



Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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NRCS 590 Nutrient Management Standard Team

MEETING NOTES

Thursday, July 25, 2024 ▲ 9:30am – 3:00pm ▲

Portage Public Library, 253 W. Edgewater St., Portage, WI 53901 ▲ Teen Community Room ▲

Agenda-In-Brief:

9:30 Welcome (Kate, Team)
9:35 Notes Review (Kate, Team)
9:40 Nutrient Loss to Groundwater
10:15 *Break as needed*
10:30 Runoff Risk Advisory Tool (Dustin Goering, NOAA)
11:00 Winter Spreading (Mike, Morgan, Andrea, and Dan)
12:00 *Lunch, provided*
12:30 Winter Spreading, continued (Mike, Team)
Break as needed
2:45 Meeting Review (Kate)
3:00 *End*

9:30 Welcome (Kate, Team)

Goal: Attendance and review the meeting objective.

Attendance: Kate Brunner, Eric Hurley, Mike Stanek, Aaron O'Rourke, Andrew Craig, Andrea Topper, Cody Calkins, Travis Engels, Morgan Kepler, Kyle Much, Matt Ruark

Absent: Carl Hahn, Dan Smith, Sara Walling

Guests: Dustin Goering, NOAA
Hava Blair, UW

Mike recently had a series of meetings to work on edits to the national 590 standard with other state NRCS reps. Their goal was to pare down the text. There's still a lot of work to be done; at least another month or two before the national draft is fleshed out. This Team will then be able to work off a new national version.

Mike plans to bring some national agronomy reps to WI in September to look at some manure management (like LDMI, 360 rain) and discuss NM in WI. Let Mike know if there are producers with manure spreading techniques that they would be able to tour.

Target dates:

- NRCS-DATCP meeting in early Oct. 2024 to refine writing

- This Team work will be complete next summer 2025, then Mike will get national approval of WI modifications (or critique leading to further editing)
- Oct. 2025 – Published in WI FOTG.

9:35 Notes Review (Kate, Team)

Goal: Brief Action Item reports and approve 6/27/24 meeting notes.

Draft notes from the 6/27 meeting were emailed to the team. Kate received some clarifications to the notes which were in turn sent to the team on Monday. Some action items will be discussed in-meeting today and some are being tracked as longer-term items.

Andrew sent some clarifications via email that will be made. Kyle has some questions on the temperature data. Kyle was not at the 6/27 meeting and Dan not at this meeting, so Kate will connect Dan and Kyle to discuss separately the temperature evaluation and whether there are new recommendations to adjust text further.

There were no further questions or updates on the June meeting notes, so Kate will finalize and post online.

9:40 Nutrient Loss to Groundwater

Goal: Agree to remaining changes to Criteria to Minimize Entry of Nutrients to GW.

- a. Additional tool for identifying high risk (Andrew)

As the last meeting the team discussed the benefit of a central data system but raised numerous questions about how it might work and acknowledged that the project of data gathering and management is outside of the SOC Team process. Andrew talked to Kevin Masarik and they agreed further data evaluation and expansion is a good idea, though expansion of the data set would take a long time to complete, likely as a joint effort between UWSP and DNR. Existing UWSP viewer can do a township-by-township evaluation and the “Phase 1” approach is already available with nitrate restrictions applying to the whole township. UWSP would manage the data and it would then be available in Snap Maps as a new layer of something like “nitrogen restricted areas” to be updated annually on a set date (like in August, not during planting season). Standard would reference this (for all plans) instead of current ref to county data/maps.

Having the restriction by Township could result in substantial impact and Team would like to understand how many acres this affects (e.g. acreage difference for current restricted soils vs this new approach) and what special distribution is for this comparison. **Andrew** will develop this information to provide to the Team to address these questions.

- b. Ksat as part of P soil definition (Mike)

Current Appendix 1 is very long with list of soil types, not easy to use. Update on Mike’s conversations with NRCS state soils staff on using Ksat in P soil definition:

- Permeability and W soils are all programmed into SnapPlus. Soils definition was once the hydrologic group A soil definition though it no longer is.
- Ksat ratings are known and available, and it has more science behind it in recent years. MN is using this in MN NRCS Agronomy Technical Note 32, Nutrient

Management Planning. However, Ksat isn't populated for every soil in the soil survey and even when there is Ksat, not all are a measured value but might be interpolated.

- The terms Ksat and permeability should not be used interchangeably. The term permeability is ambiguous and should be dropped from future standard.
- Depth to bedrock standard has table based on soil texture. This is based more on surface texture and not full assessment of permeability.
- Soil vulnerability index includes some of features of highly permeable soil. ARS helped develop this and NRCS is using this in CART but it isn't publicly available (yet?). The outputs could be made available in SnapPlus.
 - o NRCS thinks this is the time to modernize the soil data used for making decisions and this should simplify the standard.
 - o **Eric** and **Mike** will set up a meeting with Jason Nemecek (NRCS) and Hava Blair to discuss implications of using SVI vs P soils and how it could be used in SnapPlus.

c. 12 in vs 24 inches to apparent water table for cropland (Cody)

Cody prepared maps of 12 in. to water table and 24 in. to water table for just cropland so team can see the implications of this change. Team reviews the acreage change for each county maps displaying the difference. Some counties have much greater impact than others (more cropland affected if changed from 12" to 24" separation).

