



Standards Oversight Council (SOC)

Supporting Technical Standards for Urban and Rural Soil and Water Conservation

702 E. Johnson Street, Madison, Wisconsin 53703
(608) 441-2677 || Fax (608) 441-2676 || soc@wlwca.org || socwisconsin.org

590 Nutrient Management Standard Team

DRAFT MEETING NOTES

Friday, October 18, 2013 || 9:00am – 3:00pm || Hancock Ag Research Station

Attendees: Todd Schaumberg, Tony Smith, Pat Murphy, Nikki Wagner, John Koepke, Laura Chern, Matt Zoschke, Sue Porter, Sue Walling, Carrie Laboski, Andrew Craig, Joe Bragger, Kevin Masarik, Gini Knight

Welcome/Updates

- Manure haulers are anxious with their work load. It's a busy time of year and the season is once again compressed. Some farmers are trying for a 5th cutting of alfalfa.
- South Dakota lost 5-20% of its cattle herd from an early blizzard. Colorado farmers also lost many crops due to recent floods.
- Agency updates
 - NRCS is back in operation from government shutdown. EQIP was funded before shutdown, and sign-ups will continue with an extended deadline.
 - DATCP is close to completing its annual NM report. There was a 20% increase in the number of acres covered under NM plans, mostly driven by the Farmland Preservation Program. The reporting also is getting better. Some county's acreage increased by 50%. Green Lake County – now at 88% coverage. Jefferson County acreage increased from 27% to 73%.
 - Updated ATCP 50 rule is moving through the legislature. The Governor has signed it, and now it's off to House and Senate.
 - DNR staff have been occupied with many controversial CAFO hearings and manure irrigation workgroup meetings, amongst other tasks. Manure irrigation workgroup will be looking closely at a recently published article that shows correlations between high density livestock operations (mainly swine) that use antibiotics and antibiotic-resistant staff infections. What is the level of antibiotic use in Wisconsin operations?
 - UW Extension Stevens Point – operating ~ 15 county drinking water programs. Staff are working on updating the well database with about 5000 – 6000 water samples by January.

Update/progress from small group meeting (Sue, Todd, Carrie, Andrew, Pat)

This working group is drafting practices that could be used to help mitigate loss of N, particularly on sensitive soils. They are considering potential restrictions on the rate of N application and what needs to be in place if manure is applied to protect groundwater. More restrictions may be needed when there is high environmental risk. The group drafted practices for P and R soils, and have more work to do in considering and classifying wet soils. The following are all factors to consider with w soils: texture of soil, tile, yield classes, timing of high water table. Soils that are wet in the spring may not be wet during the growing season. For clarification in their notes, WP soils are permeable soils that are wet. If soils are classified as wet and permeable, we may be requiring dual restrictions if management practices and/or restrictions are classified by soil type.

In the last standard, all soil types were lumped. For now, the team is considering management practices by each soil type separately to address variation in risk. After this analysis, the team may go back to combining soil types to simplify practices. Additional complexities will mean more education and a learning curve. The team will determine if the extra layer of management is worth changing the maps? It's important for planners to walk the fields with the farmer for best management options. The aim is to offer additional management options for high level managers.

Based on the data showing that slurry is riskier under 4% solids, the work team changed the distinction of the content of liquid manure from less than or greater than 11% solids to less than or greater than 4% solids. The work group changed the 50lb rate to 60lb rate to simplify and match other practices.

Action items

- Pat to talk with Bob Murphy and bring recommendation on classifying w soils.
- Let the full team know progress of the working group, and how far they got in the standard discussion.

This working group is scheduled to meet again at DATCP on Oct 31st at 8am.

