



# Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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## NRCS DRAFT 590 Standard Broad Review Comments & DRAFT Responses

**Comment Review Period:** March 23, 2015 to April 20, 2015

The draft 590 standard and Technical Note were open for comment from March 23, 2015 to April 20, 2015. Nearly 40 entities responded from various backgrounds and responsibilities with implementing nutrient management across the state. The SOC team was very appreciative of all of the respondents taking the time to comment. The general comments are listed first. The comments associated with specific sections follow in the order of the standard language. Each comment on specific parts of the standard is followed by a response from the SOC 590 standard revision team either individually or in a group response if several comments were related. The responses are led with **"Response:"** and followed with the team's thoughts in italics.

### General Comments:

To: revision team and NRCS,  
Manitowoc County Soil & Water Conservation Department is in support of the proposed revisions to the NRCS Standard and Technical Note 1. Proposed revisions will greatly reduce the potential for nutrients and other materials from entering the surface water and ground water in the State of Wisconsin. It will also protect the condition of the soil and attempts to protect air quality.  
Thank You for your concern for the Natural Resources, health and safety of citizens, and for your time and effort it took to get to a final standard.

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I'm extremely busy right now but I did look over the pages you indicated. In general, for my clients I don't see any problem meeting the standard. However, most of my people have large land bases without extensive restricted soils. We don't apply Fall commercial nitrogen other than a little ammonium sulfate. The only thing that causes me concern are the very vague "Show adequate acreage" for manure application. The biggest problem as I see it across all the counties that I work is adequate affordable storage.

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Thank you for the opportunity to review and comment on the proposed changes to the 590 Nutrient Management Standard and Tech Note. We appreciate the time and effort the committee has invested in reviewing the science and balancing environmental protection with the realities that livestock farmers and manure applicators face.

PNAAW provided information on the proposed changes to every known manure applicator in Wisconsin, and encouraged them to comment directly to the committee. As each applicator knows their fields and farmers best, we felt that they would be in the best position to provide specific examples of how the changes would impact their operation.

The PNAAW board met on April 2, 2015 to review the proposed changes to the 590 standard.

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I commend the hard work of the committee on this draft. There are a few details that need clarification or ammendment listed below:

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I appreciate the time and effort put in by the SOC 590 standard revision team and their dedication to creating a nutrient management planning standard with a goal of protecting our natural resources. However, for the standard to be effective, it must be implementable. Thank you for the opportunity to comment on the draft standard. As a nutrient management planner, I work with the 590 standard on a daily basis. Following are suggestions that hopefully will improve on the implementation aspect of the standard. I pose some questions, where the meaning of the standard appears unclear.

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GROWMARK and Frontier-Servco FS appreciate the opportunity to comment on the draft proposed changes to the Wisconsin NRCS 590 Standards. We applaud the efforts of the technical committee throughout this complicated and time-intensive process and have appreciated the opportunity to engage with you and the committee during the drafting process.

GROWMARK and Frontier-Servco FS are committed to sound, science-based nutrient management, and we encourage our FS members to implement agronomic practices with minimal environmental impact and optimum nutrient utilization, resulting in maximum harvest yield. We believe nutrient management recommendations should be realistic and usable. Farmers should feel empowered to implement their nutrient management recommendations in order to achieve maximum yield potential and positive environmental impacts. We are concerned that the provisions in this 590 standard will leave farmers feeling trapped without a legal option for managing their nutrients. By allowing credit and tradeoffs for best management practices, by focusing on soil conditions, not the calendar, and by implementing technology, farmers can minimize environmental impact, optimize nutrient utilization, and maximize harvest yield.

We believe that continued partnerships between NRCS, DATCP, and the agriculture industry will be the benefit of all engaged in Wisconsin agriculture. We look forward to further discussion and interaction with your team as the revised 590 is finalized and into the future.

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Wisconsin Farmers Union commends the NM Team for the time and effort put into crafting and revising the 590 Standard. We continue to advocate for conservation and stewardship practices, including for the prohibition of winter spreading of manure of karst landscapes that lack sufficient soil depth to protect groundwater from contamination. However, WFU also believes that in order to fairly and effectively implement the winter spreading requirements outlined in this standard, a large amount of outreach and assistance to farmers by County Land and Water staff will be necessary. Additional educational opportunities, such as those provided by the University of Wisconsin's Nutrient and Pest Management Program (NPM), will also be needed. In order to achieve the appropriate level of assistance, County Land and Water staff and resources would need to substantially increase, as would those of the NPM.

As you know, many family farmers take great pride in providing a safe and healthy product while contributing to the health of our planet through their care of the land. Many of these farmers have a desire to be self-sufficient, but may feel overwhelmed by the amount and level of expertise required to meet many of these requirements. They want to take an active role in both understanding the standard and developing an appropriate plan to implement the standard. Finding ways to further involve farmers in the development and planning stages is essential because the plans in which farmers take an active role are likely to be better understood and followed more completely.

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I am submitting the following comments regarding the draft revisions of NRCS 590 on the behalf of the Dairy Business Association and our membership, which includes hundreds of dairy producers and many affiliated business leaders. Our organization appreciates the hard work of the SOC Committee in reviewing and revising this standard. We also welcome the opportunity to participate in this process by commenting on the proposed changes. Should you have any questions regarding our comments, please feel free to contact me directly.

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Midwest Environmental Advocates (MEA) writes in general support of comments submitted by Clean Wisconsin in response to revision of Wisconsin NRCS 590. In addition, MEA submits the following brief comments based on our organization's legal review of nutrient management plans for large farming operations throughout the state.

The revised standard should better align with manure spreading prohibitions in Wis. Admin. Code § NR 243.14(2)(b).\*

MEA asks the Revision Team to incorporate manure spreading prohibitions outlined in Wis. Admin. Code § NR 243.14(2)(b) into the revised 590 standard. The standards for responsible application of manure and process wastewater should not decrease along with the size of a farming operation. Section 243.14(2)(b) is a standard that prioritizes agronomic rather than environmental purposes. Yet this section is more stringent than the 590 standard and MEA argues that the revised standard should, at a minimum, include manure spreading prohibitions outlined this state regulation.

Future NRCS 590 Revision Team members should include organic farmers and environmental groups.\*

The 590 Standard Revision team includes federal, state and local government experts, farmers, and crop consultants. Team members may have different priorities, but all participants bring crucial expertise to the revision of the 590 standard. We recommend that future revision teams include representatives from organic farms and environmental groups. Involving these representatives would better ensure robust rule revision and would extend the audience of individuals who feel they are represented by the group of experts that lead the rule revision effort.

Thank you for your consideration of the above comments. MEA also thanks the members of the 590 Standard Revision team for dedicating your time to the important task of updating Wisconsin's 590 standards.

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We appreciate the SOC's hard work in putting together the revised standard and thank you for the opportunity to comment on the draft NRCS conservation practice standard 590, Nutrient Management. Clean Wisconsin appreciates the hard work the Revision Team has put into improving these standards, and in general we think most of the revisions strengthen protections of soil, water, and air resources in furtherance of the Standard's purposes. However, we do have comments or questions on some revisions, as detailed below.

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On behalf of the Wisconsin Pork Association and our members, following are comments on the 590 Nutrient Management Standard, Draft 3/23/15, as well as the accompanying Wisconsin Conservation Planning Technical Note 1. We appreciate the opportunity to provide feedback on how the changes will directly effect on-farm implementation of the standard, and the goal of protecting Wisconsin's natural resources. With the complexity of these changes, it is difficult for WPA to support the draft.

Wisconsin Pork Association is concerned with the level of complexity of the new standard. Wisconsin farmers need flexibility and a standard that is easy to understand, so they can implement practices on farm that improve the quality of water in the state of Wisconsin in an affordable, common sense approach. The goal is to increase the level of participation in conservation programs, but creating confusing standards will only hinder, not promote, participation. Finally, state agencies in Wisconsin have a history of taking voluntary standards and adopting them in agriculture performance standards, at which time they apply to everyone, not just those farms who participate in voluntary NRCS programs. Thank you for allowing us to provide comment. We look forward to working with the committee on possible revisions to improve the final standard and improve water quality in Wisconsin.

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To whom it may concern,

Please consider the attached comments regarding the 590 standard. These comments represent my own thoughts and opinions about the current standard, but they were influenced by several farmers throughout Central Wisconsin.

I noticed an added emphasis on management of nitrogen leaching for P (permeable) soils, but with little consideration for the slight risk for surface runoff of nutrients in these same soils. Furthermore, current standard does not fully reflect the sophistication and effort currently made by irrigated vegetable growers to split apply and spoon feed nutrients – especially nitrogen. Finally, the standard fails to address specific nutrient management concerns of irrigated vegetable growers with the following respects:

- 1) the lack of tissue testing or appropriate means for adjusting N fertility rates in season on crops other than potato;
- 2) acknowledging need for supplemental N fertilization beyond current rates recommended by A2809 following cold wet springs, large rain events, or other conditions that may lead to loss of nitrogen; and
- 3) lack of current research reflecting improved varieties that have led to improved yields and productivity.

Wide scale adoption of the NMP by irrigated vegetable growers of Wisconsin will be challenging given these concerns. Feel free to contact me if you have any questions on my comments.

In addition to my comments, I have attached several documents to support my comments. A full literature review with citations can be provided to support multiple points throughout the document as well as measured yields from processing contracts for crops such as green beans, sweet corn, and other vegetables.

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The 590 nutrient management standard serves as the basis for the NR 243 and ATCP 50. My understanding is that the three different documents will become harmonized within a 24 to 36 month period of time. As such, 590 serves is regulatory in nature and language needs to be carefully vetted to guarantee the practices are specific and not conflicting. I have tried to highlight specific examples below. In general, nitrogen recommendations are based on traditional nutrient management approaches as prescribed by UWEX A2809. Unfortunately, A2809 has out-dated or limited information on numerous crops which makes management under these recommendations yield limiting. For example, green bean yields in the state of Wisconsin have recently doubled or reached 12 ton per acre on field wide basis compared to the A2809 stated maximum yield of 6 ton/a. In addition, sweet corn yields were 12 to 13 ton in multiple irrigated fields during 2013 and 2014 growing season yet A2809 has maximum yield goals of

10 ton/a for sweet corn. While A2809 is a good baseline, mechanisms must be development within 590 that allow for development and approval of management programs that utilize new strategies to estimate nitrogen utilization and status within a diverse set of crops, adjustment of nitrogen fertility programs based on these estimates, and diverse approaches for delivering nutrients in order to optimize economic productivity. These management programs should be based on published research and bulletins from appropriate Land Grant Universities and other reputable sources.

Phosphorous is hypothesized to be a ground water concern at different points throughout the revised 590 standard. However, in some cases there is little data to support these hypotheses or contradictory evidence. In Central Wisconsin, there is little evidence to suggest that phosphorous has moved through soils to the groundwater and that subsequently the phosphorous in the groundwater emerges in streams and rivers that then contribute to the loading of the Wisconsin River. In fact, the iron content of soils and the groundwater itself suggests limited likelihood for movement of phosphorous from irrigated fields of Central Wisconsin to surface waters through the groundwater.

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First, there is a wealth of good information in the Nutrient Management Working Draft 3-23-2015 and the Wisconsin Conservation Planning Technical Note 1. Unfortunately, nearly 40 pages of comprehensive, technical and over emphasized information will drive people to abandon participation in these programs. I believe you would be better served by simplifying your product, allow farmers to only have to write a plan once every 4 years, and have the NRCS, DNR and DATCP spend more time with the farming community implementing plans rather than adding layers of complicated reporting.

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1. The timing for the release of this draft for comment was at a time when farmers, agronomists, and nutrient planners are the beginning of one their busiest times of the year. This draft should have been released in late January or wait until mid summer. The people whom this standard affects most just will not have adequate time to review the content and make appropriate comments.

2. Before this revision process started, the WAPAC organization was promised by Pat Murphy that there would adequate representation on the revision committee of NMP planners, agronomists, and producers. Therefore again, the stakeholders who are affected most I believe did not have adequate input on this revision process.

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Thank you very much for your work on the 590 rewrite project! The number one concern I have as a plan writer is making the plan understandable, sensible and implementable on each farms' fields. Some sort of simplification would be entirely welcome! As I look over the proposed changes, I am concerned with a couple of areas that other commenters have addressed as well.

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In conclusion, I would just like to thank you for the opportunity to comment and share my thoughts and concerns. If everyone works together (farmers, regulators, researchers and environmental groups) we can come up with workable regulations that are actually enforceable and produce the desired effects for everyone involved.

