Agricultural Drainage Management Systems Task Force Meeting Notes

April 5-6, 2011 – Champaign, IL

Bill Gradle, NRCS State Conservationist for Illinois, welcomed almost 40 attendees to the Illinois State Office, noting that it had been several years since the Task Force meeting was held in Illinois. All attendees introduced themselves and their connection to drainage water management.

Adoption of Drainage Water Management

NRCS: Tom Christensen, NRCS Regional Conservationist for the Central Region, described the NRCS strategy for promoting adoption of agricultural drainage water management (ADWM), which includes several conservation practices related to drainage including drainage water management, bioreactors, saturated buffers, and others. NRCS formed an Ag Drainage Water NRCS Ad Hoc Action Team (Phase I), which worked from September 2010 to February 2011. It was led by Bill Gradle, Illinois State Conservationist, with a team consisting of 11 NRCS employees from NHQ, Centers and States. Their charge was to assess the current use of ADWM; barriers to adoption of ADWM, lessons learned from adoption to date, and strategic action recommendations to increase adoption of ADWM.

Bill Gradle then provided the Phase I results (included on pages 10-12). Major points include:
Lessons Learned: Level ground is essential. Practice impacts adjacent property. More extensive drainage systems show higher benefit payoff. Denitrifying bioreactor w/ interim standard has good potential; more research needed. Saturated buffer designs & benefits undetermined. DWM should be paired with Nutrient Mgt plan in order to achieve real $ benefits.

Comments From Industry…Online training tools for CCAs, staff, partners, & drainage contractors is needed. ADMC wants to certify contractors as TSPs in hopes of speeding up the process. Incorporate DWM into 590 Nutrient Mgt. Engage Drainage Districts. Make DrainMod and NRCS Nutrient Trading Tool user-friendly. Use & promote Foregone Income for retrofits. Allow CSP enhancements for DWM. Set higher priority for DWM in EQIP rankings.
NRCS Recommendations…

- *General Communication*: Develop/Distribute factsheets. Create survey to collect producer, partner, & staff feedback. Sponsor Nat'l DWM Summit. Establish DWM Action Team.
- *Technical & Training*: Use CARTO Center to identify & map flat land w/ soils ideal for DWM.
- (Engage LiDAR data collection companies; create topo maps). see economic/technical feasibility; streamline design process.
- *Policy & Programs*: Opportunity to modify existing drainage system during maintenance. Promote CIG for further DWM (and related) study. Increase FA$ per acre for DWM; ensure all 13 MRBI states offer it.

Tom Christensen then provided future plans for this initiative. This includes three components:

(1) a new NRCS Action Team with a charge through 2013. The leader will be Paul Sweeney, Senior Project Leader, Bismarck, North Dakota, with membership of 15 NRCS employees from NHQ, Centers and States. The charge includes evaluating recommendations from the Phase I report, planning the Action Plan (see #2), stimulating innovation and creativity, evaluating progress, performance, and outcomes, and practicing "adaptive management".
(2) an NRCS Action Plan due by December 2011, and
(3) a National Summit planned for late 2011 in the Upper Midwest, probably Minneapolis. The purpose will be to assess the state of the science and technology, Share lessons learned, Identify barriers, limitations, and opportunities, Foster innovation and partnerships, and provide input toward NRCS

Action Plan . Participants should include the Ag Community, Conservation and Environmental Organizations, Industry, Agencies, Legislative Staff, Universities, Technical Providers.

Text of presentations by Christensen and Gradle are provided on pages 7-12of this document.

ADMC: Harold Reetz of the Ag Drainage Management Coalition described recent efforts related to adoption of new drainage practices. They are planning workshop in July at the national LICA meeting in Rochester MN. He is meeting with many of the state LICA groups, and also introducing training for Certified Crop Advisors including online training at http://agronomyu.com/. They are pleased with the successful completion of the multi-state CIG project, and interested in keeping up yield analyses on cooperator sites.

Drainage Focus Groups: Mark Dittrich of the Minnesota Department of Agriculture described a series of focus groups led by the University of Minnesota Water Resources Center to understand how people think about conservation drainage. The motivation was to gain insights about how drainage professionals around the state think about "conservation drainage" so future outreach and research can be informed by the knowledge and perspectives of the people who actually design, install, and regulate drainage. Three sets of people participated separately: Engineers and agency employees, Contractors and farmers, and Drainage authorities. Focus groups were held at three different sites. Recommendations and the full report are at http://wrc.umn.edu/randpe/agandwq/consdrainage/.