Fall date or soil temperature for manure spreading

Spreading manure on soils that are <50F reduces the risk for nitrogen loss. The September 15th date does not ensure that the soil temperatures are less than 50F across the state. There is little environmental protection on sensitive soils by using the Sept 15th date for commencement of manure spreading. First we need a general risk assessment. The team understands that having a date versus testing the soil temperature would benefit manure hauler accuracy and planning. The team is looking into the availability of soil temperature data across state that could be used to create a state map with iso lines indicating dates when air and/or soil temperatures reach <50F for a certain number of days.

Bill Bland was contacted and said that not much data exists across the state. He is considering the possibility of modeling air temperature with soil temperature. Even having access to air temperature data from Sept 1 to Nov 30 would be helpful. Carrie also contacted Howard Brown from Gromark to see what data Illinois uses for soil and air temperature. Some NOAA stations and counties collect this temperature data, but not all stations or counties. Do we have data that says 50F is the magic number? Extensive literature uses the range from 40F or 60F. All textbooks pretty much say that 50F is when a lot of activity stops. But the key point is that activity never completely stops. It also was noted that some soils are more biologically active than others. A database of fall soil temperatures and minimum air temperature for a number of years would be useful, particularly if overlapped with soil test results.

The rate of nitrification, conversion of ammonia to nitrate, during various temperatures was discussed. Research showed that 29% of ammonia had been nitrified in 24 days when temperature was 40F. This means that even at freezing temperatures, there is some level of activity. More nitrification happens when temperatures are moving from warm to cool versus less nitrification occurs when temperatures move from cool to warm. If the average daily air temperature is 40F for a certain number of days, then measuring soil temperature would not be necessary.

In looking at the chart from the temperature article that Carrie distributed, we're only talking about the ammonium part of manure. What is level of ammonium in manure, and how does it translate into lbs lost of N? Was the manure pit emptied before ground freeze? Is that bad?

Farmers want to make sure that the field is not destroyed when spreading. The temperature may not be as important to them, as making sure that field is not compacted in the process. A date will make manure spreading much easier and safer and reliable than measuring soil and air temperature. If we don't have the data available to provide a date, then the farmers need options for spreading on frozen ground.

Action Items

- Carrie will work on getting data from Bill.
- Carrie will bring hard copies of temperature article.

Management around wells

Current WI 590 well prohibitions:

- Nutrients shall not be spread on
 - an area 50 ft from potable well
 - Areas contributing runoff within 200' upslope of wells unless nutrients are incorporated within 72 hours
- Use Criteria B restrictions if within 1000 feet of a municipal well

There are concerns that wells are not sufficiently protected from manure applications. The team worked through which legislation could already be protecting wells from nutrient applications on fields.

- Chapter NR 811, Requirements for the Operations and Design of Community Water Systems, requires 1000' separation between a well and land application of municipal, commercial, or industrial waste; agricultural, industrial, commercial or municipal waste water treatment plant treatment units, lagoons, or storage structures; manure stacks or storage structures; or ag waste storage structures with design capacity of 12000 gallons per day or more.
- The above state code does not require a setback for land application of agricultural waste or manure. This just applies to manure storage. Therefore, the 590 NM standard could provide guidance on land application setbacks.
- 811 requires all new municipal water systems to have a wellhead protection plan.
 - Wellhead Protection Plan. This is a cookbook plan and checklist that includes having to identify the recharge area for the well, zone of influence, inventory potential sources of contamination within ½ mile radius of well, establish a public education program and water conservation program, produce a contingency plan for accidents, etc. The commonality of most plans is the 1200' radius around well for recharge, unless a better delineation is established for 5 year recharge or time of travel.
- Chapter NR 809, Safe Drinking Water, applies to all private and community wells. Non-community wells are not subject to these restrictions or code.

What about enforcement authority? Waupaca is only city in Wisconsin that pays farmers to grow soybeans instead of corn in five year recharge area around wells. They chose this option instead of building a \$3million

water treatment plant. Plover built the water treatment plant. Waupaca has a very innovative public works manager. Wells often extend out to rural areas where there is no jurisdiction. Therefore, these areas have no enforcement, and the municipalities have to come to an agreement with rural areas.