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For this standard to be effective, it must be implementable. Following are suggestions that hopefully improve on both of these goals.

General Comment: The timing for the release of this draft for comment was at a time when farmers, agronomists, and nutrient planners are the beginning of one their busiest times of the year. This draft should have been released in late January or wait until mid-summer. The people whom this standard affects most just will not have adequate time to review the content and make appropriate comments.

Overall the revision does nothing to improve water quality in WI. It makes plans more complex and with that comes less chance of the plan being implemented.

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I also agree with many of the comments/concerns that have already been submitted. In the end the 590 standard still needs to be useful and implementable. If there are too many hoops to jump through farmers will either not get a plan done or they will not be using the plan to improve their farm's practices.

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First I would like to thank all of the committee members who have put in countless hours into this process. I have read through the comments posted to date and several good points are brought up and I agree with these concerns. The biggest complaint I have with this process is the timing of the release for review. Is it a coincidence that the release was during one of the busiest times of the year for plan writers and agronomists? This definitely limits the number of comments that will be received.

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Thank you for being able to submit comments and suggestions on the proposed standards. This is not intended to undermine the effort the SOC has undertaken to mold the proposed standard to this point. Your work on the SOC is valuable to those of us implementing these proposed regulations. Thank you, Thank you, Thank you!

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I respect and applaud the extensive effort and time committed by everyone involved in the revision process of the standard. Having co-chaired the previous revisions, I understand the process and the challenges in meeting the needs of parties involved while balancing the needs for an effective guidance document.

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Many draft standard requirements and procedures described in the technical note (e.g., winter spreading plan) strike an effective balance between water quality protection and practical implementation by both small and large agricultural operations. Collectively, the draft requirements help improve upon the current (2005) Wisconsin NRCS 590 standard in several ways and, accordingly, we support them.

Because of their focus upon surface and ground water quality protection, we support the USDA NRCS National 590 Standard requirements including, but not limited to, the items listed below. We believe meeting the national requirements will help improve upon the current (2005) Wisconsin NRCS 590 standard.

- Purpose: Minimizing agricultural nonpoint source pollution of surface and groundwater resources
- General Criteria:
  - Nitrogen and Phosphorus Risk Assessments
  - Areas contained with minimum application setbacks (e.g., sinkholes, wellheads, gullies, ditches or surface inlets) must receive nutrients consistent with the setback restrictions.
- Manure Sampling:
  - Manure samples must be collected and analyzed at least annually, or more frequently, if needed to account for operational changes impacting manure nutrient concentrations
  - Samples must be collected, prepared, stored and shipped following land-grant university guidance
- Nutrient Application Rates: Estimates of yield response must consider factors
- Nutrient Application Timing and Placement: Nutrients must not be surface applied on frozen and snow covered soils and when the top two inches of soil are saturated from rainfall or snowmelt. Exceptions for this criteria can be made for surface-applied manure when specified conditions are met and adequate conservation measures are installed to prevent off-site delivery of nutrients. The adequate treatment level and specified conditions for winter applications of manure must be defined by NRCS in concurrence with the water quality control authority in the State. Adequate setback distances to protect local water quality must be considered.

- Additional Criteria to Minimize Agricultural Nonpoint Source Pollution of Surface and Groundwater:
  - Planners must use the current NRCS-approved nitrogen, phosphorus and soil erosion risk assessment tools to assess the risk of nutrient and soil loss.
  - Where there is a high risk of transport of nutrients, conservation practices must be coordinated to avoid, control, or trap manure and nutrients before they can leave the field by surface or subsurface drainage (e.g., tile). The number of applications and the application rates must also be considered to limit the transport of nutrients to tile.
- Additional Criteria Applicable to Properly Utilize Manure or Organic By-Products as Plant Nutrient Source
  - The total single application of manure must be based upon crop rooting depth and must be adjusted to avoid runoff or loss to subsurface drains.
- Plans and Specifications – all criteria
- Operation and Maintenance all criteria, and specifically: Records must be maintained for at least five years to document plan implementation and maintenance.

Some draft standard requirements for manure spreading and operation and maintenance reflect some NR 243 requirements. We support this approach because it will not only help protect water quality, but also help reduce the differences between small and large farm (CAFO) manure spreading requirements.

Some draft standard requirements will impact large animal feeding operations (CAFOs). We support those requirements because they better protect water quality, are achievable, practical and help clarify the criteria CAFOs need to follow when implementing their nutrient management plans.

We support the new or revised definitions within the draft standard. These will help clarify what some of the standard criteria or practices mean and improve implementation of nutrient management plans by both small and large (CAFO) farms.

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The Wisconsin Farm Bureau Federation (WFBF) submits the following comments about proposed changes to NRCS 590 – Nutrient Management.

National Standard: WFBF understands and supports the need to update the standard per the directive from the national office. As you are aware, in Wisconsin we have developed a system where we have incorporated NRCS technical standards into state regulations as a way to illustrate that farmers are compliance with environmental laws.

For the most part this has worked well. By having the same technical standards utilized local, state, and federal government programs, there has been consistency. However, as the national standard begins to contain provisions, such as no winter spreading of manure, the Wisconsin 590 Standard need to be constructed in a manner where if the standard is being referenced in an administrative rule, section by section can be referenced.

**Response:** *We would like to thank all of the commenters for taking the time to give feedback on the proposed revisions. The acknowledgement and recognition of this team's work is appreciated.*

## II. Purposes

536

We support including "To minimize agricultural nonpoint source pollution of surface and groundwater resources" as a purpose of the draft standard. We believe inclusion of this national requirement will help set a clear objective for NM plans and change the perception that the Wisconsin NRCS 590 standard is an 'agronomic' and not a water quality based standard.

**Response:** Thank you.

### **III. Conditions Where Practice Applies**

538

Add: and Pastures to ..... This standard applies to all fields and pastures...

**Response:** Pastures are considered “fields”. Fields are defined in Section X at the end of the standard, and pastures are listed as an example. This comment does not change the meaning of the standard, and the language will remain as currently stated.

### **V.A.1.a.**

520

Propose a third bullet: Nutrient application decisions based on plant tissue analysis can be completed in accordance with the sampling, testing of plants, and resulting nutrient recommendations for other appropriate Land Grant University recommendations for crops with no current University of Wisconsin recommendations. See section V.A.1.p.

Justification: UW recs only include interpretation of plant tissue results for agronomic crops, fruit crops, and potato. There are dozens of specialty crops produced in Wisconsin with no relevant UW data that need mechanism to test and evaluate current crop nutrient status and implement appropriate action. Furthermore, this will provide incentive for farmers to split apply fertilizers – especially nitrogen - and adopt practices that reduce fertilization in single applications.

**Response:** The intent of the current language is to allow flexibility of applying nutrients when the crops are shown to be deficient. Additional language will be added to improve clarity of additional nutrient use, particularly during extreme weather events. This is a good scenario for use of adaptive management options. If other sources of information were used, the data should be geographically relative and appropriate.

535

In addition to A2809, consideration could be given to surrounding land grant university (Tri-State Recommendations, University of Illinois, Iowa State University and University of Minnesota) soil fertility recommendations when a planner deviates from the script of A2809. Many datasets are shared on a regional basis and are supported in the development of regional recommendations (MRTN as an example). For example, Wisconsin has extensive experience in manure and nutrient credits in corn production, however we have a minimal dataset in areas of N management of high yielding winter wheat production. Our recommendations for N management of this crop is an outlier in the region. A broader recommendation portfolio will provide a strong basis for economic returns to this valuable crop. The future is uncertain as to the level of funding available for state extension specialists at the local level. Having a standard that is forward looking will improve the ability of the industry to adapt to unforeseen circumstances. The similarities we share across borders can be shared and implemented where necessary.

**Response:** These comments are more appropriate for revisions to A2809, and not appropriate to include in the 590 standard. Pre-plant nitrate test for wheat can be used to show a deficiency.

Last line reads: “Annual plan updates shall document the crops, tillage, nutrient application rates, and methods actually implemented.” Tillage is not a component of this section of the standard. V.A.1.a states: “Account for the source, rate, timing, form, and method of application for all major nutrients...” Requiring records of tillage is not consistent with a Nutrient Management Standard in the current format.



**Response:** *The plans have to document the condition of the soil and tolerable soil loss. Tillage is part of this documentation and part of the method of application. No change.*

538

Add: type ..... nutrient application rates, type, and methods...

**Response:** *Language adjusted to meet comment suggestion. We used the word "source" to be consistent with the definition of nutrient management.*

**V.A.1.b.**

535

Consider removal of the 15% reference based on 3-5 year averages. Many rental fields have rental agreements that are less than 5 years, 3 years is very common. For example, a farm that was acquired in 2012 may have experienced severe drought that year, prevented planting in 2013, hail damage in 2014 that reduced yields. The 3 year average yield may be well below the soil series yield potential. The yield goal should be dependent on soil parameters and not constrained by the 15% cap.

**Response:** *These scenarios are not under average growing conditions and would not produce reliable yields during typical years. The current language promotes using averages for typical growing conditions, which may mean excluding yield data from years with the best and worst weather conditions.*

**V.A.1.c.**

505

V.A.1.c. specifies that the plan has to include a winter manure spreading risk assessment if manure will be applied during the winter. This plan would have to be revised on an annual basis like the bulk of the plan, adding more time to complete updates either the farmer's time or a consultant (costing the farmer more money). This requirement will add another day to training programs established in order to teach farmers how to prepare their own nutrient management plan.

**Response:** *Yes, we understand this is more work and accepted this as a trade-off to allow any winter spreading and request the exemption from the national standard.*

506

I have read through the criteria in the Tech note for developing a winter spreading plan. I am not sure why this has been made to be so complicated. Just lay out the criteria to be met for winter spreading and simplify the process. At the end of the day we as planners still need to explain this to a farm that then has to implement the plan. Too much complication leads to poor implementation. *If anything is revisited in the standard this section really needs to be simplified.*

**Response:** *The intent was to create a process used by SnapPlus and GIS tools, as well as develop a process for farmers that do not use these technologies. The team will be revisiting this topic with the goal of simplifying the process. Thank you.*

523

I agree producers should have a Winter Spreading Plan IF they apply manure during the winter months. If a farm demonstrates at least 180 days of storage they should not have to include a winter spreading plan. Most farms if they have a freezing or transfer issue during the winter, will simply move that manure to storage vs applying on frozen or snow covered soil. Remove the requirement for farms demonstrating at least 180 days of liquid storage.

**Response:** *Thank you. The team is considering this option: Winter manure spreading is prohibited if no winter spreading risk assessment is completed and ample storage is available.*

The easiest way to do this process is to have the Winter Acute Loss Index available for Non CAFO's in Snap Plus. Simply rank fields by their index number and create winter spreading maps for the appropriate fields.

The Winter Acute Loss Index though needs some revision because of its over sensitivity to no-till. Also too much weight appears to be given to tillage. Corn grain residue left alone over winter appears to be very good at keeping manure in place.

**Response:** *Thank you for the suggestion. The team is working with SnapPlus developers and have spent significant amount of time reviewing how to incorporate SnapPlus reports into the process. The team also wants to be clear about the limitations of the model and its original intent. Surface roughness is the biggest driver impacting the P Index, and the PI does not account for all factors contributing to P loss.*

526

I would like to share some thoughts and comments on the revisions to Wisconsin's NRCS 590 Standards. My wife and I dairy farm in Green County, WI and we will be directly affected by these revisions in a number of ways.

First off, Part V.A.1.c adds the requirement of a Winter Manure Spreading Risk Assessment. To me this looks like a completely separate and additional Nutrient Management Plan. Being a farmer that is in the process of writing my own plan to save costs, this Winter Manure Spreading Risk Assessment is very complicated and just seems to be a duplication of the Nutrient Management Plan. Isn't the point of a Nutrient Management Plan to show you where you have restricted soils that will require modified management such as not spreading in the winter? Additionally, does the State of Wisconsin have the man power and resources to enforce and police these additional plans? Rules and requirements without enforcement are not worth the ink it takes to write them on paper. Thirdly, will all of this additional red tape do anything to further the stated purposes of this standard? I think there will be fewer farmers writing plans and even fewer following them because these plans have become so complex. Lower compliance rates and lower participation rates do not help the environment.

