



# Standards Oversight Council (SOC)

Supporting Technical Standards for Urban and Rural Soil and Water Conservation

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## 590 Nutrient Management Standard Team

### DRAFT Meeting Notes

Thursday, December 19, 2013 || 9:00am – 3:00pm || Hancock Agriculture Research Station

Attendees: Tony, Pat, Andrew, Sarah, Sue, Carrie, Laura, John, Kevin, Joe, Matt, Nikki, Todd, Gini

#### Welcome/Updates

- Golden Sands Dairy in Saratoga has approached DNR to offer their fields as a groundwater monitoring sites.
- DNR has two positions in their CAFO department that are not filled, which has been difficult internally and frustrating to keep up with the workload.
- We now have a federal budget, which is good for NRCS. There is also a stronger possibility of having a Farm Bill in early 2014, allowing NRCS know which programs will be funded.
- NE is reaping percussions of a recent news article regarding detected hormones in groundwater, <http://www.wisconsinwatch.org/2013/12/15/hormonal-wells-found-in-states-karst-region-dairy-farms-possible-source/>
  - Some team members suggest looking at the article with caution, and that the reporter took some liberty to create their story. Some of the accusations made in the news article were not documented in the research.
  - Kevin has a copy of the peer-reviewed article that he could share.
- Recap on status of fall manure hauling: A lot of manure was applied late. Manure haulers got way behind due to weather. But overall the farmers and haulers were being thoughtful about how and where they were spreading. DNR was not notified of any spills, and didn't receive any complaints. In other counties, there were good and poor decisions being made about winter spreading.

Haulers start with all the CAFOs because they cannot winter apply, so the small farms are left behind. Haulers need about one month to complete their jobs, but they didn't get that amount of time. In conversations with them and the agronomists, the haulers feel like they didn't over commit, just did not have enough time. There were freeze/thaw and weather events that contributed to broken equipment. Manure haulers get the rough end of the deal, as no one was happy with them this fall. This committee needs to keep the haulers perspective and challenges in mind.

- 2014 CCA Luncheon on January 14th. Joe will be speaking. The 590 team has been invited.

#### Delgado N Leaching Index Update

NRCS brought in Jorge Delgado from ERS in Colorado to calibrate N Leaching Index model for Wisconsin. Terry worked closely with him and provided him with relevant data, including A2809 and Larry Bundy's work, to use in the model. Delgado presented at a few briefings and conference calls, which received a lot of interest. This N Leaching Index is a qualitative tool, not a research tool with precision. It is quite general and set up with theoretical models. It has projections of lbs per acre lost after using various practices. These tools need to be used within their limitations, but this one can identify risks and be meaningful to a farmer. It could be a very

good educational tool. It won't guarantee a loss, but will provide potential loss results when you do these types of practices with certain conditions.

By the end of the calendar year, we are supposed to get a beta version that we can distribute to a select few (including this team) to start working with it to share any obvious concerns. At the next meeting, we'll be able to project the model on the screen. Delgado is considering submitting a breakout session proposal for the Soil & Water Conservation Society conference in Illinois on July.

How do we see this model fitting in? The national NRCS 590 standard requires us to have an N risk assessment tool. The team decided that it doesn't want to use the N Leaching Index in RUSLE2. In general, we think the current standard with our subgroup's revisions has enough criteria to meet the National standard, but this tool could be an educational tool and used as a reference in the Technical Note.

This team will be able to decide how useful it is, outside of being an educational tool, and what we can do with it. (ie, table, etc). The national standard requires N management based on risk assessment results, and our maps already give us that data. Technically anywhere there is a risk of N loss to groundwater, we need to use this risk assessment. As long as the model has some broad interpretation, it can be useful. There are concerns with it, and we want to make sure that it is ready for mainstream public and ready for use before it is released or included in the Tech Note. We don't want to release it and have it tied to the standard with potential confusion or concerns. If that happens, it will never be used.

Background paper about theoretical side: Index Approach to Nitrogen Losses to the Environment. In the future we will compare our current risk assessment maps with the results of the Delgado N Leaching Index.

#### **Review B. Criteria to Minimize Entry of Nutrients to Groundwater**

The team reviewed, discussed, and edited the draft language for Criteria B regarding nitrogen management as related to groundwater. The NRCS soil surveys and classifications, particularly for W soils, are complex, at times inaccurate, and need updating. Every time there is an updated survey, typically by county, SNAP and the maps can be updated. This doesn't happen more than once per year. For consistency, we are using the NRCS soil classifications for W soils, even if some soils are clearly W soils but not listed as such. The team can deliver this concern to NRCS in hopes of more comprehensive updates. Planners can always provide more input.

The team needs to address karst features in this version of the 590 standard. The NE Karst Report was released detailing the risk of these land features. This particular feature is unique because there are a lot of soil types, and soils on top of bedrock. There is an option for counties to adopt a local ordinance for this instead of addressing it in the 590 standard. These soils are more susceptible to risk of N leaching to groundwater, and therefore should be addressed in Criteria B. We could include an additional soil type (besides P,W, and R soils) and define Silurian Dolomite. The Silurian dolomite rock is more porous, and has more calcium that is more susceptible to weathering. NRCS also has another definition of bedrock or R soils in the 313 standard. The standards should be consistent. DNR treats R soils differently; they separate perched soils and saturation.

#### **Action Items or follow-up conversations:**

- Have Carrie give update on air/soil temperature modeling for 50 degrees
- Laura to create a definition for community wells and include an example.
- Consider changing 1000 feet to municipal or community wells to 1200 feet to municipal or community wells to be consistent with wellhead protection plans.
- Does the 12" to apparent water table include subsurface drainage (tile)?

