SERA-46 Meeting

# New Orleans, LA - Dec. 5-7, 2016

**Dec. 5, 2016**

## **Wes Burger: Shared Priorities Update**

* Strengthening Networks #5 – Identify common attributes and aps across state nutrient reduction strategies.
  + Some sensitivities by states, was that no state wanted to be singled out based on their deficiencies.
  + State Nutrient Frameworks – have completed 5 different semantic analyses; all showed similarities in results. At the end of the day, they didn’t show definitive endpoints. We ended up making a spreadsheet of commonalities to organize and identify. All states implied that these would be revised, with no explicit cycle times varying between 0-5 years.
  + Identified 50 top concepts across plans, and top concepts for all plans, but no commonalities in those top concepts across states
  + Key words in Stoner memo very different
  + 2nd concepts were more successful in identifying commonalities (removed state-specific jargon)
  + In 3rd concepts overlapped with many of 2nd concepts
  + Semantic clustering of plans into spatial area in relation to Stoner memo. Shows relationships and similarities to each other, as well differences.
  + Only 2 or 3 plans process driven, most were model driven. Some were a combination of both. Often, approaches are a process which integrates into a model.
  + Reverted back to Stoner Memo elements to put into a rubric. Most plans referenced some set of guiding principles or values of HTF/GOMA (ranging from 0-10, mean=5)
  + Most were built with heavy consideration for collaboration
  + Lead agencies included 9 pollution control, 2 state departments of ag, and 1 coastal protection and restoration
  + Mean number of partners involved was 14.8
  + Wes noted he will disseminate presentation\*\*
  + 6 of 12 states conducted detailed science assessments, 3 of 6 had BMP specific scenarios
  + Analyzed plans based on all 8 elements of Stoner Memo to determine how many met guiding principles
  + Who would use this information and for what?
  + States could use it beneficial to see where they may have missed the boat, or benchmarks against their peers.
  + Paper (Reed Christianson) comparing 3 sciences assessments is really insightful, Center for Watershed Excellence: <http://owl.cwp.org/mdocs-posts/upper-mississippi-nutrient-loss-reduction-strategies/>

## **Social Indicators: Richard Ingram**

* Phased approach, social science and water resources nexus
* Pull existing information together to refine existing social indicators through data discovery, assimilation and review into a synthesis report and attend the social scientists workshop (NC-1190) and then develop a final report.

## **Administrative Response: Eric Young**

* Reported to Southern Extension and Experimentation Directors, reactions from both groups was very positive. Appreciate how interactive group is with HTF. Impressed at how quickly this group got into task force and coordinating committee, being on conference calls and attending meetings so fast. They were all very happy.
* Wes’ feedback: perhaps those that paved the way making introductions at the beginning assisted in giving us a path into the group. Also great leadership from SERA-46.
* Mike Schmitt: Very similar feedback from north. Progress in 3 years is noteworthy. Building a multi-state approach from an Extension perspective was one way we could/should build over time. Building multi-state extension programming and research too.

## **Building Capacity: Rebecca Powers**

## **Transforming Drainage: Jane Frankenberger**

* Multi-state project to address HTF and LGU shared priorities. Leverages existing $5 million USDA project.
* Two issues: water quality and quantity, key to project is drainage storage
* Drainage water management, saturated buffers and surface water storage
* One critical state was missing, Illinois, asked EPA to fund a component for Illinois
* Approach: Field research, Synthesis and modeling, decision tools, Extension
* Combining drainage and watershed management
* Update: waiting for money to come through

## **Executive Session with Hypoxia Task Force (3-5pm)**

* Overall vision for tracking progress, broad overview
* Ellen Gilinsky giving brief introduction: theme is how do we show the progress that we are making through our actions? Milestones and quantifications.

### *Katie Flahive: Milestones*

* + 2025 interim goal to reduce nutrient loads to the Gulf 20%, long term goal in 2035
  + Report to Congress May 2015… recapping all of the things they’ve done and progress that has been made, including USDA CEAP working and water quality model development through USGS and states that submit information.
  + How we can use data to gain a better understanding of sources and pollutant tracking and to assess the progress we’re making.
  + What is the story we can tell with this variety of information?
  + How close are we to our goals?
  + What kinds of shifts in strategy do we need to take to reach our goals? Developing tracking reports and adaptive management.
  + What is the best way to present this to the public?
    - Reactions from group: Complicated effort, is it too complicated? All this list of action, what are we really getting? Strengthen communication for how walking will turn into running and how these early steps are slow but critical…
    - Katie Response: This will at least allow us checkpoints to see if we are on track for long term goals.
    - This will evolve, as will on the ground practices, but this process will help us evolve and gets us closer to communication strategies as this evolves, translating up from local to regional scales.