**Response:** *Thank you for taking the time to share your thoughts. The team is working to create a simplified winter spreading plan that will meet Wisconsin and national standard needs. Runoff of manure is a significant water quality concern, and our state's waters are at most risk of contamination during the winter months. This planning assessment will do more to address one of the purposes of this standard to minimize risk of agriculture nonpoint source pollution. We are working towards systems to facilitate easier implementation.*

527

The easiest way to do this process is to have the Winter Acute Loss Index available for Non CAFO's in Snap Plus. Simply rank fields by their index number and create winter spreading maps for the appropriate fields.

**Response:** *Thank you for the suggestion. We are working with SnapPlus developers.*

534

Agree producers should have a Winter Spreading Plan IF they apply manure during the winter months. In certain counties, there are Winter Manure Spreading Ordinances in effect where the producer applies for a Winter Spreading Permit and then works with the county LCD to develop a Winter Spreading Plan. This has worked successfully in Dane County. Why not duplicate this process in other counties? WI Tech Note-1 Part II does the opposite of facilitating implementation of NMP and SHOULD BE DELETED.

**Response:** *Not all counties have ordinances, and not all counties have the ability to create this ordinance. The team is aware of the winter spreading plan concerns and will be revising the language.*

535

The Winter Manure Spreading Risk Assessment appears to be a work in progress at this time and cannot be effectively be implemented as a requirement of the standard until the process is developed to a point of rapid implementation. In personal discussions with WDATCP staff I have been informed the examples provided in the implementation of the Risk Assessment took several hours for the few fields done. Imagine the outcome if the 2005 standard revision introduced the Phosphorus Index in a long hand and table version rather than SNAP. The PI was in development prior to revision process and was integrated into SNAP prior to the implementation of the revised standard in 2005. It appears the Winter Risk Assessment process was introduced to the revision committee in late 2014. The process outlined in the Tech Note for the risk assessment is not ready for implementation in the current format. This should be moved to a consideration rather than a requirement until a GIS based model can be prototyped, tested and distributed. The current method cannot be successfully implemented without the proper tools for delivery.

This section states “The plan shall include a Winter Manure Spreading Risk Assessment for the manure to be spread during the winter months consistent with this standard (see WI Conservation Planning Technical Note – 1 Part II).” The wording is confusing. Do all fields need the assessment regardless of manure status? If it isn’t receiving manure, why do an assessment? Consider the following wording: Fields receiving manure during the winter months should include a Winter Manure Risk Assessment as defined in the tech note. The information provided in the tech note is confusing and in need of considerable revision.

**Response:** *Thank you for the feedback. The Tech Note information is being revised. The winter spreading plan should reflect 14 days of manure and process wastewater OR all the manure that is anticipated to be spread, whichever is greater.*

536

We support the draft standard Winter Manure Spreading Risk Assessment for manure spreading during the winter months (and part 2 of the technical note). We believe this criteria works in tandem with Section VII.B criteria, is a substantial improvement upon the current (2005) standard and meets the National 590 requirements for winter manure applications (i.e., adequate setback distances to protect local water quality; specified conditions are met and adequate conservation measures are installed to prevent delivery; concurrence with the state water quality authority). These requirements reflect some of the 2013 and 2014 Discovery Farm considerations for Winter Applications of manure (cited in the tech note) and will help farms that spread manure in the winter months to better prevent manure runoff from fields and thereby protect surface and ground water quality (as well as public health from reduced bacteria/pathogen exposure). The proposed winter spreading manure risk assessment explains *how* to identify low risk fields for runoff and deliverability using the P-Index. The current (2005) standard does not do this. We also support the proposed mitigation practices for fields with a medium or high risk for winter runoff to surface or groundwater resources. Collectively, these practices help to better define and reduce the risk for winter runoff and corresponding surface or groundwater pollutant loading associated with mid and late winter manure applications. Last, we also believe these requirements will help reduce the differences between small and large farm (CAFO) winter manure spreading requirements.

**Response:** *Thank you for the feedback.*

537

WFBF suggests that additional methods to develop a winter manure spreading plan be included in the standard. The provision included requires a farmer or the nutrient management planner to do have calculations to determine where manure can be spread in the winter time. WFBF encourages you to look at utilizing SNAP Plus to develop winter manure spreading plans.

**Response:** Thank you for the feedback. We are working with SnapPlus developers and reviewing additional options.

505

There are several new restrictions in the standard that address inappropriate times and places to spread manure. I believe that by adding the winter spreading plan just increases paperwork, without receiving any tangible protection to resources.

**Response:** The inclusion of a winter spreading plan is a requirement by the national standard. Otherwise winter spreading is prohibited by the national standard.

**V.A.1.d.** Response to next 4 comments below.

507

Suggest adding a reference to the Tech Note section on determining an adequate land base.

511

We acknowledge the importance of determining that an adequate land base exists for manure application. While the technical note provides ratios for guidance in this regard, it is important that this be viewed strictly as guidance, not hard and fast rules. Operators require flexibility and the applicable nutrient management plan should take into account the fact-specific issues that dictate land application rates based on available manure nutrients and crop uptake. The plan must be able to make a logical argument to support a finding that an adequate land base exists, this can be accomplished without the use of the ratios provided in the technical note.

523

Is this an absolute requirement? What is the definition of “adequate acreage”? NRCS requires 1.0 acres/au. Why is this standard higher. What is this based upon? Can a planner/grower show a simple mass balance of nutrients to meet this? This requirement does not take into account large variation in waste streams and nutrient contents on farms across the state. Also does not take into account exporting manure nutrients) from farms.

529

Is this an absolute requirement? What is the definition of “adequate acreage”? NRCS requires 1.0 acres/au. Why is this standard higher (Based on guidelines in Tech Note Part I, C10)? What is this based upon? Also, does not take into account exporting manure nutrients from farms.

**Response to above 4 comments:** There are several available resources for how to document an adequate land base or adequate acreage. These options are typically covered during farmer trainings. Instead of specifying when options are appropriate, the team wanted to allow farmers the flexibility in using a calculation that makes the most sense for their farm. Many of the options are well known and differ according to the operation. The references for calculating a land-base estimate were deleted from the Tech Note. The language was adjusted to reiterate the need to comply with the standard.

535

This language is inconsistent with being a requirement. The statement makes sense for farms with manure but is not applicable to fields not receiving manure. The standard is a Nutrient Management Standard, not a Manure Management Standard.

**Response:** *Part d. relates to an adequate land for manure, and is not applicable to farms that are not spreading manure. All nutrient management plans regardless of nutrient source should follow the standard.*

536

We support this criterion. Demonstrating an adequate amount of land/acres is available to spread all manure N and P nutrients generated on a farm is a key element for any NM plan, regardless of farm size. This analysis will, in part, help determine if a farm's nutrient management plan can protect surface or ground water quality.

**Response:** *Thanks.*

#### **V.A.1.e.**

516

This section (or a section in the accompanying Technical Note) should provide requirements or recommendations for soil testing frequency based on crop, soil type, management intensity, and fertilizer application rates. Recommended soil test frequencies in other states are often less than the every four years required by the draft Standard.<sup>1</sup> The sources listed in footnote<sup>1</sup> provide examples of testing intervals based on crop, soil type, and management system that could be used as the basis for implementing this suggestion.

<sup>1</sup> To list a few:

- Indiana: <<https://www.extension.purdue.edu/extmedia/AY/AY-281.html>>;
- Iowa: <<https://store.extension.iastate.edu/Product/Take-a-Good-Soil-Sample-to-Help-Make-Good-Decisions>>;
- West Virginia: < [https://www.wvu.edu/~agexten/forglvst/Soil\\_Sampling\\_2011.pdf](https://www.wvu.edu/~agexten/forglvst/Soil_Sampling_2011.pdf)>;
- Tennessee: <<https://utextension.tennessee.edu/publications/documents/PB1061.pdf>>;
- Michigan:  
<https://www.msu.edu/~warncke/E0498%20Sampling%20Soils%20for%20Fertilizer%20and%20Lime%20Recommendations.pdf>

**Response:** *This standard follows guidance delivered in UWEX Pub A2809. A2809 suggests more frequent sampling to ensure more accurate result. Every four years is the minimum.*

520

New methodology has been developed and substantive literature exists suggesting more advanced methods for testing fertility status of soils exists than is currently recommended by UWEX publication A2809 or A2100. This includes use of Veris soil testing or other approaches used in creation of zones based on soil physical properties. Generally these approaches require more intense sampling of soiling, but on occasion zones may be greater than 5 a. These approaches should be encouraged through the standard based on positive results for soil nutrient management in the scientific literature and extension recommendations from appropriate Land Grant universities.

**Response:** *Thank you for the suggestion. This could be included in the considerations section. The 590 standard follows the guidance of A2809, and encourages more frequent sampling as needed.*

535

Some language is redundant with V.A.1.a. Consider expanding the lists of approved labs based on more than WDATCP approval. Lower cost labs are available in the region as well as other methods of extraction. Wisconsin farmers may reduce their costs of lab analysis if UW recommendations are updated to include soil fertility calibration data for Melich extractions for routine P & K analysis. Quality control and the basis of recommendations are two separate components of the nutrient recommendation process, but are intertwined in the WDATCP lab certification. The processes we have in place for certification is cumbersome for regional labs and may be limiting competition.

**Response:** *Wisconsin soil testing labs have to follow the procedures outlined in A2809 on page 11. The procedures are consistent. The nutrient management plans must follow A2809, which acknowledges that more frequent soil sampling is best practice.*

#### **V.A.1.g.**

507

Am not certain if the calculation for the maximum combined application of commercial fertilizer P to meet the recommendations for the rotation should be discounted for planned manure or other organic P applications. Please clarify.

**Response:** *Thanks. The words 'commercial fertilizer' have been removed from the language to account for all P applications, either as fertilizer or manure.*

535

How does this language impact non-commercial fertilizer applications? Are K applications of environmental concern? If not, why limit application rates. There are several farm financial management reasons to build soil K levels faster than the current A2809 recommendations...

**Response:** *There are no prohibitions regarding the K application rate. K applications are not an environmental concern. Over application of K is economically limiting.*

#### **V.A.1.h.**

507

The exception for 20 lb of commercial N in starter when all of the recommended N comes from organic sources is limited to corn in this draft, but in A2809 (see p.83) that exception does not specify a crop so presumably applies to all crops with N recommendations.

**Response:** *A2809 builds in starter fertilizer for other crops where starter is typically used. The N starter fertilizer exception when all sources are organic is intended to apply only to corn and sweet corn. No change.*

508

The past standard allowed a 20% overage of N if organic sources where the sole source of N on a crop because of variability in N mineralization and application. The new standard only allows the 20% overage for starter fertilizer. Proposed standard should allow a grower to use the overage allowance as manure.

**Response:** *The old standard was based on the 1998 edition of A2809. This revision reflects the new A2809 which is based on new research. No change.*

523

The past standard allowed a 20% overage of N if organic sources where the sole source of N on a crop because of variability in N mineralization and application. Now the new standard allows the 20% overage BUT as included it starter for corn. This is problematic for two reasons. Some growers apply liquid UAN 2x2 with a planter. This system usually cannot apply less than 10 gls/ac. 10 gls/ac of UAN is about 30 lbs/ac of N. Another issue is the use of "pop up" starters. Typically the rates on these systems do not exceed 5 gls/ac. Using common the common "pop ups" only gives you about 5 lbs of N per acre. This

system does not allow a grower to use the overage allowance as starter. Make the allowance 30 lbs/ac to make practical sense of this situation and allow it as starter or in the actual manure applications as in the past. This just make agronomic sense!

529

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534

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**Response for above 3 comments:** *The language follows the current version of A2809. See Chapters 6 and 10 of A2809. The prior version of standard was based on the 1998 edition of A2809. This revision reflects the new A2809 guidelines which is based on new research.*

#### **V.A.1.h.2.**

520

The application of commercial N up to 20 lb per acre on fields that have manure applications at rates supplying total nitrogen demand should be allowed on crops other than corn and timings other than planting. Is the specific intent of the standard to deter integration of manure with cropping systems not based on production of field corn? Furthermore, why restrict the application only to starter and not allow for the application as side-dress when determinations can be made as to whether conditions restricted mineralization or resulted in the loss of N due to denitrification and volatilization. This standard penalizes growers for willingly delaying N applications to target delivery at time of greatest crop need and not reward prescriptive approach to applying supplemental N fertilizer in the event the crop might be short.

**Response:** *The answer to your question is No. Regardless of nutrient sources, the standard is written to protect water quality and meet agronomic needs. The exemption is related to starter fertilizer only because it is designed to mitigate the risk of slow N mineralization early in the growing season.*

#### **V.A.1.i**

520

I have a challenge with this due to the lack of current research on modern hybrids for a number of specialty crops including green beans, sweet corn, peas, dry beans, etc. There should be consideration for research published on crops from outside UW as well.