Canadian adoption activities: Mark Sunohara of Agriculture and Agri-Food Canada, who has been attending ADMS Task Force meetings since 2005, usually presents scientific findings from the "Watershed Evaluation of Beneficial Management Practices" project. This time he talked about adoption of drainage practices, and introduced graduate student Colin Dring who is conducting a social science study (survey and interviews) of barriers to adoption of the practice. An Ontario cost-share program provides 30% up to $15,000 and a local program provides 50% up to $1000. Colin presented his methods and preliminary findings.

Two-Stage Ditch Discussion and Barriers: Beth Clarizia, Agricultural Engineer in the Indiana State NRCS Office, provided an overview of two-stage ditches and NRCS's involvement in this practice in Indiana. They have incorporated them into the 582 Open Channel Standard, and participated in contracts for about 5000 feet, many through a CCPI with The Nature Conservancy. Jennifer Tank of Notre Dame University has conducted denitrification studies to quantify nitrate removal, and found very positive benefits. Unknowns include the role of the plants in nutrient uptake, the bench elevation that would maximize stability and nutrient uptake, and transition requirements.

Kent Wamsley of The Nature Conservancy (TNC) said that TNC has implemented more than 20 two-stage ditches so far, some with TNC funds, some with county maintenance funds, some with 319 grants, and some with wetland mitigation funding from highway construction. TNC sees high value in focusing on ditches, which are the "veins that feed the freshwater system". A major barrier to further two-stage ditch implementation is caused by FSA's policy restrictions. The area adjacent to the ditch at many possible sites is enrolled in CRP, and although the current grassed buffers have little water quality benefit, landowners are penalized if the area is used for floodplain benches instead. Discussion followed about costs, benefits, and next steps for this technology.

Blind Inlets*:* Stan Livingston of ARS in West Lafayette IN described research investigating the water quality benefits of blind inlets (gravel with intensive tile drains). Significant decreases in phosphorus loss have been found compared to open surface inlets. Gary Sands of the University of Minnesota said that

cost-sharing is available in Minnesota to replace open inlets by rock inlets, and that there has been some controversy about the wisdom of such payments. Surface inlets are very common – typically 9 per square mile in the Minnesota River Basin. The group discussed water quality benefits of the practice compared to alternatives.

Bioreactors in Iowa: Matt Helmers provided research data from numerous studies in Iowa.

AgriDrain WaterGate*:* Charlie Schafer explained the need for underground water control structures that led to the development of the Water Gate. Richard Cooke presented preliminary testing results from his hydraulic study, explaining that he is planning to redo some conducted by students.

End-of-pipe filter materials**:** Norm Fausey presented a handout explaining filter materials that are being tested for potential phosphorus treatment.

Saturated buffers: Dan Jaynes described the first installation of a saturated buffer. Results seem promising after 30 days of monitoring. Approximately 40 kg nitrate-N have been removed. Studies continue.

Thursday, April 6

Drainage Schools DWM curriculum: Gary Sands explained that the Minnesota drainage workshop includes exercises in the design of drainage water management. For all drainage systems, he emphasizes the benefits of placing laterals along the contour for future drainage water management. Matt Helmers also includes drainage water management design in the Iowa drainage workshops. Larry Brown described drainage water management in the Overholt Drainage School. Harold Reetz described training efforts of ADMC, including the July workshop in MN and online training. ***Discussion:*** Hamid Farihani stated that he and Jerry Walker (Central Region water management engineer) are developing training on drainage management for NRCS engineers and other staff, and that collaboration between these efforts and NRCS in training would be beneficial.

Iowa Nutrient Reduction Strategy: Matt Helmers and Dan Jaynes reported on the intensive effort to develop a strategy in the next few months.

MRBI Program Report: Deena Wheby, the first "permanent" MRBI Coordinator (for one to three years) of MRBI, gave an update on the program including recently-completed solicitation for new projects in the currently identified 12-digit HUC MRBI watersheds. She described several lessons learned and future directions, and is developing an annual report that will have more information.

SWCS Modeling Summit: Jane Frankenberger shared information about this summit, organized by the Soil and Water Conservation Society, to exchange information about current models and data sets for inclusion in current and future models. An emphasis was modeling to determine effects of conservation practices.