### *Matt Lechtenberg: Non-point source group*

* Complicated interactions between state, federal, and private
* Have received NRCS data by state, analyses have begun, determining what additional data is needed
* Barriers include: location, installation (ex. if a downstream practice is already in place downstream).
* Showed combined data by state, with top 20 practices on the ground and investment, narrows primary practices from 200 or so
* Categorizes practices by nutrient reductions of both sediment and phosphorus.
* Combining NRCS and state data to have a more informed perspective and determine what is achievable
* Data includes conservation practices like CRP and WRP, acres/state and expenditures $
* Also was able to visual expenditures by agency per practice (based on target resource) over time
* Private data- many folks are using surveys to capture data. Some are moving to mapping, but you are limited to visual practices. Need to recognize that it will be a lower resolution, not specific to each farmer.
* Next steps: seeking additional feedback on identified parameters. Working on collecting and aggregating sample data to determine if it is adequate, and then how or when to we collect more data to be consistent? Retain consistency once data is collected. Then we will follow up with NRCS to capture that additional data, and determine who wants to be engaged with us in the private sector, like Field to Market or TNC, and what scale they are willing to operate at. Then they will develop a status report for NPS measures and utilize data to strategize implementation and program delivery.
  + - Comments: Ellen Gilinsky commending effort and speed with which this was all accomplished. Inquiries about accuracy of NRCS data. Presentation will be sent out to everyone. Concern about being too exhaustive in trying to track too many NPS endpoints, should we perhaps be more strategic about what endpoints we show, perhaps to send a message and set a standard/prioritize?

### *Matt Helmers reporting on Walton Family Foundation Grant*

* + Moira at Walton was interested in identifying endpoints for their grantees to determine their progress
  + Laura Christianson is the lead from Illinois.
  + Contracts are just getting in place, $350K over 24 months
  + 1st develop a framework for BMP inventory and source tracking, pilot project in two states to develop this framework
    - Key steps- define eligible practices, data norms, build pilot database, using information to derive estimated load reduction to report to states. Also involves, Rebecca, Amanda, Matt and Katie Flahive has provided direction.
    - This is the first step, perhaps if we show how this system can work through our pilots how this can translate to other states and involve private entities as well.
      * Comment: What is the major outcome? How flexible is this between states? We will likely determine that as we go. What type of data would be need to make estimated load reductions? No one is going in saying we have all of the answers and this is what the states have to do- NOT at all. Just trying to gathering information and provide facilitation for gathering and tracking this information.
      * Could perhaps identify best practices rather than reinventing the wheel.

### *Katie Flahive, Reid Christianson: Science Assessments*

* + Cross-sections of Iowa, Illinois, and MN; Reid has developed a report of those cross-sections
  + Pulled out most used words from each report, these include BMPs, corn, yield, and cost; MN included reduction, Mississippi, load, phosphorus, crops and cost focus was minimized; Illinois had focus on phosphorus, had large point source focus, again, corn and cost were less of a focal point.
  + Agreement of reductions specific practices and sources, wetlands, perennial crops, buffers
  + Disagreement/variation between practices: cover crops
  + Comparison of nutrient reductions and costs
  + Overall nutrient reductions for all practices indicate there is no silver bullet and will need multi-prong approach
  + Phosphorus reductions show same thing, that no practice will achieve load reductions alone
  + Research gaps: cover crop seeding method, P removal for wetlands?, controlled drainage IL, Bioreactor design, ancillary benefits (soil health?), stacked BMPs, regional or global economics impacts, river/stream BMPs
  + Full white paper has been distributed for more information, <http://owl.cwp.org/mdocs-posts/upper-mississippi-nutrient-loss-reduction-strategies/>