**Response:** *This is an example where the farm should consider using NRCS adaptive nutrient management. The University would be interested in seeing the results.*

536

We support the application rate criteria to prevent exceeding the annual N removal by a legume crop or legume companion crop (described in part III.B of Tech-Note). The revised Manure available N application rates are an improvement from the current (2005) standard. The application rates more accurately reflect reduced N uptake by legumes in the seeding year and also reflect realistic N uptake rates for soybean. The criteria will help improve ground water quality by limiting manure N applications to legume crop N needs.

**Response:** *Thanks*

**V.A.1.k**

520

Soil nitrate test is not appropriate on sand soils so plant tissue testing should be allowed. Seeing as the UWEX A2809 does not have sufficiency/deficiency levels established for many crops, recommendations should be derived from appropriate land grant universities such as Purdue Extension Corn Production handbook, University of Kentucky or other publications from appropriate Land Grant Universities for given crops.

**Response:** *It is unclear if other land grant universities provide a specific application rate recommendation. Additional language in V.A.1.j. was inserted which should address these concerns.*

**V.A.1.l.**

510

Thank you for modifying the phrase “significant operational change” to read “operational change”. This clarifies the intent of the rule.

**Response:** *You are welcome.*

506

Note - I see you are encouraging that manure be analyzed for ammonium N content for liquid manure less than 4% solids. If we do this what do we do with the ammonium value? If manure is surface applied does the ammonium value matter? Is the ammonium value to be used in SNAP-Plus under surface, incorporated or injected for manure nutrient value? More explanation here would be helpful.

**Response:** *The national standard requires that manure is analyzed for ammonium N content. Knowing the ammonium value allows you to better manage the risk of nutrient loss. This is stated as a consideration in the WI 590 standard.*

520

The Note makes reference to ammonium-N content for liquid manure. This references potential difference in behavior of manure with low solid content and high potential ammonium content, yet no recommendations are available for this type of manure through UWEX. Furthermore, how is this note to be interpreted in harmonization of NR243 or ATCP50? Will farms under WPDES permits be expected to manage manure with low solid content and high level of ammonium-N than others. Given the basis of 590 for regulatory framework, this statement is too vague and lacks appropriate BMP's for inclusion.

**Response:** *This “Note” is a consideration in this standard. It is not used in ATCP 50. NR 243 requirements are based on the associated risk. Please consult with DNR for 243 questions. Knowing the ammonium value allows you to better manage the risk of nutrient loss.*



535

Notes on ammonium-N for liquid manures – we need recommendations to go with this...

**Response:** *Knowing the ammonium value allows you to better manage the risk of nutrient loss. This section is a consideration that does not require specific BMPs to go with the recommendation.*

523

V.A.1.l(1) Manure samples should be collected every year. This just makes sense.

529

V.A.1.l(1) Manure samples should be collected every year. This just makes sense.

533

V.A.1.l(1) Manure samples should be collected every year.

535

What is the basis for the suggested sampling intervals? Avoid being overly prescriptive in this area without a strong basis supporting the required procedure. In general, manure nutrient content varies considerably and we need more analysis rather than less. For example, seasonal variations in precipitation have a significant impact on nutrient content of manure in storage.

**Response for above 4 comments:** *This is the minimum frequency established by the national standard. One can always sample more frequently.*

#### **V.A.1.m.**

507

Please specify what analysis needs to be done. Organic byproducts should have a consistent method of analysis and method for estimating N availability for nutrient management planning. The method currently mandated for biosolids uses Total N, Total P, Total K, Solids content and Ammonium N and is workable.

**Response:** *Thank you. The specific components listed for analysis were included in the language.*

516

The national standard requires that “[f]ields receiving animal manures and/or biosolids must be monitored for the accumulation of heavy metals and phosphorus in accordance with land-grant university guidance and state law.”

However, the draft standard does not appear to require monitoring of fields for accumulation of heavy metals. The current standard appears to only require a limit on heavy metals in field-applied organic byproducts themselves, but does not require monitoring of field soils once the byproduct is applied. To be consistent with the national standard, the requirement to monitor metal accumulation in the fields should be clearly stated.

An example of implementing this suggestion comes from Minnesota’s 590 Standard:

“Biosolids shall be sampled, analyzed and applied in accordance with USEPA regulations. (40 CFR Parts 403 (Pretreatment) and 503 (Biosolids); Minnesota Rule R. chapter 7041 and other local regulations regarding the use of biosolids as a nutrient source. Consult Minnesota Rule Chapter 7041 for detail including application timing restrictions.

When biosolids are applied, the accumulation of potential pollutants (including arsenic, cadmium, copper, lead, mercury, selenium, and zinc) in the soil shall be monitored in accordance with the

US Code, Reference 40 CFR, Parts 403 and 503, Minnesota Rule R. chapter 7041 and/or any applicable state and local laws or regulations.”

Or from Illinois' 590 Standard:

“When sewage sludge is applied, the accumulation of potential pollutants (including arsenic, cadmium, copper, lead, mercury, selenium, and zinc) in the soil shall be monitored in accordance with the US Code, Reference 40 CFR, Parts 403 and 503, and/or any applicable state and local laws or regulations.”

**Response:** *The permittees are required to analyze the content, and the 590 standard requires all other laws to be followed in Section IV. This concern is appropriate for other regulations and is already covered in the 590 standard.*

523, 529, and 533 (all had same comment)

I agree that other organic by products other than manure shall be applied according to this 590 Standard.

**Response:** *Thanks*

**V.A.1.n.**

536

We support taking corrective actions described in the draft standard when applied manure flows towards wells or direct conduits to groundwater. This language reflects the national standard's purpose and will help to better protect groundwater quality.

**Response:** *Thanks.*

**V.A.1.o.**

535

Please consider the following wording: “Where nutrient application decisions are based on plant tissue analysis, for crops such as cranberries or established fruits, the sampling and testing of plants and the resulting nutrient recommendations shall be done in accordance with University of Wisconsin, or other institutions with active nutrient research programs and recommendations for the crops of interest, or the in the references section of this standard.” Examples of cranberry management recommendations from Massachusetts, Rutgers and Oregon are pertinent and applicable to the industry in Wisconsin. Specialty crops like cranberry are highly dependent on the national coordinated efforts of the very few specialists to advance the state of nutrient management.

**Response:** *A reference to the Tech Note will be included in this section to look at Appendix II specific to cranberry operations.*

**V.A.2.a.(1)** (page 3)

507

This needs some editing. “Nutrients may be added for the establishment of perennial vegetation” refers to concentrated flow channels and non-harvested buffers and not to the other areas listed.

**Response:** *Thanks. The language has been edited.*

514

Nutrients shall not be spread on the following areas:

- 1) Surface water, saturated soils, during periods of active snow melt, where water is flowing, etc

I initially thought periods of active snow melt needed to be better defined. Then on rereading, I realized a period of active snow melt is not an area. I think you mean you can't spread on areas where water is flowing during periods of active snow melt.

**Response:** *Thanks, the language was edited for clarification.*

535

The definition of concentrated flow channels results in unintended violations of this prohibition. Please consider refining this language to allow for applications to these areas. The current language does not accommodate the limitations of existing fertilizer application technology in place today or the foreseeable future. If a concentrated flow channel is not delineated as a grassed waterway, a nutrient applicator will not avoid it. If the concentrated flow channel is a grassed waterway, odds are very high that it will be harvested. Maintenance of the perennial vegetation will be difficult without nutrient applications. This becomes a target for those looking to find violations of the standard or a disincentive for some to put in grassed waterways to control ephemeral erosion. How might this language be changed to remove the challenges planners and applicators face and achieve the desired outcome of resource protection practices that are necessary? Easier said than done, but this is a gaping hole in our existing NM/conservation planning process today. We are in need of helpful solutions rather than punitive restrictions.

Part a. deals with areas. The following are specific areas: Surface water, concentrated flow channels and non-harvested vegetative buffers. Nutrients added to establish and maintain vegetation needs to be addressed clearly as in V.A.2.a.(4), but with the allowance for application in harvested areas that have perennial vegetation. Saturated soils and periods of active snow melt are not consistent with the term area but are temporal components within any field. Please revise to provide consistency.

**Response:** *The team recognizes the practical difficulty in stopping nutrient application over concentrated flow channels. Regardless, it is not good practice and application on these areas pose high risk for nutrient runoff. The team feels the technology soon will be available for more detailed and accurate application placement. No change from first comment. The language in the next section was clarified.*

536

We support prohibiting nutrient applications during periods of active snowmelt, where water is flowing. This language reflects the intent of the national standard's purpose and will help to better protect surface and groundwater quality. It will also help reduce the differences between small and large farm (CAFO) winter manure spreading requirements.

**Response:** *Thanks.*

538

Modify second line to read.... Nutrients may be added for the establishment of perennial vegetation buffers based on soil tests and time of year being established.

**Response:** *Good points, and also redundant as these additions are already in the NRCS Standard 342, Critical Area Planting.*

#### **V.A.2.a(2)**

538

Add swallets, fractures, exposed bedrock and fractures... or direct conduits to groundwater, such as sinkholes, swallets, exposed bedrock and fractures or nonmetallic mine.

**Response:** *These suggestions or examples are listed in the definition. The team recognizes the importance of encouraging standard users to review the definitions, as many users currently do not.*

**V.A.2.a(2) & (3).**

507

The “direct conduits to groundwater” can be removed from (2) because of the prohibition on spreading within 50 ft of them in (3).

What is the water quality rationale for allowing manure deposited by animals within 50 ft of a potable well? Or a SWQMA in the winter? Should there be some caveats on animal density or management if grazing/gleaning is allowed in these areas?

**Response:** Thanks for the comment. The language has been revised to improve clarification and *minimize redundancy regarding direct conduits to groundwater. Grazing animals are allowed near wells, because they need access to water. The included definition of ‘gleaning/pasturing’ does require established vegetation and other requirements to address animal density and management.*

**V.A.2.a.3**

506

Remove the exemption that allows grazing animals to deposit manure within 50’ of a private well. Manure is manure and it should not matter how it is placed on the landscape. Grazing animals that are allowed to congregate around a well can cause contamination as well. Also some fields do have wells in them and when planted to corn can starter fertilizer at least be applied in the 50’ area? Most planters will not have the ability to turn off the fertilizer in these small areas.

**Response:** *Grazing animals are allowed near wells, because they need access to water. The included definition of ‘gleaning/pasturing’ does require established vegetation and other requirements to address animal density and management. Starter fertilizer is not allowed within the 50 feet buffer.*

527

I agree with many of the comments already submitted and think they make valuable points. One other thing that I think has been missed is the use of fertigation. Under this proposed standard producers will have a very difficult time spoon feeding nitrogen through the irrigation system. A lot of irrigation wells (direct conduits to groundwater) are located in or on the edge of the production area. Most of them are not 50 feet away from where the irrigation system water hits.

**Response:** *The definition of direct conduits to groundwater has been revised to exclude irrigation wells.*

533

Need to address the fertigation issue brought up by Kevin Flyte.

**Response:** *The definition of direct conduits to groundwater has been revised to exclude irrigation wells.*

512

Nutrients are prohibited from being spread within 50 feet of a private potable well unless directly deposited by pastured animals, but untreated manure shall not be mechanically applied within 250 feet of a public water supply designated as a non-community potable well or within 1000 ft of a community potable well.

- Comment 1. How is 50 feet safe for my private well, but yet for a school or restaurant there is a 250 feet setback and 1,000 feet setback for a community potable well?

**Response:** *Manure deposited by pastured animals is except because the animals need access to water. The gleaning/pasturing definition also requires management practices that address animal density and vegetation management.*

- Comment 2. Can untreated manure be deposited by gleaning or pastured animals within 1000 ft of a community potable well or within 250 ft of a non-community potable well?

**Response:** Yes. The prohibition is for mechanical application.

- Comment 3. Should there be a definition for treated manure? Are there different restrictions for treated manure such as can treated manure be applied within 1000 ft of community water well and within 250 ft of a non-community potable well?

**Response:** Good point. The language and definition was changed from untreated manure to treated manure.

529

Why is grazing seem to have a pass to do anything. Manure is manure.

**Response:** Grazing animals are allowed near wells, because they need access to water. The included definition of 'gleaning/pasturing' does require established vegetation and other requirements to address animal density and management.