Census of Agriculture Drainage Question: Dan Jaynes reported the happy news that National Ag Statistics Service has tested two questions to include in the 2012 Census of Agriculture:

1. How many acres were drained by tile?
2. How many acres were artificially drained by ditches?

If all went well in testing, data will be available sometime after 2012.

ARS 2012-2016 Action Plan related to drainage research. Norm Fausey presented the outcome of the Customer Workshop held in common with the previous ADMS Task Force meeting in Chicago. Several

sections relate to drainage, including 1.5.1, 1.5.2, and 1.5.3. See document at (http://www.ars.usda.gov/research/programs/programs.htm?np_code=211&docid=17585).

EPA Update: Katie Flahive spoke about three issues. Links are included below.

- A new EPA memorandum, "Recommended Elements of a State Framework for Managing Nitrogen and Phosphorus Pollution" builds on principles that EPA has previously articulated and reaffirms the commitment to partnerships with states and tribes and collaboration with stakeholders. Katie stated that EPA recognizes that states and tribes need room to innovate and respond to local water quality needs, so a one-size fits-all solution is not desirable or necessary. Developing and adopting numeric standards for nitrogen and phosphorus can be a complex and challenging process, and public health and the environment will benefit from an increased emphasis on load reductions in the near term, while states and tribes continue their progress in developing numeric standards. EPA will use this memorandum as the basis for discussions with interested and willing states and tribes about how to move forward, taking into account existing tools and innovative approaches, available resources and the need to engage all sectors and parties in order to achieve effective and sustained progress.
- She described the *"State Nutrient Reduction Strategies Workshop—Agricultural Component"* workshop that will be held June 13-15, 2011 in Columbus, OH. (Save the Date). The description reads "The Mississippi River/Gulf of Mexico Hypoxia Task Force Action Plan calls for the reduction of excessive nutrients to the Gulf of Mexico. States are developing Nutrient Reduction Strategies as part of this overall effort. The individual state strategies need to answer four basic questions: • What nutrient load reductions are achievable? • How will these reductions be achieved? • What is the implementation schedule and corresponding milestones for this effort? • What is the value to each stake holder from these reduction efforts? … This workshop is intended to help states in the Upper Mississippi River Basin develop the agricultural component for their State Nutrient Reduction Strategies."
- Farm, Ranch, and Rural Communities Federal Advisory Committee The panel will provide EPA recommendations via their report due in October, 2011. They will comment on the opportunities for water quality improvements through the partnership EPA forms, resources, and science.

ADMC update: Harold Reetz provided further detail on training that will be provided by ADMC.

USGS update: Jeff Frey reported on new SPARROW models.

CIG plans for publishing research results – Dan Jaynes reported that the CIG group plans to publish results in group, possibly in Journal of Soil and Water Conservation. We will share papers in an internal review by August 1, with a goal of having papers published a year from now.

Wayne Skaggs closed the meeting by discussing the potential of estimating the impacts of controlled drainage by using an average nitrate concentration with modeled drain flow using DRAINMOD. Results vary within specific years, but over 30 years the "estimated" method compared well with the more complex DRAINMOD N-II model.

Participants

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AGENDA FOR THIS MEETING

April 5 – NRCS State Office meeting room (2118 W. Park Court, Champaign, IL)
Moderator: Doug Toews
1:00 p.m. Welcome – Bill Gradle, NRCS Illinois State Conservationist
1:15 p.m. NRCS strategy for promoting adoption of DWM - Tom Christiansen
Discussion: Implications for ADMS Task Force
2:00 p.m. ADM Coalition efforts promoting adoption of DWM - Harold Reetz, et.al.
2:20 p.m. Minnesota DWM Focus Groups summary report – Mark Dietrich, et.al.
2:40 p.m. Canadian survey evaluating DWM adoption issues - Mark Sunohara, et.al.
3:00 p.m. Discussion: Task Force Action Items needed to support DWM adoption efforts
3:15 p.m. Break
Moderator: Jane Frankenberger
3:30 p.m. Two-stage ditch adoption issues – Beth Clarizia, Mike Cox , TNC
Discussion: Obstacles to improving agricultural drainage ditches
4:15 p.m. Emerging Technologies Progress/Status reports:
4:15 Blind inlets –Stan Livingston, Gary Sands, et.al.
4:30 Biofilters – Matt Helmers, et.al.
4:45 AgriDrain "Water Gate" - Charlie Schafer and Richard Cooke
5:00 End-of-pipe filter materials – Norm Fausey
5:15 Saturated Buffers – Dan Jaynes
5:30 p.m. Adjourn