### *Tom Wall, EPA office of water: Point Source Workgroup Update*

* + Focused on N and P loading and limits
  + Good progress on calculating loads with standard tool
  + Exploring industry sector/high loading facilities
  + Coordinating with USGS to update locations/SIC codes, work planned for spring 2017
  + IDNR/USGS exploring feasibility of estimating a 1992 point source loading baseline
  + Fall 2017: seek concurrence from HTF for progress report
  + WWTP monitoring and permit limits for major facilities
  + Also POW optimization is a major goal, have done a number of case studies to show economic savings, attempting to do national survey to optimization secondary facilities
  + More on 1992 baseline project to determine if this data compilation would a be a reasonable baseline for point sources
  + Could this process be adopted more broadly
  + Iowa nutrient strategy, intricate and detailed strategy
  + Assessment of NPDES permits, following state rule where they commit to % N or P removal- basically is our clean strategy going to work? 35 feasibility studies were conducted
  + Industrial commitments are showing positive results and feedback, tracking ranges of percent removal, etc.
  + Are able to calculate annual load reductions, break down optimization, analyze data in many different ways

**Dec. 6, 2016**

## **Hypoxia Task Force Public Meeting**

### *SERA-46 update*

* + Overview of SERA-46 background and priorities
  + LGU multi-state collaboration is a main priority
  + Structure: includes research and extension reps from each LGU (at minimum)
  + Effective implementation of research-based solutions for nutrient management
  + Priority updates:
    - 10 ways to reduce nitrogen runoff document, by Laura Christianson
    - Transforming drainage: recycling drainage water
    - Social Indicators Project led by Richard Ingram
    - Multi-state project assessing current programs, successful methodologies and gaps, developing training modules for drainage management, led by Rebecca Powers, Mike Daniels, Joe Bonnell, et al.
    - Walton Family Foundation grant to develop MARB Nutrient Reduction Measurement Framework, led by Laura Christianson
    - Shared priorities document is a dynamic and evolving document, future opportunities include economic tools, costs and benefits

### *Representative from Louisiana: update on LA Nutrient Reduction Strategy*

* + Overview of coastal wetlands restoration efforts and science assessments

### *LA Dept. of Agriculture and Forestry*

* + Reiterating the importance of LA wetlands as wetlands of MS
  + LA commitment to nutrient reduction
  + LA conservation partnership agricultural water quality program, using surface water through rice systems to benefit water quality and quality.
  + Why not water diversion through wetlands? Protection of mussel and oyster habitat
  + Locally led water conservation districts, political action committees and boots on the ground
  + Tremendous partnerships with DEQ
  + LA Master Farmer Program, role of soil and water conservation association and NRCS, resource conservation planning- 1st part is education, second part is field demonstration on the farm, entire meetings on ditches

## **SERA-46 Meeting**

* Discussion on Economics
* What would a sustainable system look like in your area?
  + Beneficial economic factors
  + Hindering economic factors
* Research, Synthesis, and outreach needs
  + Farm
  + Watershed
  + Community
  + State
  + Federal

### *Tim Baye: utilization of soil nutrients (recovery) in lieu of extraction*

* + Investment tax credits for P recovery, fees for new extraction
  + Behavior change incentive
  + Conventional or recovered P? –provides incentive for reuse
  + Also provides economic boost for P recovery and reuse, would complement ongoing watershed restoration work, nutrient reduction work, etc.
  + Potential increase in public funding pools, nutrient recovery systems would have access to these funding pools.
  + Would incentivize private investment
  + Would it replace targeted watershed work?
  + Research questions outlined, 5 buckets:
    - Basic industry economics; Who are the participants in that industry, understanding supply chain
    - P recovery systems, existing comprehensive overview of state of industry
    - Supply chain industries, interest groups, engagement
    - Policy and lobbying, best models at state wide level to leverage
    - Field trials
  + Using acid rain solution as success model, where industry stepped up prior to regulation to solve its own problem