536

We support the 50 foot prohibition for nutrient applications from private potable water well or direct conduits to groundwater. This requirement reflects the national standard's purpose will help to better protect groundwater quality, including the risk for bacteria/pathogen exposure from manure applications. Although it is not the same setback distance required for large farms (CAFO), we believe it is a reasonable compromise that will help reduce the differences between small and large farm (CAFO) manure spreading requirements. We also support this prohibition because it works in tandem with the V.A.2(b)(1-3) setback criteria for untreated manure applications. Collectively, these setback requirements help to better protect ground water quality.

**Response:** Thanks.

538

Change: 50 feet of a Private Potable Water Well to 100' so as to be consistent with CAFO.

**Response:** Thanks for the comment. The proposed language was thoroughly debated, and the 50' setback was a compromise for simplicity.

#### **V.A.2.a.(5)**

535

What alternatives does a planner or farmer have where T cannot be met? I have a current plan that has a soil series with a T of 2 tons per acre and a calculated loss of 2.3 tons per acre. We have exhausted the reasonable rotation/tillage/cover crop options but are in violation of the standard. We must provide alternatives for special situations, even if they are rare. Language that accommodates difficult situations is helpful.

**Response:** The difficulties in unique situations is understood. Meeting tolerable soil loss is critical to reduce phosphorus loss, which is key to this standard.

#### **V.A.2.b**

505

V.A.2.b untreated manure shouldn't be applied... the words untreated manure, in my mind, refers to manure that hasn't had a nitrification inhibitor mixed in it, not referring to the lack of pathogens as the definition suggests. Maybe it should say that "altered or weakened manure" can only be applied in these places.

**Response:** The section was re-worded. The team understands the need to emphasize all standard users to review the definitions section to specifically understand the intent of the language.

#### 509 - Well Restrictions

New setbacks from community, public, and non-community potable water wells have been included in V.A.2.a and V.A.2.b of this draft of the 590 standard. These setbacks present concerns on a few levels. First, private and non-community potable water wells are not required to be publicly disclosed. Therefore, these wells are not present in SNAP+ software. Nutrient management planners and/or farmers assume the liability for “guessing” where these wells are located and establishing the required setbacks. Farmers should not be required to establish setbacks from wells that are not publicly reported and included in SNAP+. Second, these additional setback requirements further decrease the likelihood that a farmer will have a “clean” field in which to apply nutrients for a growing crop.

**Response:** *The wells will be identified and available in the 590 restriction maps. Non-community potable water wells are the responsibility of the planner. The existence of buildings typically indicates that wells are present.*

536

V.A.2(b)(1-3). We support the untreated manure application prohibitions and believe it works in tandem with the V.A.2(a)(3) setback criteria. This language reflects the national standard’s purpose and will help to better protect groundwater and surface water quality, including the risk for bacteria/pathogen exposure from surface applied untreated manure. This prohibition will help reduce the differences between small and large farm (CAFO) manure spreading requirements and expands upon the current (2005) standard - V.A.2(b)(2) - for no application of nutrients to locally identified areas as contributing nutrients to direct conduits to groundwater or surface water as a result of runoff. We also support the proposed 1,000 foot setback for municipal wells and 250 foot setback for non-community potable water wells because they are consistent with ch. NR 151.015(18), Wisconsin Adm. Code, for a site that is susceptible to groundwater contamination. Last, we support V.A.2(b)(3) criteria and believe incorporating it within NM plans, strikes an effective balance between small and large agricultural operations that surface apply untreated manure for plant production and ground water quality protection.

**Response:** *Thanks.*

#### V.A.2.b.1

506

The 1000’ prohibition setback for untreated manure to a community well should be revisited and I think reduced. I have 2 small farms (each less than 200 acres) that each have over 20% to 30% of their acres within 1000’ of a community well. They need these acres for manure application or the other option is to overload the acres greater than 1000’ from the community well. Each of these farms is a daily haul farm with solid type manure that is untreated.

**Response:** *Thanks for sharing your specific situation. The team still feels that spreading in proximity to these wells is of high risk. Consider treating manure for pathogens such as with high temperature composting.*

508, 529, 534 (all three reviewers with the same comment)

Will information regarding the location of these public water supplies be made readily available to planners that do not use the [www.manureadvisorysystem.wi.gov/](http://www.manureadvisorysystem.wi.gov/) website as a source for 590 nutrient application restriction maps?

**Response:** Yes, the community well locations will be available. Private well locations will be the responsibility of the planner, which are often present if buildings exist.

**V.A.2.b.(2)**

518

Non-community potable and private wells are not publicly disclosed and not present in the SnapPlus software, and may cause issues with identification.

**Response:** The community well locations are available on the DATCP 590 restriction maps. Private well locations will be the responsibility of the planner, which are often present if buildings exist.

**Next 6 comments – same comment regarding change to 100’ as in NR243.**

508, 529, 534 – all same exact comment.

Restriction of manure applications within 250 feet of a public water supply designated as a *Non-community Potable Water Well*. In the last sentence of the definition of *Non-community Potable Water Well* it states “Non-community potable wells include schools, restaurants, or churches and private potable water wells that meet the use definition.” What is meant by the term ‘meets the use definition’? Does it mean private potable water wells that serves at least 25 or more people for 6 months or more per year? If it is meant to include single dwelling private potable water wells, then the set-back must be changed to 100 feet as is NR243. Set at 250’ could remove significant acreage for some smaller growers.

**Response:** The non-community potable wells also include private potable water wells, when they are serving more people than the NR 812 definition, 25 or more people for 6 months or more.

523, 527, 533 – all same comment; similar to above.

Do not agree with restriction of manure applications within 250 feet of a public water supply designated as a Non-community Potable Water Well. This must be changed to 100 feet as is NR243. This adds another well setback that will make things more confusing for everyone.

**Response to above comments:** The proposed setbacks to wells were thoroughly debated. The setbacks from private wells will remain at 100’, 250’ from public non-community wells, and 1000’ from public community wells.

**V.A.2.b.(3)**

512

On Silurian dolomite soils we encourage surface application of manure because we don’t want to force the manure closer to the bedrock, which is why we promote surface application when the weather and soil conditions are favorable.

**Response:** The concern is understood. Standard does promote surface application in appropriate conditions, and does not require incorporation.

513

Section V.A.2.b and c: the revised standard should give Land Conservation Committees further guidance regarding areas contributing direct runoff to groundwater and surface water.

The revised standards, sections V.A.2.b and c, would allow county conservation committees to prohibit spreading of untreated manure and certain spreading on frozen-or snow covered ground based on potential for direct runoff to surface and groundwater. MEA supports this effort to acknowledge that

uniform spreading regulations are not appropriate for all soil types and conditions that are present in Wisconsin.

However, we recommend that the revised standard include further guidance regarding when county conservation committees should limit spreading based upon potential for direct runoff. Without this guidance there remains a great risk that certain counties will not sufficiently protect groundwater and surface water in areas of the state with karst topography, sandy, shallow, and/or clay soils. As an example, the revised standards could encourage county conservation committees to prohibit spreading in fields with karst topography according to recommendations of the Northeast Wisconsin Karst Task Force, available at <http://learningstore.uwex.edu/Final-Report-of-the-Northeast-Wisconsin-Karst-Task-Force-P1394.aspx>. Providing this guidance would also allow citizens to review the 590 standard and have some understanding of the conditions under which their county conservation committee would prohibit manure spreading.

**Response:** *The counties have access to topographic maps and LiDAR data to find soil types and water features.*

**Next 3 comments are similar:**

523

There are many references to “areas delineated in a conservation plan”. Will County LCD’s be providing more information to planners on these areas? How will this happen? In the past, finding these areas has been left up to the NMP planners. Of whom many are not properly trained in conservation practices or trained to look for these sensitive areas like Conservation Planners at NRCS and LCD’s. The County Land Conservation Offices must become an integral part of the NMP planning process by providing actual conservation plans to NMP planners. Land Conservation offices must take a much more active role in this process. Snap Plus does a good job of calculating soil loss, but that is only a small part of a true Conservation Plan.

529

There are many references to “areas delineated in a conservation plan”. Will NRCS be providing more information to planners on these areas? Currently NRCS fails to provide any kind or real conservation planning in the field and have become invisible to the task of conservation planning. How will this happen? In the past, finding these areas has been left up to the NMP planners. Of whom many are not properly trained in conservation practices or trained to look for these sensitive areas like Conservation Planners at NRCS and LCD’s. NRCS and County Land Conservation Offices must become an integral part of the NMP planning process by providing actual conservation plans to NMP planners. NRCS and Land Conservation offices must take a much more active role in this process. Snap Plus does a good job of calculating soil loss, but that is only a small part of a true Conservation Plan.

534

There are many references to “areas delineated in a conservation plan”. Will County LCD’s be providing more information to planners on these areas? How will this happen? In the past, finding these areas has been left up to the NMP planners. The County Land Conservation Offices must become an active participant in the NMP planning process by providing actual conservation plans to NMP planners or to producers.



**Group Response to above 3 comments:** *Planners and farmers are encouraged to contact the LCDs for more information and guidance. This language allows for flexibility in the standard, instead of having statewide rules that do not allow for flexibility in local areas. The language was revised slightly.*

538

Change: Land Conservation Committee to Land Conservation Department

**Response:** LCCs have a clear, formal process used for establishing their Land and Water Resource Plans, which is important in establishing this authority. No change.

**V.A.2.c.**

536

We support the reference to the Winter Spreading Plan requirements in Section VII.B. draft standard and the Winter Spreading Plan requirements in Section VII.B. We believe this section improves upon the current (2005) standard and meets the National 590 requirements for winter manure applications (i.e., adequate setback distances to protect local water quality; specified conditions are met and adequate conservation measures are installed to prevent delivery; concurrence with the state water quality authority).

**Response:** *Thank you for the support and recognizing the compliance with the National Standard.*

**V.A.2.c.(2)**

535

Standard procedures for dealing with locally identified resource concerns must be implemented on a statewide basis if we are going to implement this effectively. The capacity and willingness of local county and federal conservation staff to identify and delineate landscape features varies dramatically across regions and across county lines. The current status of inventories of these features of concern is inadequate for effective nutrient management planning. A suggestion is that a qualified shared dataset be developed state wide that any qualified private or governmental staff can populate. If standard procedures are developed, simple GIS procedures can be utilized to transfer this information to restriction maps in the NMP process.

The existing language does nothing to address this fundamental problem that has existed since the adoption of the 1993 version of the 590 standard. On a state wide basis we do not consistently deliver conservation plans that identify the features this section of the standard is intended to address.

**Response:** *The team understands the concern with consistently identifying these features, and that this is a bigger problem than what the 590 standard and standard revision team can address. This section allows some flexibility for implementation at the local level. It also allows for additional planning and uses a formal process for recognizing emerging issues. The inclusion of this section avoids statewide rules.*

536

We support this criterion because it will help both small and large (CAFO) farms to reduce the risk for manure runoff during frozen or snow covered soil conditions and better protect surface and ground water quality.

**Response:** *Thank you for the support.*

538

Change: Land Conservation Committee to Land Conservation Department

**Response:** *LCCs create Land & Water Plans through a formal, recognized process, where resource concerns can be identified. No change.*

**V.A.2.c.(3)** - rates (3 comments below are the same; response grouped)

508

Understand the reason to limiting winter applications of P. However, would change the second sentence to either read “do not exceed the P removal of highest P demanding crop in the rotation” or “limit applications to no more than 60 lbs of P2O5”. Not sure why allowing only 50 lbs of P2O5 if the following crop will be soybean, while allowing 70 lbs of P2O5 if the following crop is corn does anything to improve P runoff in winter. As currently proposed, only adds complexity and confusion in planning and implementation without improving chances for decreasing P runoff in winter.

529

Understand the reason to limiting winter applications of P. However, would change the second sentence to either read “do not exceed the P removal of highest P demanding crop in the rotation” or “limit applications to no more than 60 lbs of P2O5”. Not sure why allowing only 50 lbs of P2O5 if the following crop will be soybean, while allowing 70 lbs of P2O5 if the following crop is corn does anything to improve P runoff in winter. As currently proposed, only adds complexity and confusion in planning and implementation without improving chances for decreasing P runoff in winter.