Once a revised draft of Criteria B is completed, the team can consider adding wells to the list of resource concerns in Criteria B. There is concern about incorporation within 200' of well. Some research shows more risk of N loss with incorporation versus no-till. Volatization of Ammonia could increase when manure is incorporated. There was a suggestion to delete the incorporation, and decrease the setback. A 100' of contributing area setback suggestion would be consistent with other soils.

Managers could build a berm, so that runoff is not contributing directly to the casing. However, groundwater could be moving in a different direction than surface water.

There is discussion about including an additional layer on the N-restrictions maps for well protection. Incorporating a layer around wells will make the restriction look like a soil layer, and well locations are not specifically identified.

Action Items

- Laura – develop and bring a cheat sheet for well types with examples and restrictions.
- Laura – write definition for 'community wells'
- Laura/Pat – review definition to 'direct conduit to groundwater'
- Pat will find the well maps to send to DATCP to update maps. Pat emailed Ken about maps. Sara will make sure the maps are worked out and have an example created.
- Review definition of "effectively incorporated", addressing no-till systems

Background on risk of nutrient transport to tile

The team began having background discussion on the risk around tile drainage.

Drain tile collect nutrients, P & N, along with water, and delivers it to groundwater and surface water. The pipe of drantile typically goes to surface water, where it has no pretreatment before the outlet. Legally tile has to have an outlet at surface water or wetland. The issue here is that there is loss of nitrogen to surface waters through tile. Tile systems are not only on wet soils, but also on hilly soils, where they catch clean water and pipe it elsewhere. Many systems have not been sized appropriately and many systems are broken and have not been repaired.

Currently in the WI 590, nutrient application is prohibited within 200' of tiles unless it's incorporated. Fertilizer in irrigation is considered effectively incorporated. There may be less runoff if manure is not incorporated into soil. The standard shouldn't mandate disturbance of soil structure.

Team is considering a buffer around tile, thinking of the systems as a shoreline. So far the options are to: 1) create a vegetated buffer, 2) plug the inlet during growing season, or 3) incorporate manure around tile. Maybe the recommended practices for all tile systems or just artificial tile will overlap with restrictions on W and R soils. A2809 distinguishes tile into 1) artificial tile, which changes the drainage profile and 2) pattern tile, which is highly susceptible to N loss, particular for fall application.

A DNR research study will present preliminary findings at the November Soil & Water Mgmt meetings regarding best management practices around tile including setbacks, timing, and application amounts. Also, there is currently a CA lawsuit that trying to classify tile as point sources.

Action Items:

- Pat will work on definition of tiles to make sure it addresses functioning systems and specifies need for repair.

SWQMAs - Topic to be discussed at an upcoming meeting.

- Inclusion of intermittent streams
- Defining navigable waters
- Knowledge of new hydrolayer... What assumptions were made and what things were not included? Should we conference call in someone who is working with this layer. Examples would be helpful.

Wrap up & next meeting agenda

- Update from N mgmt work group
- Show Joe's land through DATCP maps, as example of farms and management practices that have shallow soils. Show video.
- Continue tile discussion.
- Alternative to P Index – Provide input to DNR on alternative. What is our starting place?
- Management for shallow carbonate. What information would be useful? Could we also apply restrictions of R soils to Silurian carbonate bedrock? If not, why not? We need to justify this to groundwater constituents. Kevin can look into finding acreage of these areas, and if there are other layers, like 50" to 60" to bedrock?

Next Meetings:

- Nov 12
- Dec 19
- Jan 21
- Feb 13
- Mar 25
- Apr 10

Additional Action Items

- Gini will organize maps, research papers, and handouts, and will add year, month, day to documents.
- Everyone that has provided handouts, should also provide pdfs or digital documents to Gini to add to the website or file sharing location.
- Resend google drive link.
- Change Nikki's email on google group.