### *John Westra: Challenges and benefits of changing landuse in agricultural watersheds*

* + Net farm income for producers, including positive externalities, like environmental services
  + What are benefits? How expensive are they? How valuable are they? How do we encourage more of them?
  + Using contingent valuation method to estimate willingness to pay
  + Case study in two watersheds
  + Captured baseline conditions (landuse, ag production, stream conditions, net farm income (NFI))
  + Investigated scenario B which included conservation tillage, nutrient management, grass filter strips and riparian buffers to determine costs and benefits of implementation, where farmer receives continuous CRP payment.
  + Data discovery and integration into modeling of biophysical parameters and economics.
  + One model used was ADAPT which integrates local weather, GIS, soils data by STATSGO MUUF, production costs and returns, fisheries effects, and contingent valuation
  + Results indicated no NFI loss due to increase in federal CRP payments offsetting commodity value loss, also saw reductions in nutrients in each watershed, and benefit to fisheries habitats (decreases in lethal fisheries events)
  + Found an estimated annual household WTP in MN of $125/yr for 10% reduction and $201/yr for 50% reduction in negative externalities.
  + Data was from 20 years ago, since then fertilizer taxes and clean water taxes have been passed in MN
  + Missouri also passed similar taxes
  + Legislature in Iowa wouldn’t implemented a tax that the population voted yes on
  + From John: link to that multi-state group focused on dairy and beef cattle waste and nutrient management that may be useful to link.
    - NE1544: Dairy Production systems: C,N, and P management for production, profitability and the environment.
    - <https://www.nimss.org/projects/view/mrp/outline/17536>

### *Economic Discussion*

* + Diversification of crops, incentive system of subsidies and policies are impeding us, why would we grow more sugar? For health purposes and revenue? What’s wrong with the system?
  + Example of Iowa: haven’t increased corn production for a while. In 80’s had piles of corn rotting… identifying federal support for corn production is a hindrance to developing sustainable system
  + Behavior change is more likely during a time of crisis in the farm sector
  + TN has real estate tax that goes into a sportsman fund for BMP implementation
  + Economic development angle to change the system… where landowners could make more money along different avenues….
    - ***Nick Jordan, agronomist from UofM***
    - Driving forces: increasing demand for consumer products in range of sectors that have some positive sustainability attribute baked in. Creates economic incentive for supply chains in ag to figure out how to deliver those qualities in cost effective way, with reasonable price point.
    - New kinds of products including oil produced by winter hearty oil seeds functioning as cover crops, perennial grain crops, etc. Entirely new commodities. Or current commodity types can have sustainability attributes, e.g. growing oil seeds in corn/soy rotation has multiple additional benefits.
    - Idea that agriculture can produce water services of a value and be a low-cost provider of those service. Tim Baye highlighted a way that those can work around phosphorus. Other services as well toward resilience/buffer to climate change in the form of droughts and floods. Involve modification of current agriculture, where ag could produce a valuable service to society. Shift of ag from environmental degraders to provider of environmental services.\*\*
    - Potential for major economic upside from that point of view. Could drive major change in landuse and in regards to water.
    - How do you get a wide range of collaborative entities on the same page?
    - ***Carissa Slotterback, UofM***
    - Example of case study on MN river
    - Engaged a few dozen stakeholders, producers, local nonprofits, extension, community, crop consultants, and others to create a more multi-functional landscapes for economic (and environmental) benefits…
    - Designing a watershed with a number of practices integrated into landscape design. Finding win-win in landscapes design in regards to diversification of economic value of land with environmental benefits.
    - Focus on biomass creation and processing facilities, what is the demand, what are the types, how is that accommodated on the landscape?
    - “Collaborative geodesign process/method”
    - Getting people on board with the idea that there can be this win-win scenario in landuse diversification for farm economics and water, showing this instead of just claiming win-win
    - Incorporating how agriculture is offsetting urban growth, and impacts urban areas? Movement from rural to urban areas of population movement?
    - Opportunities with current projects to further develop what win-win means and does the general public agree with that?
    - Incentives for more civic engagement toward the development of these economic endpoints
    - When looking at research, start think about it with an economic lens, e.g. local food systems? Are they jobs that are going to keep young people in rural communities? How can you present the issue in a way that is relevant and attractive- greatest concern in rural America is how to have good jobs in small communities to keep people here? Making the connection that, while we look through the nutrient reduction lens, most people do not look through that lens.
    - Job development in local wetland design? Engineering jobs? Small land improvement contractors? Couching the economic costs of conservation in a way that highlights how it reinvests in rural communities\*\*\*
  + Moving to discussion of research, synthesis, and outreach needs at various scales to get us to a more sustainable agricultural system that incorporate energy-food-water system, by way of addressing economic factors.
    - Farm
      * soil fertility recommendations of LGUs are not followed by landowners, as they are listening to agribusiness and fertilizer companies, how can we engage them?
      * Documenting environmental and economic benefits of LGU recommendations
      * Shared priority in engaging agribusinesses
      * Impact of not farming low yielding lands (profit zone)
      * Impact of crop insurance on decision making
    - Watershed
      * Range in economic costs and benefits to reach nutrient reduction goals, better assessment of ranges
      * Integration of localized drainage communities, whether township in north or water management districts,
      * Payments and fess for achieving localized nutrient concentration targets/TMDLs
    - Community
      * Perhaps watersheds and community levels are overlapping, depending on the watershed scale
    - State
      * What jobs might be created, benefit from conservation
    - Federal
      * Policy opportunities and barriers, are direct payments to farmers the only options? (discussion between Otto Doering and Kathy Kling)
      * Economic impacts if we don’t address hypoxia
      * Local collateral of freshwater nutrient pollution issues, land value, expanding on Kathy Klings approaches in Iowa- bringing local impacts to forefront
      * Economic impacts of not controlling nutrients- drinking water and HABs are major drivers and concerns…. Toledo, OH…. Cost public health concerns\*\*\* treatment costs, approaches in rural areas.
      * More focus on phosphorus, especially in light of freshwater nutrient pollution concerns
  + Identifying new priorities and developing white papers and proposals around them
  + Discussion on Walton Family Foundation
  + Potential funding opportunities/moving forward on shared priorities