534

Understand the reason to limiting winter applications of P. However, would change the second sentence to either read “do not exceed the P removal of highest P demanding crop in the rotation” or “limit applications to no more than 60 lbs of P2O5”. Not sure why allowing only 50 lbs of P2O5 if the following crop will be soybean, while allowing 70 lbs of P2O5 if the following crop is corn does anything to improve P runoff in winter. As currently proposed, only adds complexity and confusion in planning and implementation without improving chances for decreasing P runoff in winter.

***Response to above 3 similar comments:*** No change. The proposed rate is not an environmental consideration. The limit is not meant for the full rotation, just a specific time. This range allows flexibility for planners.

518

First, the Winter Manure Spreading Plan (V.A. 2.c.(3)) and Risk Assessment (also addressed in the Technical Note.) While we understand and appreciate that winter spreading needs to be done judiciously, the proposed approach is complicated, will be time consuming, and adds extra costs for farmers who are following nutrient management plans. Furthermore, the vast majority of Wisconsin pork producers store their manure in pits underneath their barns, with fall application. They have no plans to winter spread, yet under the new 590 standard they will be required to complete the assessment and submit a winter spreading plan. If they can demonstrate 180 days of storage, they should not be required to have a winter spreading plan as part of their nutrient management plan. For those that find it necessary to winter spread, a simplified process of identifying appropriate fields and practices to mitigate losses should be identified.

***Response:*** Thanks for the comment. The winter spreading section has been revised. Producers are required to produce winter spreading plans that reflect 14 days of manure generated on the farm or the amount anticipated to be spread in the winter. These producers would need to create a plan for just 14 days of manure and wastewater generated. The team feels this is a critical planning tool.

**V.A.2.c.(4)** - Slopes

534

Is it wise to specify that “Grazing is allowed on all slopes?” Perhaps you could leave this to the grazier’s best judgement instead of giving them a “get out of jail free card?”

**Response:** *This section does allow grazing on all slopes, but graziers still have to comply with the rest of the standard in meeting V.a.1.i. in not exceeding N and P requirements, meeting tolerable soil loss, etc, and must comply with the definition of gleaning/pasturing which maintains vegetative cover.*

538

Add: Grazing may occur on all slopes provided permanent vegetation is maintained so as to prevent rill and gully development.

Question: says not to mechanically apply nutrients on slopes greater than 9% etc. Does this apply only to solid manure or solid and liquid?

**Response:** *Reference V.a.1.i. prohibits exceeding N and P requirements. Grazing should refer to “gleaning or pasturing” referenced earlier in the standard, which is defined as having maintained vegetative cover. The standard language was changed to substitute “grazing” for “gleaning or pasturing”.*

**V.A.2.(c).6.** – No liquid manure in Feb & Mar

504

The PNAAW board met on April 2, 2015 to review the proposed changes to the 590 standard. The one comment that we are making to the committee regards V. A 2. (c) 6 – that reads: *Do not surface apply liquid manure during February and March on areas depicted on the 590 spreading restriction maps as areas where DNR Well Compensation funds provided replacement water supplies for wells contaminated with livestock manure or Silurian dolomite (SD) soils.* Sub 6 is under (c) that reads: *When frozen or snow-covered soils prevent effective incorporation at the time of application and the nutrient application is allowed, implement the following according to a Winter Spreading Plan in Section VII.B.:*

The PNAAW board wished to thank the committee for recognizing that, in certain years, soil conditions may be suitable in February and March for safe application and allowing it to continue. Our members have seen too many times when wet fall conditions prevent safe application, and allowing this window means that some farms will be able to safely apply in March, thereby avoiding the lose-lose situation of letting a manure storage overflow, applying on frozen soil in winter or being forced to apply on saturated soils in April. A system that is based on actual soil conditions and not an arbitrary calendar date provides both environmental protection and enhanced flexibility.

If the committee wishes to speak with us to expand on this comment, please feel free to contact President Jake Buttles.

**Response:** *Thank you for the support and recognizing that the exemption for application in February and March only occurs when frozen and snow-covered ground prevents effective incorporation.*

508

Will information regarding the location of the water supplies where DNR Well Compensation funds provided replacement wells be made readily available to planners that do not use the [www.manureadvisorysystem.wi.gov/](http://www.manureadvisorysystem.wi.gov/) website as a source for 590 nutrient application restriction maps?

**Response:** *Yes, these areas and maps are currently available on that website.*

509 – Winter Spreading Restrictions

Part V.A.2.c(6) restricts farmers from applying liquid manure during February and March in areas of the state depicted on 590 spreading restriction maps as having Silurian dolomite (SD) soils or where DNR Well Compensation funds provided replacement water supplies for contaminated wells. This restriction takes away all farmer flexibility. A strict date-based restriction is ineffective, unrealistic, and illogical. This

restriction assumes that conditions in February and March will always be the same, which we know to be false. Weather unpredictability is a constant in agriculture and nutrient management restrictions should take this unpredictability into consideration. A reasonable restriction would be based on weather and soil conditions rather than calendar date.

**Response:** Please review the language in V.A.2.c. which supercedes V.A.2.c.6. and states that the prohibitions should be followed when frozen or snow-covered ground prevent effective incorporation. If effective incorporation is possible due to weather and soil conditions, these restrictions do not apply.

Furthermore, the map output required in Part II of Technical Note 1 is incredibly complex. A sample map of a typical field shows many overlapping areas of setbacks, restrictions, and special requirements. Farmers will not be able to read and implement a map with this level of detail unless they are using variable rate technology to apply nutrients. Without the technology, farmers will be forced to avoid applications on entire fields; for many farmers, they may be faced with no option without restricted areas and setbacks. These farmers will be left with no feasible and legal options for the disbursement of manure.

Finally, the values used in the Winter Risk Estimate Rapid Calculator Table (Part II, F. of Tech Note 1) imply that farmers are highly unlikely to have a low-risk field, and in fact are highly likely to have all medium-high risk fields based on the criteria allotted. Tying the hands of the majority of livestock farmers in the state will not result in improved nutrient management compliance.

**Response:** Thank you for the comments. The 590 revision team is considering alternatives for a simplified Risk Assessment.

511

It is unclear how many areas in the state would be impacted by this new restriction, which should be an important consideration when deciding if these areas are the most appropriate ones for such prohibitions. It would also be important to examine the reason for a well replacement. In situation where poor well construction played a role in the well ultimately becoming contaminated, it would be inappropriate to use that well replacement as the basis for a newly designated area that restricts manure application. It is also essential that emergency application still be allowed in such areas provided that appropriate protocols are followed.

**Response:** The number of acres impacted by this restriction was determined and reviewed: 2,4440 ac of Well Comp Areas. 21,933 ac of SD soils.

523

Is there any allowance for winter surface applications on Silurian dolomite soils for emergency spreading if that is the only soils a farm may have?

**Response:** Currently there is no emergency variance in the standard. Growers should work with their Land Conservation Departments and the DNR if emergencies occur.

534

Is there any allowance for winter surface applications on Silurian dolomite soils for emergency spreading if that is the only soils a farm may have? Also, will information regarding the location of the water supplies where DNR Well Compensation funds provided replacement wells be made readily available to planners that do not use the <http://www.manureadvisorysystem.wi.gov/> website as a source for 590 nutrient application restriction maps?

**Response:** *Currently there is no emergency variance in the standard. Growers should work with their Land Conservation Departments and the DNR if emergencies occur. Maps of these areas are currently available on the DATCP website.*

535

This section needs to be clarified. How do planners locate the DNR Well Compensation fund locations at the sub-field level? SD soils are easy to identify on a regional basis but extremely difficult to delineate at the field level. The SD features and concerns are not unique to Silurian dolomite formations. How does the committee address the inconsistency of resource concerns on soils with less than 60" of soil over bedrock on other soils with lithic contact? We do not have the detailed, sub-field inventory to make these delineations in any area of the state with a high degree of accuracy. The cost associated with making depth to bedrock determinations is prohibitive for planners. We need a mechanism to deliver this information to planners.

What recourse does a farmer have where all his soils are SD? How do you develop an emergency plan with this restriction?

**Response:** *Detailed maps of SD soils are currently available on the DATCP website. There is no emergency variance in the standard. Growers should work with their Land Conservation Departments and the DNR if emergencies occur.*

536

We support this criterion because it reflects the highest risk period for winter runoff and will help better protect surface and ground water quality by prohibiting manure applications on specific areas and soils that have been associated with demonstrated groundwater quality problems (e.g., nitrates and bacteria/pathogen exposure). We believe this criterion works in tandem with the VII.B Winter Spreading Plan requirements and improves upon the current (2005) standard and meets the National 590 requirements for winter manure applications (i.e., adequate setback distances to protect local water quality; specified conditions are met and adequate conservation measures are installed to prevent delivery; concurrence with the state water quality authority). We also support this criterion because it will help reduce the differences between small and large farm (CAFO) winter manure spreading requirements and reflects some of the 2013 and 2014 Discovery Farm considerations for Winter Applications of Manure (cited in the tech note).

**Response:** *Thanks for the support.*

538

Change: Do not surface apply liquid manure during February and March to .... December, January, February and March.

Change: or Silurian dolomite (SD) soils to..... Soils with less than 5' separation from bedrock or watertable

**Response:** *This version of the 590 standard is a step further than the 2005 version of the standard. The team discussed this option at great length, and the team feels that the stated restrictions are addressing the greatest risk areas.*

### **V.A.3.a**

509 – Applications in a SWQMA

Part V.A.3.a now allows applications of liquid manure in a SWQMA at a rate of 12,000 gallons per acre per application, which is an increase from previous standards. This increase will positively benefit farmers in SWQMAs.

**Response:** *Thanks for recognizing the increased flexibility.*

### **V.A.3.a.(4)**

507

Please define promptly (same day?, same week?). This should be amended to include small grain forage crops that will provide cover but are not “cover crop” because they will be harvested. It probably should not include some crops like tillage radishes that are often included in lists of cover crops but that do not have a high stem density.

**Response:** *The team did not create a definition of “promptly” to allow planners/managers to plant when soil conditions are appropriate. The language was slightly changed to include crop or cover crop to account for small grains.*

### **V.A.3.b.**

502

The waiting for 7 days for sequential applications is a ridiculously long time. No evidence was presented in the standard as to what benefit the 7 day wait period would provide. The cost to pick up and move equipment then move it back for the sequential application seems very costly with little benefit. The standard already mandates no application on saturated soils isn't that providing enough protection?

**Response:** *The process was simplified by excluding the moisture assessment. The table was difficult to interpret and therefore removed. The cost of simplification is a longer wait period. The seven days between applications is a general rule.*

509 – Applications in a SWQMA

We are concerned, however, with the inclusion of subsurface drainage in the restricted section, V.A.3.b. Subsurface drainage should not be treated as navigable water and including it into this section with SWQMA restrictions essentially treats it as such. The prevalence of subsurface drainage in Wisconsin fields would greatly reduce a farmer's ability to spread manure, requiring that farmer to have more land over which to spread the same amount of animal waste, an expensive and unnecessary requirement.

Further, we are concerned by the requirement that farmers wait a minimum of seven days between sequential applications in these areas. This rigid requirement eliminates flexibility and is unrealistic for farmers to implement for several reasons. First, many farmers make use of the services of a custom manure hauler. These haulers must satisfy many customers in a short season and it is unlikely they will be able to return to a farm for a second application in the narrow window allowed by this standard. Further, the seven day wait requirement does not take into consideration soils which dry quickly and may be appropriate for application much sooner than the allotted seven days. Finally, a set number of days would ignore the fluctuations in weather that a farmer must manage; day six may be dry and appropriate for application but days seven, eight, nine, and ten may bring rain and by day eleven, the window to apply may have passed. Farmers should have the flexibility to apply when labor availability, weather, and soil conditions permit.

**Response:** *One of the main purposes of the standard is to reduce runoff risk. The national standard requires states to include guidance that will reduce the risk of nutrient loss specifically through subsurface*

*drainage. These restrictions are one of the ways to reduce the risk of runoff through tile. The limited time period for manure haulers and the increased costs are understood.*

511

The definition of liquid manure is currently consistent with the definition in NR 243.03(32), but the proposed revisions would change that. We oppose this change because we believe consistency with NR 243 should be favored when possible. Also, we favor the retention of Table 1 or the creation of a new numeric moisture standard that could take its place. An alternative to the 7-day application prohibition should be provided for producers with the technological and agronomical expertise necessary to utilize it.

**Response:** *UW A2809 redefined liquid manure and this standard follows A2809 guidance. NR 243 could also be changed to be consistent with A2809 guidance. Table 1 was difficult to use, and there deleted. The process is now simplified.*

512

What if there is one tile that runs through a small portion of a large field, is the entire field limited to 12,000 gallons per acre or just an area near the tile?

