be a regulatory component. Some producers already following nutrient management plants. But another step in this regulatory progress might be some kind of formal requirement for row-crop agriculture, regardless of manure. One thing would want to do is ensure it covers all the other programs as well: would the requirement and implementation of nutrient management plan for row crop agriculture, considering the cost, would it get us anywhere? Would the cost-benefit be worth it?
    i. Some questioning about requirements for BMPs—seems to have drawn some anger in the Chesapeake Bay, etc. more interested in some of the other components, like the soil sampling. So, if U of I study showing that Illinois had high phosphorus levels in soil, wondering if people are over-applying, and if there were some testing every 4 years, would that help?
        1. Seems like we need a baseline. Basic understanding of how many farmers are pulling samples, frequency of sampling, etc. many farmers are fertilizing at lower yield levels than what the fields are actually producing.
    ii. Focus on nutrient management plans—look at system rather than plan, so have some tool to address losses. If pick the wrong weather year, then the plan will not work.
    iii. So say system: MOM and Systems—requirement for an implementation for a MOM-based system, wouldn't that reduce loses?
        1. No, because required it—and we don't have all the answers. Have a lot to learn, and need room to do that without a regulatory requirement.
        2. On the phosphorus-side—available phosphorus and interpretation of phosphorus based on samples and soil-sampling techniques.

5. Mandatory practice changes:
    a. Prohibit application on frozen ground
    b. Prohibition on Fall application of Nitrogen
    c. Required cover crops
    d. Would any type of mandatory practice change result in nutrient reductions:
    e. Comments:

i. All good activities if used in a good place. Depends on the year. It's not about an activity. It's about residual nitrates. These suggestions are tools for a systems approach.
ii. Some frustration that I'm sensing: question should these things be regulatory? But each piece is valuable and should be in strategy, but not convinced if should be regulatory. But should be looking at in strategy. Continue to ask if regulatory, and then start looking at incentives. Uncomfortable in saying whether these should be regulatory,
iii. I think we have a big responsibility to help the science in this. Also, what research do we need to make a farmer comfortable using a systems approach? But we haven't done the research to be able to say use cover corps, etc. how do we support what we're going to propose as practices?
iv. Summary—while some benefits, we don't know enough yet to lock something like this in.
v. From a farm standpoint, we use all tools every year, and each year may change. 9/10 years we get it right, but that 10th year trips us up. And that's why we need all these tools, and what we're looking for is more education to get that 10th year right.
vi. Discussed a lot of good ideas today, but we all know not happening on scale need to. Seems like need regulatory approach to get water quality benefits results in changes quickly. How else do we get the scale we need?
vii. Things we know: fall application—study in Iowa. 1000 acre watershed, convinced all farmers to spring apply, and showed a substantial reduction in nitrate loss. We have do have some studies, and that is much of what we use to develop estimates of reduction on these practices.
viii. I'm wondering if people have thoughts on practices they really wish were not happening:
    1. Inhibitors
    2. Like to see programs not limited by larger producers?

6. Other Ideas?
    a. Questions: nitrate-based phosphorus fertilizers
        i. Yes. Have to import 3P fertilizers. Long-hanging fruit—fall application of Triple phosphate in fall, and save nitrogen for application in the spring. Could reduce loading. Variable-rate phosphate application ignores nitrogen application.
        ii. Fertilizer industry is aware of this—happened this way, because of worldwide markets.
        iii. Don't mandate it, work on it on a watershed-by-watershed basis. Ask the farmers. Let it be market-driven, and don't have to produce.
    b. Look at the bottom line—wanted to try cover crop this year, but it ate up over half profits
        i. Some of these practices do save money

ii. Is going to be regional—ex. Farther north, can't put in a cover crop, can't get it to come in early enough

c. Summary: really depends on year. NSF had a National Advisory Council—commented that need to look at averages.