April 6 – Drury Inn and Suites meeting room (905 W Anthony Drive - Champaign, IL)
Moderator: Dan Jaynes
8:00 a.m. Drainage Schools' DWM curriculum discussion – Jane Frankenberger, et.al
8:15 a.m. Iowa Nutrient Reduction Strategy progress report – Matt Helmers
8:30 a.m. MRBI program report – Deena Wheby, MRBI Program Coordinator
8:45 a.m. SWCS Modeling Conference report – Jane Frankenberger
9:00 a.m. Hypoxia Task Force report – Dan Jaynes
9:15 a.m. Census of Agriculture questions on drainage – Dan Jaynes
9:30 a.m. Break
Moderator: Norm Fausey
10:00 a.m. ARS 2012-2016 Action Plan related to drainage research – Norm Fausey
10:15 a.m. EPA update – TBD
10:30 a.m. ADMC update – Harold Reetz
10:45 a.m. Other federal and NGO updates - TBD
11:00 a.m. CIG plans for publishing research results – Dan Jaynes
11:15 a.m. Wayne Skaggs
12:00 p.m. Adjourn

Tom Christensen Presentation:
Increasing Successful Adoption of Ag Drainage Water Management

Tom Christensen, Regional Conservationist
USDA Natural Resources Conservation Service

Benefits of Conservation Programs and Practices

- Partnership efforts have yielded great benefits for SWAPA+E+H.
- Soil, Water, Air, Plants, Animals + Energy + Humans
- Conservation tillage has experienced phenomenal growth.
- Considerable progress in reducing soil erosion and sedimentation.
- Wetland gains outnumber losses on agricultural lands.
- Significant gains in wildlife habitat.
- Major NRCS Initiatives in FY 2011

Approved Landscape Initiatives

- Bay Delta
- Chesapeake Bay Watershed Initiative
- Great Lakes Restoration Initiative
- Illinois River Sub-basin and Eucha-Spavinaw Lake Watershed
- Lesser Prairie Chicken Initiative
- Longleaf Pine Initiative
- Mississippi River Basin Healthy Watersheds Initiative
- New England/New York Forestry Initiative
- North Central Wetlands Conservation Initiative
- Sage-Grouse Initiative
- CEAP – Conservation Effects Assessment Project

What CEAP Reveals —

- Conservation practices work
- Comprehensive planning is needed because suites of practices work better than single practices
- Targeting critical acres improves effectiveness significantly
- The most critical conservation issue is reducing the loss of nutrients, especially nitrogen through leaching

What CEAP Reveals in the Upper Mississippi River Basin

- <u>Conservation Practices Work</u>

Compared to no conservation practices:

  - Sediment loss reduced by 69%
  - Total phosphorous loss reduced by 49%
  - Total nitrogen loss reduced by 18%
  - Pesticide risks to human health reduced by 48%

<u>Comprehensive Planning is Needed</u>

  - Surface nitrogen losses reduced by 46% BUT subsurface losses are reduced by only 5%
  - Without nutrient management practices, erosion control practices can increase subsurface nitrogen losses by re-routing surface water to subsurface flow pathways

<u>Significant Progress Made in Reducing Erosion and Sedimentation</u>

  - 45% of the cropland and 72% of highly erodible land has structural practices
  - Edge of field sediment loss reduced by 69%
  - In-stream sediment reduced by 37%

Drainage Water Management (NRCS Practice Code 554)

- Scheduled Years — 2008 through 2015
- Number Applied — 5

- Number Planned — 123
- States with 554's Planned or Applied — 9. (NRCS East Region - Florida, Ohio; NRCS Central Region — Arkansas, Illinois, Indiana, Michigan, Minn., Missouri; NRCS West Region Washington)

NRCS Expectations for ADWM

- Not about draining new acres
- Consider name that works for all stakeholders
- Focus is managing drainage water for improved environmental outcomes and sustaining crop production
- Use a conservation systems approach—ADWM with nutrient management, conservation tillage, crop rotations, cover crops, etc.
- Consideration must be given to watershed/landscape context—downstream flow, flooding, groundwater
- Partnerships and collaboration will be essential—research, demonstration, technical and financial assistance, assessment and evaluation, etc.