### *Discussion with Katie regarding synthesis of identified research priorities regarding economics*

* Recapping above identified priorities for Katie
* Seeming to have positive feedback regarding list above and approval to bring to HTF
* NIFA is also interested in these outcomes
* Thoughts from Katie on priorities that are coming up from HTF:
  + Economic components are important
  + Interest in phosphorus in addition to nitrogen; what is needed by states to get on top of phosphorus management and remediation; is there a synthesis of policy recommendations; there have been some white papers; Forbes is working toward a BMP synthesis; takes time, need a dedicated person. There is a need for BMP phosphorus synthesis. Jane and Forbes agree to follow up with SERA-17. Current information is limiting. Look to states that currently have P criteria.
  + <https://sera17.org/publications/>
  + Development of communication strategy to stay engaged with the Walton Family Foundation, part of that structure is built into the proposal; we are in the start of development now, actually determining what that communication structure and strategy should look like so that policy makers are getting information and feedback that they need.

### *Robbie Kroger, Chief Scientific Officer of Covington Civil and Environmental, LLC*

* Scale and scope of restoration following BP oil spill settlement
* Delivering the economic benefits
* 3 types of oil spill money: Direct component and centers of excellence, council selected components and spill impact, Program bucket; stipulations with each of the buckets
* Encompasses environmental, economic, and infrastructure projects
* There is a water quality category of dedicated money where one priority is nutrient reduction
* National Fish and Wildlife Foundation funding, is an NGO, this came out of the criminal settlement, money must go toward injured resources, e.g. oil oyster bed; the bigger the project, the more it is connect to the coast proper.

### *Opportunities for collaboration on projects with partners in Gulf States*

### *Austin Omer, PhD, Mississippi State University*

* Tailwater Recovery System Efficiencies
* How TWR fit and function on the landscape
* Monitoring design sample collection via automated samplers, flowmeters, telemetry, pressure sensors, and pump meters.
* Results of nutrient reductions show increase in concentrations but a decrease in loads,
* Quantified annual nutrients and sediment reduced annual per hectare
* Discuss water quantity issues in the MS alluvial aquifer and depletion
* Created a water budget to quantify gains and losses of all TWR, 2% of delta farms could offset water deficit by 15%
* Economic analyses: used 5 systems, with a number of agronomic and natural resource inputs
* Presentation of net present values of various scenarios and benefit/cost ratios over a 15 year period.

### *Beth Baker, MSU, Outreach and Extension*

* Sustainable training in agricultural natural resources. Extension and outreach program.
* Training extension agents in the LGU extension system
* Collaboration with multiple stakeholders to address natural resource issues
* Taking a bottom up approach to conservation and getting back on the farm

### *Assessment of shared priorities document: adding new and archiving some priorities*

* Matt Helmers will send out updated draft of priorities
* Identify university impact percentage up educating ASAs and CCAs…