- Pat/Terry (NRCS) need to look at the definition of R soils and bedrock and make sure they are consistent between standards. They should also consult with Bob Murphy regarding R soils maps to confirm that the data is correct.
- Kevin, Tony, Todd, and Laura will continue to consider how to incorporate karst features into this section. They will also create a definition of karst, consider varying depths besides 50' to see the impact on farms, and will bring these recommendations back to the full team.
- The N mgmt group (Todd, Carrie, Sue, Andrew, Pat) will reconvene in late January or February to further refine Criteria B with the few concerns brought up at the meeting.
- Carrie will develop draft definitions for nitrification inhibitors, slow & controlled release

### **Nutrient Loss through Tile Drainage Discussion**

The team furthered the discussion on tile drainage, referring to recent reports as background for potential BMPs to mitigate nutrient loss through tiles.

- <http://www.extension.org/pages/67624/minnesota-watershed-nitrogen-reduction-planning-tool>
- <http://www.pca.state.mn.us/index.php/view-document.html?gid=19853>
- <http://www.nutrientstrategy.iastate.edu/sites/default/files/documents/NRSfull-130529.pdf> In particular, Section 2.1, page 6.
- Univ of Minnesota Extension: [Nitrates in Drainage Water in Minnesota](#)
- UW Discovery Farms – [Managing Tile Drained Landscapes to Prevent Nutrient Loss](#), Fact Sheet #3

Drain Tiles have been documented with high risk of transport of nutrients from agricultural fields to surface waters in multiple upper Midwest states– <http://ohioline.osu.edu/b871/>. Recently, this trend was also verified with Univ of Minnesota Extension fact sheet on drain tile nutrient losses.

National 590 standard requires conservation practices to be coordinated to avoid, control, trap, manure and nutrients before they can leave the field by surface or subsurface drainage (e.g., tile) when there is a high risk of transport of nutrients. The number of applications and application rates must also be considered to limit the transport of nutrients to tile. The NE Karst Report documents these features and their risks, but does not necessarily provide information on what to do about it. Tiles are addressed in the current WI standard in V.A.k. and V.A.l. The team will consider including additional criteria in V.C., as well as in the Considerations section or Tech Note. There is particular concern about liquid manure and leaching through macropores.

**The following BMPs are proposed for discussion for inclusion with WI 590 standard.** Nutrient losses from drain tiles can be either acute or chronic.

- Identify drain tile systems to maximum extent practicable, using DF recommendations.
- Monitor drain tile outlets for flow before, during and after manure applications for evidence of discharges
- Avoid manure applications on fields if drain tiles are flowing.

### **Acute loss BMPs**

- Evaluate soils for clay content above X % for cracks and macropores
- Inspect tiled fields for cracks or other macropores.
- Complete tillage on field prior to manure application (to break up macropores)
- Reduced or split application rates of manure or CF
- N inhibitors
- Timing of applications in Spring vs. Fall

- Avoid applications of low solids content manure – less than 4%. If avoidance is not possible, reduce application rates/split applications
- Evaluate field soil moisture prior to application. If soils are close/at field capacity, avoid application
- Implement setbacks from tile inlets
- Avoid tiled areas of field
- For manure applications, check tile outlets within 2 hrs after prolonged or heavy rainfall events
- Have manure spill containment measures/plan to contain tile discharges

#### **Chronic loss BMPs**

- Establish Cover Crops on tiled fields
- Complete tillage on field prior to manure application (to break up macropores)
- Select Perennial crops for tiled fields
- N inhibitors
- Spring vs Fall applications of nutrients
- Split applications
- Avoid tiled areas of field

#### **Action Items**

- Do we need to define ‘perennial’ and ‘biennial’ crops?
- Include information on nitrification inhibitors in Tech Note
- Define patterned tile or artificial drainage
- Pat, Andrew, and Sue will strengthen criteria language if needed and develop proposal for where additional language may be needed, either in criteria, considerations, or Tech Note.

#### **Alternative to P Index**

Consider manual version or option for calculating P Index. There has been requests to give farmers that do not use computers or Wisconsin PI a manual option instead of using SnapPlus. Right now we have soil test P as an alternative. Actually, nearly 99% of CAFOs already just pick a PI instead of using soil test P. Often soil test P is more restrictive than just using the PI. The easiest way to calculate PI is through SNAP. National Instruction says that a P Index assessment is required. This discussion will be continued at the next meeting.

#### **Winter Spreading Risk Assessment Update** (Matt, Pat, Andrew, Joe, John)

The full team was updated on the status of the winter spreading work group meeting. The group does not predict any significant language changes in the standard, but plans on providing guidance in the Tech Note. The prepared guidance is planned to be farmer friendly and be for the following uses:

- Emergency Winter Spreading Applications
- Short-term strategy for winter applications
- Long-term strategy for winter applications

This work group is just starting to establish what would go into a winter spreading risk assessment. The outcome format, who would be using it, and specifics are still being draft. This will need to address pastures and grazing on slopes. Soon we will have to include surface water nutrient criteria for N, so we’ll need to come up with strategies that allow for reduction of N. We may need to maximize what we already have in the standard first, and then consider anything that we need to add. The work group will meeting again in 2014.

### **Well Management Update**

The team acknowledged that we have not finalized this topic and still have outstanding concerns or requests.

- Add or refine definitions, such as for community well
- Consider increasing setback from 1000' to 1200'
- Consider including setback restrictions around wells in maps

### **Wrap up & next meeting agenda**

- Subsurface Drainage continued
- Winter Spreading Risk Assessment Update
- Alternative to P Index
- N Leaching Index trial & update

**Next Meetings:** Jan 21, Feb 13, Mar 25, Apr 10