NR243 identifies 24" to water table. W soils in 590 have spreading rate restriction, not complete prohibition, whereas CAFO program has full prohibition.

24 inches of soil is documented to help reduce pathogen impact from manure (see OSU research and information gathered as part of the TAC for the Silurian performance standard, including Borchart research). Not same separation relative to nutrients.

Team does not want the research supporting details in the 590 standard to be based solely on pathogens and karst and depth to bedrock in considering the W soils definition.

Homework related to 12 vs 24 inches to water table:

- **Kate** will look up previous team notes and see why it was 12 inches last time.
- **Matt** will ask Becky Larson related to her research, which may have been the basis of the 12 inches in the 2015 standard.
- **Travis** will summarize and share research on manure spreading and 24 inch separation (Borchart and possibly others?).
- **Andrew** will ask DNR drinking and groundwater program for insight into 12 vs 24 inches to water table.
- **Mike** will get in touch Kevin Masarik for his work on this with nitrates (and possibly pathogens).
- Each person doing homework will present short summary and provide resources via email if possible, or at next meeting.

10:15 Break

10:30 Runoff Risk Advisory Tool (Dustin Goering, NOAA)

Goal: Review data and mechanics behind the RRAT, answer team questions.

Dustin provides some background and insight on how the data is gathered and displayed in the Runoff Risk Advisory Tool. The manure advisory system was developed because of WI legislature to establish and operate an online manure management and advisory system. It was developed for WI but now also for other states (OH, MI, MN, NY), though other states use/display the information differently.

Key points of Dustin's presentation and team discussion:

- This tool is to give farmers information to make better decisions on manure spreading. It's a threat index, not forecasting specifics (like, NOT air temp or stream flow) forecaster.
- Prediction comes from both rainfall and snow melt (water quantity), frozen ground conditions. The system has been fine-tuned and is now a 2 km grid.
- They compared 6 years of forecasted risk to observed runoff conditions.
- Edge of field data helped validate their prediction to reality. It's not a perfect comparison – field management, crop coverage, tillage, etc. not considered in the comparison. This is modeling so there are instances of "false alarms" more on the low runoff side and less on the high runoff side.
- Forecast is generated 4 times/day.
- Winter risk overrules other types of risk.
- WI has a 10-day risk available, with highest risk for 3 days with a pop-up for details.
 - Tool is always looking ahead 3 days, so Day 3 risk evaluation is looking ahead to Days 4 and 5.
 - Different depictions could be used in future iterations (like perhaps just pop-up for 1 day risk?). If any adjustments are beneficial, let Dustin know.
 - Team likes idea of having 10 days available but just showing a popup risk for 1 day. Hava would have her team make the changes. RRAF will be discussed separately.
- They are working on improvements and may transition to using data from the National Water Model. Version 3 is in the works. As more states that adopt runoff risk will help NOAA to operationalize a Version 3 and keep it going.
- WI runoff risk map shows soil temperatures. It isn't accurate or precise, but it does track the trend.
- The morning, noon, and evening forecasts can be vastly different and tricky to use with big changes. This can be due to changing weather forecasts and forecast-to-observed differences but the reality evolves. The most current information is the best available.
- There is a variety of soil temperature data sources. Mesonet is adding stations on an ongoing basis and will have 1 station per county by 2026, perhaps late 2025.
- Dustin will share his slides with **Kate** who will in turn share with absent Team members.
 - He has historic soil temp data. Could the predicted vs actual be compared (like with Mesonet) to ground truth this? **Hava** could do this with **Andrea**.
 - What about correlation with Growing Degree Day maps? Interesting but these won't impact the NM standard.
- **Kate** will send Dustin the data evaluation by Dan Smith comparing soil temp and air temp for consideration.
- Team takeaways: it's a quick, easy tool for producers to make decisions. It provides producers documentation if there ends up being runoff with some unpredicted condition. If the standard requires RRAF, then there's a requirement for all producers in the state to

have technology. No good option for runoff risk assessment. There could be alternate for soil temp probe, but there would need to be guidance on how/where/when.

- There is room for improvement of the tool:
 - Is there a way to show when the map is not fully loaded? A progress bar would be helpful.
 - What about when the system is down—when the layer is down it can just show a white map rather than an error.
 - Hava will look into these above suggestions for WI's tool.

11:00 Winter Spreading (Mike, Morgan, Andrea, and Dan)

Goal: Review recommendations from breakout group work on changes to the current standard language related to setbacks. Get team input and agreement on modifications.