2:15 — 3:20 Prioritization of BMPs for inclusion in Scenario Analyses and nutrient reduction strategy:

1. Crop production strategies
- ***a.*** Fall to Spring nitrogen application on tile drained acres
  - ***i.*** Could perhaps drive unintended consequences
- ***b.*** Cover crops on corn and soybean tile drained acres
- ***c.*** Cover crops on corn and soybean non- tiled acres
- ***d.*** No phosphorus fertilizer on fields with soil test showing phosphorus above the recommended maintenance level (12.5 million acres)
- ***e.*** Perennial crops on all Corn and soybean tile drained acres
- ***f.*** Perennial crops on corn and soybean non- tiled acres
- ***g.*** Additional practices:
  - i. Nitrogen Management System
  - ii. Split Application of nitrogen
    1. 50-60% Fall, 10% Pre-plant, etc.
  - iii. There may be some advances in trait development in corn, but won't be immediate

2. Sediment loss strategies
- ***a.*** Convert 1.8 million acres of conventional till eroding > T to reduced, mulch, or no-till
- ***b.*** Cover crops on 1.6 million acres eroding >T currently in reduced, mulch or no-till
- ***c.*** Stream bank erosion practices
- ***d.*** Perennial/energy crops on 1.6 million acres eroding >T currently in reduced, mulch or no-till
- ***e.*** Additional Practices:
  - i. Grassed waterways, terraces, add conventional practices already in use by NRCS

3. Livestock/Feedlot production strategies
- ***a.*** Incorporation of manure applications (unintended consequence: erosion)
  - ***i.*** Just not put on highly erodible ground?
- ***b.*** No application of manure on frozen ground
- ~~***c.*** No fall application of manure~~
- ***d.*** Additional Practices:
  - ***i.*** Why no fall application of manure? Never heard of this.
  - ii. Manure application set-backs from streams
  - iii. Livestock exclusions
  - iv. Manure management plan—does speak to setbacks, slopes, etc.
    1. Many farmers don't have these plans
    2. Need to be able to apply at different times—especially depending on rainfall—most producers don't think about manure in the day to day

3. Rather than individual practices—go with a management plan that includes many of these practices
4. NRCS just finished up manure standards (?)—looking at timing, etc. are a number of things in 590 standard, including transporting manure. A number of things that aren't listed. Needs to be a systems approach.

4. Drainage water management strategies
- ***a.*** Bioreactors on tile drained acres
- ***b.*** Wetlands on tile drained acres
- ***c.*** Tile water level management (remove?)
- ***d.*** Additional Practices:
    i. Saturated buffers (in demonstration in Illinois right now—check with Ag. Watershed Institute)—going beyond buffer to having perennial crops—getting high nitrogen back into soil—combining perennial crops with drainage water management
    ii. Question from spring: higher levels—may flush the nitrogen—in some case may get big flush, but still nitrate. Same N concentrations, but less water coming out. Don't know where that water goes. A site in Salt Fork—backed up water on one tile, did really reduce what gets to stream?

5. Riparian management strategies
- ***a.*** Wetland restoration (big, floodplain—removing nutrients from river water)
- ~~***b.*** Buffers on applicable cropland~~
- ***c.*** Buffers on Ag streams
- ***d.*** Additional Practices:
    i. Livestock exclusion
    ii. Stream bank stabilization practices
    iii. Question on intent: focus on what we prioritize, or attempt to capture what doing?
        1. Trying to provide guidance to Science Team in the scenario development.

6. Comments:
    a. Science Team's estimates are rough, preliminary estimates. Lots of room for improvement with new practices and data and geographic differences.

3:20 pm Select Dates to create Doodle Poll for Future Meetings

Top practices—vetted in the strategy, even if not regulatory, but supported by the strategy,

Getting poster lists out is important

Felt regulatory discussion was somewhat rushed—would like to know what is working in other states

Cost analysis—need to discuss this before draft strategy

Timeline: Rough, rough draft—early March dates: