

ADMS meeting

September 18-19, 2008 – Columbus, Ohio

Welcome & Introductions.

Norm Fausey welcomed the group to Columbus. Norm explained that Jim Fouss was not able to attend this meeting because of the aftermath of Hurricane Gustav in Louisiana.

Katie Flahive reviewed the agenda.

Hypoxia Action Plan

Katie Flahive reviewed new priorities in the Hypoxia Action Plan. The first action item is to complete and implement nutrient reduction strategies.

In the next year, the group will develop set of common outcomes, identify states for pilot efforts, identify planned activities and funding needs

A number of states have pulled together information but no state strategies were ready to be shared.

A webcast will be held Tuesday Oct 7 from 1-2 pm on the topic of “Moving Forward on Gulf Hypoxia”. All are invited to attend. Register at

<http://www.epa.gov/watershedwebcasts>

Suggestion: There is a disconnect between the Gulf of Mexico and people’s perceptions of nutrients in their own states. Maybe bringing people together from the Gulf states and the areas that are sources of N and P would be helpful. We can also emphasize the benefits of nutrient reduction locally.

Ag DWM and CEQ Perspective

Sheryl Kunickis, Associate Deputy Director for ____ of the White House Council of Environmental Quality discussed her current position and

Mike Sullivan presented a certificate recognizing Sheryl for “outstanding leadership and contributions in promoting and implementing Agricultural Drainage Management Practices to reduce nutrient losses, improve stream water quality, and decrease hypoxia in the Gulf of Mexico” on behalf of the Task Force. She said that the ADMS Task Force is one of the most satisfying things she has been involved in, and expressed appreciation for the work that is being done.

NRCS Standards

Doug Toews presented an update on NRCS Standards 391 and 554, which are used by NRCS personnel to plan and design practices.

554: Drainage water management

Additional criteria to reduce nutrient, pathogen, and/or pesticide loading.

During non-cropped periods, the system shall be in managed drainage mode within 30 days after the season’s final field operation, until at least 30 days before commencement

of the next season's field operations, except during system maintenance periods or to provide trafficability when field operations are necessary.

391: Forest Buffers

Many buffers have been installed over drainage. Drainage water management could enhance denitrification and buffer function. A concern was raised about potentially increasing instability of banks. Others felt that riparian buffer function could be increased without extending saturated area all the way to the bank. One option was to install laterals in the riparian zone. This would be primarily for moving water from the main into the riparian zone. Another concern was potential root plugging if in a forested area. The proposal is that "where possible, existing functional underground drains should be modified to include control structures, to allow the management of water table elevations within the riparian root zone."

Follow-up from April Meeting

Cover crops and drainage water management – synergies and distinctions

Eileen Kladviko introduced new developments with cover crops, including the Midwest Cover Crops Council. (See new web site, <http://www.mccc.msu.edu>. Jim Hoorman and Rafiq Islam of Ohio State University presented current research on cover crops.

Drainage data sets

The ADMS wants to make sure that questions about drainage are asked in the 2012 Census of Agriculture.

Katie Flahive said that she called NASS to get the current questions on the Ag Survey. The only questions related to drainage are actually under irrigation.

Dan Jaynes said that the last time drainage included was 1978, when county personnel were asked.

Reason abandoned was that they were getting erratic results. Only questions since then have been NRI, and also the CEAP questionnaire.

In order to get it in the 2012 Census of Agriculture, we need to provide the following:

- Description of the data to be collected
- Possible wording of a question
- Why the data are needed
- Why the Census of Agriculture is the appropriate instrument to collect the data
- Who will use the data

Discussion: Could we find the questions that didn't work?

Have you improved drainage in the last x years?

Do any of the acres on this farm have subsurface drainage?

What can we get in NRI?

How many acres of systematically drained cropland?

If farmers say yes to the irrigation question, they get a follow-up survey on irrigation (2002 irrigation survey)

Acres of drained land (tile or ditches?)

Rosetta DM model

Pat Willey gave an update on the Rosetta DM model, which is a product of ARS Riverside lab. Determines DRAINMOD input parameters from silt, sand clay, water content at 1/3 bar and wilting point. (Takes Rosetta outputs and puts it in DRAINMOD format). Uses NASIS soil inputs, goes into Rosetta-DM, outputs DRAINMOD parameters

Skaggs concern: Need is most critical for parameters at wetter end. Results provided by Rosetta are most detailed (best?) at drier end.

606 subsurface drainage standard

Pat Willey said that the 606 subsurface drainage standards is being updated, and they wish to add criteria for plowing in drain tiles in addition to the trenching method. He welcomes feedback, and sent a note to the email list asking for comments.

They are also considering expanding criteria for plastic materials. The current standard referenced is by AASHTO which is for virgin material. There is a new ASTM standard that allows post-consumer plastic, with the same performance requirements. This responds to the LEED certification need for 40% recycled material. The new standard may be referenced by NRCS for plastic materials.

Flow Mini-Symposium

Jane Frankenberger presented the characteristics of drain flow in low-gradient drained systems that make it so difficult to measure.

At Purdue University, three methods have been used:

Circular flume

Flow measurement in a section of full-pipe. (Propeller meter from Global Water; Electromagnetic flowmeter from Seametrics. The problem with these systems is the minimum velocity required for recording flow. (Minnesota sites have which

Discussion:

Problems are under extreme conditions

Minnesota put in restriction of only long enough to measure flow (10 diameters of a 2-inch pipe, which is about ___)

Chip Chescheir: Measuring low-gradient situations in NC

Uses weir.

Preferred method of measuring stage. Float and pulley device.

They always have a staff gauge both upstream and downstream. Everyone who goes to the field records this each time to know it's working.

Challenge of high tailwater and backwater conditions

Ultrasonic area-velocity meter. Acoustic Doppler velocity meter now added. Still keep upstream and downstream measurements from weir, for low flow measurements.

Weirs installed inside culverts. (Issue with highway department allowing this – no constrictions in culvert usually allowed)
Measuring stage and velocity in a constructed channel.

HL flume “the way life should be”. Used in Uruguay, with hills
Need to stress redundancy

Tidewater: Pump drainage, keep track of when pump is on, measure depth in sump, two flow meters. Total of 4 systems. Requires 110 V power to run pumps. May lose data during storms. [also take wq samples from splitting off a portion]

Tipping buckets. He has a diagram.

In pipe electromagnetic flowmeter used by CEMAGRAF researchers in France “u bend” to measure flow. Cleaning is a problem. They took it in the lab and put soap on it.

Control structure with weir and water level recorder: Get his presentation! He gives total for each setup. We should have a breakdown – with standard labor costs, etc.

Jim Bonta – USDA ARS North Appalachian Experimental Watershed, Coshocton, OH

Drop-Box Weir

Originally developed for rangelands in 1960s. Good at sampling sediment-laden flows.

When asked about the best monitoring technique in a particular situation, he asks the following:

Objectives

Expected flow rates

Channel approach slope

Channel approach angle

Approach water velocities (subcritical, supercritical. Ponding)

Expected sediment deposition

Expected sediment loads and sediment sizes

Expected trash in flow

Accuracy required at low and high flows

Submergence

Maintenance

How to sample water

Decision Tree for Monitoring Drain Flow

As more and more people wish to monitor flow, it would be helpful to have guidance on how to monitor

A decision tree

Agency updates

Doug Toews: Opportunities for DWM in new Farm Bill

- Increased funding for EQIP. Go from \$1.2 billion to \$1.75 billion.
- New program in EQIP called agricultural water enhancement program. Funding for sponsored projects. For example, a drainage district could sponsor a drainage water management project for producers in their district. Will focus on water quantity and quality. Initially \$73 million/year. Half to states, half dispersed by headquarters for watersheds that cross state boundaries.
- Conservation Security Program renamed Conservation Stewardship. More streamlined, but still the goal is to support producers who are doing the right thing.
- Under CRP, a new pilot program for wetland buffer acreage.
- CIG has significant increase in funding
- Planning assistance – in areas where NRCS doesn't have much technical expertise such as energy management, irrigation water management, drainage water management

Mike Sullivan: Will be getting the first draft of ____ out for peer review. Then reports for other sub-basins will be done.

Performance and Results System specific to drainage water management. About 1000 acres for each year.

ARS

Mark Walbridge. Special issue of Journal of Soil and Water Conservation will include all the ARS CEAP studies.

ADMC

All drainage demonstration plots are installed and instrumented. Education component has gotten into high gear. Leonard Binstock traveled 2000 miles for Field Days that were conducted in each state in collaboration with the universities. Many people are interested, but they want to know about effectiveness and yield/economic impacts. So we need to get the data analyzed to get that information out to people before they can make decisions about the practice. The 3-year grant is flying by, and we have to hurry

Charlie:

3 things needed for adoption:

Cost-share

Yield information. Ohio DNR, Ohio EPA, Ohio State, and SWCD, NRCS etc and Miami Conservancy District . Provide pollutant load information that can be used for trading.

State Reports

Larry Brown for Ohio

Craig Schrader for Minnesota

Jane Frankenberger for Indiana

Dan Jaynes for Iowa

Xinhua Jia presented a number of projects in North Dakota. (Get her presentations?)
Wayne Skaggs discussed a new project to revitalize drainage management in North Carolina. He pointed out that most contracts were written for 10 years and have expired. We will need to keep in mind the need for continual education on drainage management for large scale implementation as it has been in NC.

One of the farmers has done his MS and is working on a PhD in Biological Engineering and is an excellent farmer.

DRAINMOD course will be offered online this spring.

Designing drainage systems with drainage water management in mind

Mike Cook and Nate Cook

How Advanced GeoPositioning Solutions is used for machine control for drainage installation

It utilizes the power of RTK GPS. Base station set up once per day.

AGPS-topo. First rapid survey system with Auto Capture at user-set intervals. (typically every 10 ft). They make the map using Surfer 8.

They use Ag Data Viewer™ which is used by many farmers in Minnesota and other states. Can calculate flow accumulation. Can do a profile by clicking any two points and setting a grade. Easy to look at a couple different scenarios and how

AGPS has export options to support Trimble Terramodel™, AB Consulting LANDRAIN, LI Contour, any other program that reads points in a .txt file.

AGPS Pipe Pro: Replaces a laser on the pipe. Vertical Curve Technology.

Can import images including aerial photos or yield data. Some aerial photos can show existing tile lines if taken at the right time.

Exports to AutoCAD and all CAD programs supporting .dxf standard. Return to a job years later and quickly and easily locate pipe or split lines.

Could import the image of a design made in LANDRAIN, for example, and then click on each line and install it.

Not a design software – it's machine control and record of what was installed.

AGPS Ditch Pro. Similar to Pipe Pro, you draw lines on the contours. Import georeferenced image as background.

AGPS Shape Pro

Alternative to traditional land leveling. Uses vertical curve technology, bends with natural flow of the ground to create a smoother field that has natural grade. Import into program, turn on autoblade.

AGPS Dirt pro. Machine controlled software. Load any design into it, machine control leveler. Used for construction, for example subdivisions. They have also used it for waterways.

Drainage on a contour is better,

My father said he would buy it but he wouldn't use it.

Now they recommend it to any farmer. Most say “Do what you need to do”. May cost \$120/acre more than straight lines.

On contour, can't maintain your preferred spacing. Is there a way to optimize this? What is the potential for universities to use this software to teach? Very low educational cost.

Reflections: Farmers are out there grasping for knowledge. They feel they are being attacked. Yet the best want to do what they can before regulations come. Farmers need something online that can give them insight on what they could do with controlled drainage. They are pretty independent and they do what they want to do.

Cost share questions:

Some farmers are taking buffers out because of commodity prices

Cost-share on controlled drainage:

Want to start on something, but not do it all.

County drains are requiring storage/retention areas. Building berms around wooded areas with control structures to retain water.

Others are getting wetland mitigation credits.

Ohio Rural Drainage Report

Norm Fausey gave a brief overview on the process that led to a publication called “Rural Drainage Systems: Agencies and Organizations Reach Consensus on Ways Forward”.

http://www.dnr.state.oh.us/Portals/12/programs/rural_drainage/docs/Drainage%20Report.pdf

To Discuss at Next Meeting

Larry Brown volunteered to take the lead on a discussion/way forward on liquid manure

Discuss Seepage and how it will be handled in our modeling? (Maybe better for

Xinhua Jia said she has used HYDRUS-2D, and could explain that

Update on state level nutrient reduction standards

Location and Site

Next NCR207 meeting originally scheduled for Ohio. Maryland is being considered.

ADMS Task Force could be in conjunction with CSREES National Water Quality

Meeting in St. Louis in February? Mike Sullivan and Jane Frankenberger will follow up.

fname	lname	Norm
Roxanne	Adeuya	Purdue University
Keith	Admire	USDA-NRCS
Norm	Fausey	USDA-ARS-SDRU
Barry	Allred	USDA/ARS-SDRU
Leonard	Binstock	ADMC
Larry	Brown	Ohio State University
Thomas	Davenport	US EPA Region 5
Mark	Dittrich	MDA
James	Fouss	USDA, ARS (cancelled due to Hurricane Gustav)
Mike	Hagen	ADS/Hancor
Dan	Jaynes	USDA-ARS
Xinhua	Jia	North Dakota State University
Roxanne	Johnson	North Dakota State University
Sheryl	Kunickis	White House Council on Environmental Quality (CEQ)
Keith	Libben	OSU
Mike	Monnin	USDA/Natural Resources Conservation Service
Amy	Parker	PBS&J
Gary	Sands	University of Minnesota
Charlie	Schafer	Agricultural Drainage Management Coalition
Craig	Schrader	University of Minnesota
Yuhui	Shang	Ohio State University
Vinayak	Shedekar	Ohio State University
Jeffrey	Strock	University of Minnesota
Mike	Sullivan	USDA NRCS
Doug	Toews	USDA NRCS
John	Torbert	Iowa Drainage District Association
Mark	Wahl	Ohio State University
Patrick	Willey	USDA-NRCS-WQQT
Amber	Marriott	Tetra Tech, Inc.