**Response:** *Yes, limit is 12000 with tile.*

If a field has tile, is the application rate limited to 12,000 gallons even if the manure is incorporated? If the concern is manure entering tile, I read the above that manure could be applied at a higher rate, such as 15,000 gallons per acre as long as it is incorporated- which is putting the manure closer to the tile anyway.

**Response:** *Yes. The concept is to break up the macropores, which are more direct deliveries to groundwater. The standard now requires monitoring tile outlets for discharge.*

513

Section V.A.3.b: the revised standard should not allow for higher application rates in SWQMAs.

MEA echoes the concern of Clean Wisconsin regarding increased application rates that the revised standards would allow in SWQMAs. At a minimum, the revised 590 should maintain allowable rates as outlined in the current standard. To allow for increased application rates in SWQMAs disregards the purpose of the 590 standard as well as the groundwater quality crises that are occurring in certain Wisconsin counties.

**Response:** *The standard still requires that no manure leave the site at application and be applied a rates specified in A2809. The 12000 gallon rate was a compromise that allows more flexibility in application that still protects groundwater and surface waters.*

516

The revised standard allows 50-400% higher liquid manure application rates in SWQMAs than the existing standard. What is the justification for uniform 12,000 gallon/acre rate? This is 20% higher than the highest allowable rate in the in the current standard and would appear to make surface waters more susceptible to runoff, counter to the purpose of the Standard.

Maximum application rates in these sensitive areas should still be scaled to the soil type to minimize runoff, and thus Table 1 in the current Standard should be left in as a guide to maximum application rates for manure applied under this section.

Alternatively, if uniform maximum rates are required regardless of soil type, the maximum application rates from the current standard (7,000 gallons per acre with <30% residue/cover and 10,000 gallons per

acre with >30% residue/cover) should be used instead of the 12,000 gallons per acre maximum in the draft revised standard.

**Response:** *Table 1 was difficult to use and therefore eliminated. See above responses for rates discussion.*

522

Junction View Dairy, LLC (JVD) has 2,100 acres in a 243 NMP. Located in Richland County, with a majority of the soil types being 161D2, JVD is required to no-till to meet T on a majority of their fields. The elimination of Table 1 from the previous standard will allow JVD to land apply manure at a more economical rate, 12,000 gal/ac, per application. Given that approximately 1,329 acres are impacted by the SWQMA, the previous standard only allowed them to apply up to 7,500 gal/ac, per application, on those 1,329 acres. This is not economical or reasonable, and the standard needed to be revised. 12,000 gal/ac will allow JVD to not have their manure haulers drive their fields twice, and will save both money and time.

**Response:** *Thanks for the comment.*

524

“Sequential applications may be made to meet the desired nutrient additions consistent with this standard. Wait a minimum of 7 days between sequential applications.” 7 days is not flexible enough, the standard does not allow applications on saturated soils, where did the 7 days come from? Custom manure haulers will not allow their equipment to sit that long before moving on, with no guarantee they will come back. Where is the evidence that a 7 day wait period is necessary?

531

“Sequential applications may be made to meet the desired nutrient additions consistent with this standard. Wait a minimum of 7 days between sequential applications.” 7 days is not flexible enough, the standard does not allow applications on saturated soils, where did the 7 days come from? Custom manure haulers will not allow their equipment to sit that long before moving on, with no guarantee they will come back. Where is the evidence that a 7 day wait period is necessary?

535

Revise: “Wait a minimum of 7 days between sequential applications”. This language assumes time is the only variable influencing liquid manure attenuation. Suggestion: Stage sequential surface applications in a manner that minimizes risk of movement to surface waters or subsurface drainage tile. Monitor soil moisture conditions and adjust application rates accordingly.

**Response to above comments:** *The seven day wait period is a general rule that balances agronomics and environmental protection.*

526

Parts V.A.3.b , VII.A and VII all touch on new restrictions surrounding subsurface drainage systems. First of all, identification and mapping of most drainage systems is darn near impossible. Proper tile maps were never made to start with and then throughout the years tile lines were fixed and added on to without any record. So how do you decide what part of the field has tile lines and what part does not? Secondly, this standard restricts application to 12,000 gallons per acre with the option to apply more with subsequent applications after 7 days. Do you understand the added expense and man power needed to set up drag hose systems only to tear them apart and reset them up in a week? Or how about the added compaction caused by the need for two trips across the field with tankers? Not only are the acres with tile



systems some of the most productive and hence needing the most nutrients, they are also the most prone to weather related delays and shorter windows to do field work without compromising the structure and tith of the soil or causing compaction. Lastly, how should farmers monitor their tile outlets? This requirement is so open ended and up for interpretation that it almost seems like a trap. Should the tile lines be checked every hour or once a day? If the farmer only hauled one load of manure does that also mean he/she needs to check all of his/her tile outlets before going back home?? This change will cost farmers money and headaches without any guarantee of improving water quality.

**Response:** *Manure loss to tile is a high risk that was specifically identified in the national standard. The inclusion of prohibitions where tile is present is one of the ways the new standard addresses this national standard requirement. Visually monitor tile outlets for discharge.*

536

We recommend referencing Sections VII.A and VIII.B drain tile criteria within this section of the draft standard as these Plans and Specifications and Operation and Maintenance practices work in tandem with V.A.3(b) and part III.D tech note criteria and will help protect surface water quality by preventing or reducing manure or nutrient losses to drain tiles.

We support the V.A.3(b) drain tile criteria (and Sections VII.A, VIII.B and part III.D of the tech note) because they, collectively, will help protect surface water quality by clarifying what practices to follow when applying manure on fields with drain tiles and also help improve implementation of nutrient management plans by both small and large (CAFO) farms. We believe these proposed drain tile practices are an improvement upon the current (2005) standard and meet the National 590 requirements for drain tiles (i.e., conservation practices coordinated to avoid, control or trap manure and nutrients before they can leave the field by subsurface drainage (e.g., tile); number of applications and application rates must be considered to limit transport of nutrients to tile; total single application of manure must be adjusted to avoid loss to subsurface tile drains).

**Response:** *Thank you for the support.*

538

Add: or saturation exists... OR where subsurface drainage is present or saturation exists

**Response:** *Standard prohibits application on saturated soils.*

#### **V.B.**

502

Hanor Company of WI, LLC (Hanor) has 1,347.1 acres in their Main Farm NMP, of which 860 acres are affected by fall N restrictions, a great majority of which are P soils, with some being W soils. Hanor does not operate any of the fields within the NMP and relies solely on manure contracts with nearby landowners. Timing is an issue; the new NRCS 590 does not allow the flexibility required to manage manure in the fall. A majority of the fields in the NMP do not have a rotation that includes perennial or overwintering annual crops, so they will be required to wait until October 1st to land apply in the fall. The allowance of 60 lbs of N only equates to approximately 6,000 gal/ac for Hanor, which is not enough manure to justify the cost of hauling on those types of crops if they were available. In addition, they will be required to either use an inhibitor or surface apply and not incorporate for at least 7 days because the manure has less than 4% solids.

This is a problem for several reasons; Hanor is permitted, and must also follow the rules of NR 243. NR 243 requires incorporation in a number of situations within 48 hours; this is a direct conflict between the new 590 and the current NR 243. Also, there is a direct conflict in the language between V.B.1.a.2, and V.B.1.a.4. The prior states "surface apply and do not incorporate for at least 3 days" while the latter states

“surface apply and do not incorporate for at least 7 days.” It’s not uncommon to find W soils, R soils, and P soils in the same field, or some combination, so the language should not conflict. Incorporation is considered one of the best management practices for manure, helping to minimize odor, minimize surface runoff, and minimize losses of N. This has been the message conservation staff has been sending to farmers for the last decade. To require the choice between surface application and using an inhibitor (which often requires an applicator license) is not reasonable. Inhibitors are expensive, and the research on their effectiveness is conflicting, so many farms will likely choose surface application due to cost and ease of application.

Forcing farms to surface apply manure is a huge step backwards in conservation; it presents a greater risk of runoff and loss of nutrients. Unincorporated manure applications in the SWQMA under the new 590 are also rate restricted to 12,000 gal/ac. The complexity of NR 243, and the new 590 will continue to make it difficult for CAFOs to operate, and since they are required by law to follow these rules they will be further disadvantaged economically. This is a huge change from the previous standard, which allowed early applications in the fall on all fall restricted soils. The complexity of new language is going to majorly impact CAFOs, it’s going to increase the cost of manure hauling, it will narrow the window of opportunity for land applying in the fall, it will increase surface applications of manure, and it will increase the disparity between small and large farms. Forcing manure haulers to wait may have unforeseen consequences to the environment due to bad weather, and may lead to more applications of manure on frozen ground which could negatively impact surface water. Small farms will continue to apply solid and liquid manure, regardless of soil temperature, regardless of soil type, and large farms hands will be tied due to regulation. The new 590 may be more protective to groundwater in theory, in practice it’ll likely lead to a more negative impact on surface waters and will probably will have no positive impact to groundwater since applications from small farms will still be done in early fall with little to no regard to the standard.

**Response:** *Planners should manage the field with the most restrictive soil type. Criteria B is Wisconsin’s approach to the national standard’s requirement to include an N Leaching Index. The revisions proposed provide a reasonable balance of agronomics and environmental protection. There was conscious decision to allow volatilization of ammonia to the atmosphere in protection of groundwater. Planners have the option to spring apply on these soils if conditions are appropriate.*

530

Naples Swine, LLC has 1,045.3 acres in their 243 NMP, of which 856.1 acres are affected by fall N restrictions, a great majority of which are P soils, with some being W soils. Naples Swine, LLC does not operate any of the fields within the NMP and relies solely on manure contracts with nearby landowners. Timing is an issue; the new NRCS 590 does not allow the flexibility required to manage manure in the fall. A majority of the fields in the NMP do not have a rotation that includes perennial or overwintering annual crops, so they will be required to wait until October 1st to land apply in the fall. This is also a problem given the location of Naples Swine, LLC. Timing is an issue due to weather, and the unpredictability of early snow fall in northern Wisconsin. The allowance of 60 lbs of N only equates to approximately 6,000 gal/ac of surface applied manure for Naples Swine, LLC, which is not enough manure to justify the cost of hauling on those types of crops if they were available. In addition, they will be required to either use an inhibitor or surface apply and not incorporate for at least 7 days because the manure has less than 4% solids.

This is a problem for several reasons; Naples Swine, LLC is permitted, and must also follow the rules of NR 243. NR 243 requires incorporation in a number of situations within 48 hours; this is a direct conflict between the new 590 and the current NR 243. Also, there is a direct conflict in the language between V.B.1.a.2, and V.B.1.a.4. The prior states “surface apply and do not incorporate for at least 3 days” while the latter states “surface apply and do not incorporate for at least 7 days.” It’s not uncommon to find W

soils, R soils, and P soils in the same field, or some combination, so the language should not conflict. Incorporation is considered one of the best management practices for manure, helping to minimize odor, minimize surface runoff, and minimize losses of N. This has been the message conservation staff has been sending to farmers for the last decade. To require the choice between surface application and using an inhibitor (which often requires an applicator license) is not reasonable. Inhibitors are expensive, and the research on their effectiveness is conflicting, so many farms will likely choose surface application due to cost and ease of application. This is likely to also cause an increase in neighbor complaints due to odor.

Forcing farms to surface apply manure is a huge step backwards in conservation; it presents a greater risk of runoff and loss of nutrients. Unincorporated manure applications in the SWQMA under the new 590 are also rate restricted to 12,000 gal/ac. The complexity of NR 243, and the new 590 will continue to make it difficult for CAFOs to operate, and since they are required by law to follow these rules they will be further disadvantaged economically. This is a huge change from the previous standard, which allowed early applications in the fall on all fall restricted soils. The complexity of new language is going to majorly impact CAFOs, it's going to increase the cost of manure hauling, it will narrow the window of opportunity for land applying in the fall, it will increase surface applications of manure, and it will increase the disparity between small and large farms. Forcing manure haulers to wait may have unforeseen consequences to the environment due to bad weather, and may lead to more applications of manure on frozen ground which could negatively impact surface water. Small farms will continue to apply solid and liquid manure, regardless of soil temperature, regardless of soil type, and large farms hands will be tied due to regulation. The new 590 may be more protective to groundwater in theory, in practice it'll likely lead to a more negative impact on surface waters and will probably will have no positive impact to groundwater since applications from small farms will still be done in early fall with little to no regard to the standard.