Management of Ag Drainage Water NRCS Ad Hoc Action Team (Phase I)

- Timeframe – September 2010 to February 2011
- Sponsorship – RC, S&T, SSRA, Programs
- Leadership –Bill Gradle, Illinois State Conservationist
- Team Members –11 NRCS employees from NHQ, Centers and States
- Charge
  - Current use of ADWM;
  - Barriers to adoption of ADWM
  - Lessons learned from adoption to date
  - Strategic action recommendations to increase adoption of ADWM

Management of Ag Drainage Water NRCS Action Team (Phase II)

- Timeframe – April 2011 to April 2013
- Sponsorship – RC, S&T, SSRA, Programs
- Leadership –Paul Sweeney, Senior Project Leader, Bismarck, North Dakota
- Team Members –15 NRCS employees from NHQ, Centers and States
  - – 4 Engineers
  - – 2 Soil Scientists
  - – 2 Program Managers
  - – 2 Resource Conservationists
  - – 1 Biologist
  - – 1 Wetlands Conservation Compliance Specialist
  - – 1 Nutrient Management Specialist
  - – 1 LIDAR/GIS Specialist
  - – 1 Conservation Modeler (CEAP/APEX)
- Charge –
  - Evaluate Phase I recommendations for feasibility and priority
  - Develop and implement NRCS Action Plan with partner input and involvement
  - Help formulate and conduct National Summit
  - Stimulate innovation and creativity
  - Evaluate progress, performance and outcomes
  - Practice "adaptive management"

NRCS Action Plan Timeframe

- Rough Draft — June 2011 (Next Partnership Meeting)
- Final Draft — October 2011 (National Summit)

- Final — December 2011
- Key Components –
  - Policies and Programs
  - Science and Technology
  - Technical and Financial Assistance
  - Research and Innovation
  - Cultural and Socio-Economic Considerations
  - Education and Training
  - Information and Outreach
  - Partnerships and Collaboration
  - Performance and Outcomes
  - Adaptive Management and Continuous Learning

National Summit

- Timing – October 2011
- Location – Upper Midwest (Minneapolis ?)
- Organizer –Sand County Foundation (Alex Echols)
- Purpose –
  - Assess the state of the science and technology
  - Share lessons learned
  - Identify barriers, limitations, and opportunities
  - Foster innovation and partnerships
  - Input toward NRCS Action Plan
  - Participants –
  - Ag Community, Conservation and Environmental Organizations, Industry, Agencies, Legislative Staff, Universities, Technical Providers

NRCS Briefing on Phase I (Partner Feedback, March 23, 2011)

- Crop yields and on-farm economics
- Impact on phosphorous
- Nitrogen reductions—water volume versus concentration
- Impact of cover crops in combination with ADWM
- Make CIG results publically accessible
- Impact of timing of nutrient applications
- Scope of ADWM currently, including with financial assistance
- Innovative approaches beyond management of tile water (2-stage ditches, biofilters, etc.)
- Aging tile drainage systems—opportunity for replacement with contour systems
- Concern about impact of ADWM on adjacent properties
- Treatment above ground with constructed wetlands
- Concern about expansion of tile drainage
- Are we looking at the right solutions (for/example, as compared to more surface flow uptake)
- Need more crop diversity and reduced nutrient inputs
- ADWM most effective where tile drainage is most intensive
- Need to look at downstream impacts on water flow—watershed context
- Need to look at impacts to groundwater and flooding

Strategic Watershed Action Teams -- SWATs - MRBI

- Accelerate conservation activities through:
  - Outreach
  - Conservation Planning

    - Practice Implementation
    - Follow-up
- 23 different partners will provide matching funds, helping to staff teams that will work in approximately 30 high priority watersheds
- $4 million NRCS + $2.16 million partner match in Contribution Agreements
- Approximately 41 staff years each year over the next 3 years.

Mississippi River Basin- ADWM CEAP Scenario

Approach to Model

- Use all CEAP survey points in Basin that have artificial drainage and slope of less than 1 percent
- Hold back tile drainage water after fall harvest, except for crop rotations with fall planted cover crop
- Release water in late winter to:
    - denitrify leftover nitrogen
    - allow for soil warming
    - dry soil out to allow planting
- Fertilization activities reported by farmers in survey will not be altered
    - unless they occur after December 1st
        - will be moved to spring after drainage is reopened
- Objective – estimate nitrogen reduction by adopting ADWM

Partner Input

- Periodic meetings/conference calls on draft NRCS Action Plan and issues/opportunities
    - Early June 2011
    - Early September 2011
    - October 2011 (National Summit)
- Website to share materials
- CEAP Results—Upper Mississippi and ADWM Scenario
- Training Opportunities—MRBI Focus

What Have We Learned?

- Conservation works and can improve the economic bottom line.
- Watershed and site-specific conservation planning are needed to aid decision-making.
- Targeting critical areas improves effectiveness and efficiency.
- Technical assistance is critical to planning, implementation, and follow-up.
- Effective adaptive management, after implementation, is vital.
- Leadership and partnerships must be effective and sustainable.

All this calls for new collaborative responses and a continuing and even stronger commitment to private lands voluntary conservation.

- Chief White refers to the 70/30 rule – 70% of the contiguous US is private lands – the success of conservation will depend on what happens in that 70%.
- The historic local, state and federal partnership, complemented by the private sector (both nonprofit and for profit) will remain at the core of facilitating voluntary actions by this nation's farmer and ranchers.

Bill Gradle Presentation:

Subsurface Water Management Strategies: *Taskforce Summary Report; April 2011*

Background…

- In September 2010, a team developed strategic actions to increase successful producer adoption of Drainage Water Management (DWM) within the Mississippi River Basin Initiative (MRBI), specifically in the Upper Mississippi River Basin.

The Team…

- Bill Gradle, STC-Illinois, Team Leader
- John Russell Davis, Natural Resources Specialist, NHQ
- Doug Toews, National Water Management Engineer, NHQ
- Keith Admire, Director, National Water Management Center, AR
- David Buland, Economist, CNTSC, TX
- Ivan Dozier, ASTC-Programs, IL
- Don Pitts, Water Quality Specialist, IL, retired
- Jody Bell, Sociologist, IL
- Tom Coffman, District Conservationist, MN
- Deena Wheby, MRBI Coordinator, KY
- Troy Daniell, Initiatives Coordinator, NHQ
- Ruth Book, State Conservation Engineer, IL

Their Charge…

- Assess current practice use
- Identify barriers to its adoption
- Determine & consider 'lessons learned'
- Develop strategic action recommendations to increase DWM adoption in MRBI watersheds

Let's Define the Situation…

- Midwest tile drainage systems are designed to efficiently drain ag fields & allow access for Spring planting.
- Tile drainage introduced to region in the 1860's. Systems also reduce damage to growing crops from prolonged soil saturation.
- There are about 50 million acres of tile drained ag land in the Midwest.

Our Goal…

- Since early 1990's, NRCS worked with landowners/producers to install water control structures that allow operators to manage/contain the flow of water leaving tile systems during winter months.

Practice Standard 554: DWM System;DWM Plan; Conservation Practice Standard 587. Client needs both.

New Concepts to Consider…

- Saturated Buffers
- Bioreactors with denitrification walls, or trenches to intercept tile flow

Barriers…

- Flat ground requirements
- Limited knowledge of existing systems
- Other system elements (bioreactors, saturated buffers) are under studied
- DWM concept difficult to grasp
- No yield increase data; economic benefits in question

Lessons Learned…

- Level ground is essential.
- Practice impacts adjacent property.

- More extensive drainage systems show higher benefit payoff.
- Denitrifying bioreactor w/ interim standard has good potential; more research needed.
- Saturated Buffer designs & benefits undetermined.
- DWM should be paired with Nutrient Mgt plan in order to achieve real $ benefits.

Comments From Industry…

- Online training tools for CCAs, staff, partners, & drainage contractors is needed.
- ADMC wants to certify contractors as TSPs in hopes of speeding up the process.
- Incorporate DWM into 590 Nutrient Mgt.
- Engage Drainage Districts.
- Make DrainMod and NRCS Nutrient Trading Tool user-friendly.
- Use & promote Foregone Income for retrofits.
- Allow CSP enhancements for DWM.
- Set higher priority for DWM in EQIP rankings.

NRCS Recommendations…

General Communication…

- Develop/Distribute factsheets.
- Create survey to collect producer, partner, & staff feedback.
- Sponsor Nat'l DWM Summit.
- Establish DWM Action Team.

Technical & Training

- Use CARTO Center to identify & map flat land w/ soils ideal for DWM.
- Engage LiDAR data collection companies
  - create topo maps,
  - see economic/technical feasibility; streamline design process.

Policy & Programs

- Opportunity to modify existing drainage system during maintenance.
- Promote CIG for further DWM (and related) study.
- Increase FA$ per acre for DWM; ensure all 13 MRBI states offer it.