This breakout group met again to clarify the current approach and provided some updated language for the team to review. Team provides input:

- This subgroup set out to make one set of clear winter spreading restrictions. It's more restrictive and initial proposal includes the February 1-March 31 and all other times when the RRAF shows high risk for runoff
 - No surface applications of liquid manure
 - No surface applications of solid manure when ground is frozen, or snow covered.
- Discovery Farms papers used as backdrop for this, specifically the article on controlling nutrient loss and studies of farm runoff available here:
<https://uwdiscoveryfarms.org/resource-library/> The research showed February and March as high risk runoff periods.
- Under this proposed new language, daily haul farmers would need to stack (solid) or build pit (liquid) for that 2-month period.
 - This is cost prohibitive: concrete is so expensive, design and construction takes time, and 6 month storage is a lot.
 - Many daily haul farms want to build manure storage but they haven't been able to.
 - Getting cost sharing for manure storage is hard—farms often don't rank high enough to get NRCS cost sharing and attempt for years. Can ranking be bumped up for manure storage with NRCS funding in order to meet NMP?
 - The cost sharing cap (\$450K under old farm bill) restricts NRCS funding since the cap is so much lower than the cost of manure storage pit. County bond funds might be like \$60,000 so that may not even one manure storage pit that year.
 - The cost sharing may also need adjustment since it currently requires 6 months storage. If planning for just 2-month winter storage, the producer would likely design for 3 months (like to account for rain, snow melt).
 - The conversation about the proposed prohibitions from February 1-March 31 will continue at a later Team meeting.
- "Frozen" needs a definition. Current standard doesn't specifically define but the nutrients need to have effective incorporation. **Aaron** will draft a definition.
- Different requirements by slope.
- <16% solids used for liquid manure definition to match 313 definition for stacking. It's different from A2809 but 313 is a comparable source/purpose.
- 6-12% slope used as range available in Snap Maps data sources.

- Future discussions/edits:
 - Discuss and develop possible adjustments to the proposed spreading restrictions and prohibitions from February 1-March 31.
 - Vary spreading rate by liquid content.
 - Setbacks – Discuss if additional setbacks needed for liquid but not for solid.
 - Better define channelized flow. Previously discussed that the 590 SWQMA definition will be made clearer, changed to align with CAFO program.

12:00 *Lunch, provided*

12:30 **Winter Spreading**, continued

See notes above.

Break as needed

2:45 **Meeting Review** (Kate)

Goal: Review Action Items and prepare for the next meeting.

Next meeting is scheduled for August 22 from 9:00-2:30. Kate and Mike will look into option of NRCS's new space at the Stevens Point Rural Development Office.

Let Kate know of any absences so she can confirm quorum.

Possible topics for the agenda for August or beyond include:

1. Lots of small action items to report back on, including more refinement of winter spreading.
2. *Idea from previous meeting:* wells and geology—fracture traces, closed depressions – could include presentation by Madeline Gotkowitz. She could also be consulted to help review select text sections of early draft.
3. *Idea from previous meeting:* Using DNR TMDL modeling results for more location-specific P related criteria (rather than P Index).

ACTION ITEMS

- **Andrew** will develop comparison of current Snap Maps N layer compared with Township level nitrogen restricted areas in the UWSP tool. Team requests both acreage summary and map showing of distribution these areas.
- **Eric** and **Mike** will set up a meeting with Jason Nemecek and Hava Blair to discuss implications of using SVI vs P soils and how it could be used in SnapPlus.
- Homework related to 12 vs 24 inches to water table, relative to pathogens and also possibly nutrients. Each person doing homework will present short summary via email if possible, or can share at next meeting.
 - **Kate** will look up previous standard team notes and see why it was 12 inches last time. UPDATES:
 - 10/31/13 notes: “W soils with 12 inches to water table.... R soils you can apply in the spring. W soils you can’t really apply in the spring. W soils are inherently different than R soils. And W soils are totally different – there are sandy w soils and clay, loam, etc. Maybe we can split with texture or yield

potential at least within w soils? If w soils are sandy, then they follow the P soils recommendations. Is there other classifications we can use for the w soils, and not use NRCS NASA [sic: NASIS?] system?”.

- 12/19/13 notes: “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.”
- **Matt** will ask Becky Larson related to her research, which may have been the basis of the 12-inch separation used in the 2015 standard.
- **Travis** will summarize and share research docs on manure spreading and 24-inch separation (Borchart and possibly others?).
- **Andrew** will ask DNR drinking and groundwater program for insight into 12 vs 24 inches to water table.
- **Mike** will get in touch with Kevin Masarik for his work on this with nitrates (and possibly pathogens).
- **Kate** will share Dustin Goering’s presentation slides with absent Team members.
- **Kate** will send Dustin the data evaluation by Dan Smith comparing soil temp and air temp for consideration.
- **Aaron** will draft a definition for frozen soils to clarify standard.
- **Kate** will draft notes from today’s meeting for Team review.
- **Kate** will publish final June meeting notes.
- **Kate** and **Mike** will develop agenda for next meeting and send it to team along with any reading materials one week prior.

3:00 End