**Response:** *Thank you for explaining your farm situation and your comments. Planners should manage the field with the most restrictive soil type. Criteria B is Wisconsin's approach to the national standard's requirement to include an N Leaching Index. The revisions proposed provide a reasonable balance of agronomics and environmental protection. There was conscious decision to allow volatilization of ammonia to the atmosphere in protection of groundwater. Planners have the option to spring apply on these soils if conditions are appropriate.*

509

Rather than blanket restrictions which limit a farmer's flexibility to operate, we support management options for farmers who work in N-restricted soils. Farmers facing R, W, P, or shallow bedrock restrictions should have the option to implement voluntary best management practices to maintain the flexibility of application time and how they manage nutrients. A list of appropriate BMPs is already written in the standard, under VI (Considerations) A-U. These BMPs include: variable rate technology, split applications, inhibitor usage, and/or nitrogen availability studies like N-WATCH. These BMP suggestions along with others focus on managing nutrients while allowing flexibility in application options as farmers work with weather and soil conditions preparing fields for crops. BMPs have a significant, positive impact on the surrounding environment. Farmers could be incentivized to implement BMPs voluntarily if they were rewarded with greater flexibility in nutrient management planning and applications.

**Response:** *The options listed in Criteria are believed to have the most efficacy based on the science available and field experience. The standard is baseline guidance and the farmers is always encouraged to improve upon the management practices where applicable.*

512

There is a definition for N restricted soils including a W soil. However in section V.B.1.a.(2) When manure is applied on W soils or combination W soils, there is no definition for what a combination W soil is.

**Response:** A combination soil is defined as a WR soil or WP soil as listed in the Tech Note 1, under county soil map units. These soils are listed as either a W, WP, or W+ soil.

517

In the definitions of N-restricted soils you are now including 5' to bedrock, where R soils with 20" to bedrock were already defined. 5' to bedrock greatly expands the acres covered in this definition.

**Response:** *The 5' to bedrock restriction is for application of commercial fertilizer in the fall and for limited application on SD soils in the winter.*

525

I agree with others that the calendar doesn't always give us the best timing for applications, and farmers should be allowed flexibility on incorporation of manure. Soil temperature should be a guide when applying fall nutrients, not just a vague 'late summer/early fall' definition. (Pat Murphy did agree to research the exact language in this instance, thank you.)

I understand that there is a terrorist component potentially when identifying wells, but also feel that planners and farmers should be able to use some sort of 'best guess' when identifying wells near fields that receive nutrients.

**Response:** *The revisions do allow farmers to use the soil temperature of greater or less than 50 degrees to determine their management practices. Community wells will be identified on DATCP maps.*

536

In general, we support the proposed nitrogen management criteria because it will help protect groundwater quality by clarifying what practices to follow when applying commercial fertilizer or manure on fields with N restricted soils and soils with depth of 5 feet to bedrock by time of year. We believe the N management criteria strikes an effective balance between water quality protection and practical implementation by both small and large agricultural operations that apply nutrients for plant production. The N management criteria helps improve upon the current (2005) standard N criteria (which is confusing to understand and follow) and we believe the revisions will help improve implementation of nutrient management plans by both small and large (CAFO) farms. Please see our specific clarification comment for V.B.1(b) below.

**Response:** *Thanks.*

#### **V.B.1.a(1)**

509

The change to part V.B.1.a(1) regarding fall application which allows the use of "blended commercial fertilizer materials ...[when] the N application rate shall not exceed 36 pounds N per acre" is a positive change which gives farmers some flexibility in achieving their crop fertility needs.

Part V.B.1 expands the restriction on applications of commercial nitrogen. The expanded restriction now prohibits application of commercial N in "late summer or fall" on N-restricted soils. This time period is not otherwise defined and leaves room for interpretation and confusion. We believe this statement should be refined to "when soil temperatures are above 50 degrees Fahrenheit." This definition is specific, simple, and reflects industry best practices.

This section of the proposed rule also expands the existing restriction on fall applications of commercial N to include a restriction on areas identified as having a soil depth of -five feet or less over bedrock. This expanded definition will greatly reduce the areas in which farmers have the flexibility to apply fertilizer in

the fall. Agriculture is a time-sensitive and weather-dependent business and farmers need flexibility to work within small windows of time. Any additional restriction on the time frame or location in which farmers can operate results in a barrier to operation, leading to decreased farm viability.

Further, this restriction relies on maps which generalize areas of the state. Because of this generalization, it is possible that a field may be inaccurately categorized and therefore unjustly restricted. Farmers should have a simple and reasonable process for demonstrating that one or more of their fields are inaccurately classified.

**Response:** *After debate, the team agrees that the fall commercial N application is not best practice. This was a compromise to address agronomic practicality and environmental risk.*

520

Define late summer of fall? Green bean or pickle are commonly planted July 20-25. Summer seeded alfalfa can be seeded until August 20. Needs to be specific.

**Response:** *Thanks for highlighting the potential confusion. The N recommended rate for establishing a second crop would be available. These would be considered summer crops and therefore not limited to 36 lbs of N. This condition is intended for the following season's crops or over wintering crops. The language was changed slightly.*

#### **V.B.1.a.2**

520

Will this deter farms from manure digestion or solid separation or double the storage costs for systems that already require substantial investment?

**Response:** *The N application rate has not changed on the W soils. Those systems result in more ammonium and higher risk for N loss.*

1<sup>st</sup> bullet

520

Nitrification inhibitors are not labeled for all crops. Most are currently regulated as a pesticide.

**Response:** *We are aware of this and EPA is updating their requirements for crop labels. This is one of several options for planners to use.*

4<sup>th</sup> bullet

506

Should we be encouraging surface application of <4% solids manure? Manure manures of this type have low nitrogen content so application rates could be rather high and meet standard requirements. Also doesn't this encourage ammonium losses to the atmosphere?

**Response:** *We included surface application as an option in areas where groundwater and surface waters are a more immediate risk than air pollution or impacts.*

514

Getting manure out on fields in the fall in a timely, environmentally responsible, and economic manner is a constant struggle for farms of all sizes. This proposed change promotes delaying manure applications until later in the year, leading to the likelihood of more manure applications taking place when ground is

frozen or snow covered. Alternatively, the farm makes several smaller applications to a field, a costly undertaking. While there are four practices listed that would allow the farmer to elevate applications to 120 pounds of N per acre each is limited in practicality.

- Use a nitrification inhibitor: While this appears straightforward implementation is complicated by the fact that many of the nitrification inhibitor products require application by a registered commercial pesticide applicator. The manure haulers do not have the necessary certifications. Additionally, there is a lot of conflicting research regarding the efficacy of these products and there is a substantial cost to implement. These factors limit the feasibility of using more of these products.

**Response:** *It is understood that applicators have to follow the label requirements. The research verifies that there is at least a short-term efficacy to N loss when using N inhibitors. We included more options for planners to increase flexibility.*

- Apply on an established cover crop: many cover crops do not have high N needs, so applying 120 units of N results in an over application of N. Economically the farmer can't afford the cost of planting a cover crop and then making multiple rather small manure applications to a field.

**Response:** *This is an option to help reduce carry-over of N.*

- Establish a cover crop w/in 14 days of application: In the central and northern parts of the state establishment of cover crops is limited by the shorter growing season.

**Response:** *This is another option and planners could find a more appropriate variety to plant.*

- Surface apply and do not incorporate for at least 3 days: Promoting unincorporated manure seems like a move backwards. "W" soils are often located near surface water bodies and within SWQMAs. While surface application will likely reduce leaching of N, is the unintended consequence making the manure more vulnerable to runoff, phosphorus loss and contaminating surface water bodies? We also know that incorporation is the best odor control method out there, and while odor is not regulated, it is the most common complaint in urban edge areas. Additionally, after meeting the 25' setback from a navigable water, wetland, etc. a CAFO is required to incorporate or inject manure under NR 243. This would effectively make manure applications to fields w/ SWQMAs a patchwork process. Not being able to inject at a meaningful rate has the result of promoting top-spreading using heavy tankers which promotes soil compaction on these soils that are already vulnerable to compaction.

**Response:** *This option may be advantageous for farmers when spring application is less likely.*

While the desire to prevent N loss through leaching is commendable, the proposed solutions appear to have unintended consequences such as promoting surface runoff, increased loss of phosphorus, and odor issues. Some of the pressure would be alleviated by keeping the Sept 15 date in the current standard rather than the proposed Oct 1. Also aligning the dates between the CAFO rules and 590 standard allowing incorporation of surface applied manure in the 24-48 hour timeframe would be helpful.

**Response:** *This was a compromise between agronomics and environmental protection.*

518

The reduction of manure N application to 60 or 90 pounds on restricted soils, which is a 25% reduction over the current standard, poses an economic challenge for farms (V.B.1.a.2. & 3.) This will significantly reduce the gallons of swine manure that can be applied, and will make it difficult to justify the cost of spreading.

**Response:** *The team considered the options and this is a compromise and will address the risk of leaching to groundwater.*

520

This is inconsistent with air quality standard. Which BMP takes precedent in development of NR243 regulations?

**Response:** *Agreed that this recommendation addresses the risk of leaching to groundwater over air quality. This is a higher priority in this section. This team is not working on NR 243 regulations.*

524 - V.B.1.a.(2), V.B.1.a.(4):

Rosy-Lane Holsteins, LLC currently has 2,734 acres in their 243 NMP. 2,159.3 acres are affected by fall N restrictions, all of which are W or combo W soils, and some of the fields are tiled. The new 590 contains language specifically requires mitigation practices when manure has less than or equal to 4% solids. Typically the manure tests for Rosy-Lane Holsteins, LLC are greater than 4% solids, but there have been occasional times that have been lower. The manure is not treated, it's stored in an in-ground earthen-concrete lined manure pit, and sand is used for bedding. Where did the 4% solids come from? Is this language really meant for dairy manure that is untreated, or more for treated manure, where solids are separated? The language "surface apply and do not incorporate for at least 3 days" differs from the language in V.B.1.a.(4) where the standard states "surface apply and do not incorporate for at least 7 days". Why are these inconsistent with each other, and also inconsistent with NR 243? Incorporation is one of the options within the CAFO SWQMA, which W soils are typically found within. The language should not be inconsistent. Also, given the changes to A2809 in 2012 (Table 9.1 and 9.2) and the availability of nutrients in the manure, there has been a significant change in what is considered available N in manure. Though 120 lbs. is essentially no change from the previous standard, it still amounts to less manure allowed than at the time the previous standard was developed. There needs to be more flexibility in land application to W soils in the fall, on farms like Rosy-Lane Holstein, LLC where a great majority of the land is affected, land application in the fall not only necessary, but the best time of year to ensure manure is applied responsibly.

**Response:** *The 4% DM is from the new manure book values in A2809. This risk of nutrients leaving via runoff is higher on P and R soils, and therefore the longer delay allows more N to be volatilized before incorporation.*

531

Norm-E-Lane, Inc. currently 4,204.9 acres in their 243 NMP. 1,110.2 acres are affected by fall N restrictions, all of which are W or combo W soils, and some of the fields are tiled. The new 590 contains language specifically requires mitigation practices when manure has less than or equal to 4% solids. The language "surface apply and do not incorporate for at least 3 days" differs from the language in V.B.1.a.(4) where the standard states "surface apply and do not incorporate for at least 7 days". Why are these inconsistent with each other, and also inconsistent with NR 243? Incorporation is one of the options within the CAFO SWQMA, which W soils are typically found within. The language should not be inconsistent. Also, given the changes to A2809 in 2012 (Table 9.1 and 9.2) and the availability of nutrients in the manure, there has been a significant change in what is considered available N in manure. Though 120 lbs. is essentially no change from the previous standard, it still amounts to less manure allowed than at the time the previous standard was developed. There needs to be more flexibility in land application to W soils in the fall, land application in the fall not only necessary, but the best time of year to ensure manure is applied responsibly. Typically Norm-E-Lane, Inc. uses a nitrification inhibitor in early fall applications, but discontinues use after the soil temperatures are below 50 degrees, during their late fall

applications. This is not required, but a best management practice used by the farm, which has allowed them to decrease their commercial nitrogen application rates in the spring. During late fall applications on W soils the options for land application of manure with 4% solids or less doesn't make sense, using a nitrification inhibitor is arguably not necessary and a waste of money, there was not enough time to establish a cover crop since it's late fall, and establishing a cover crop after application wouldn't be effective because it's late fall. So the only options left would be to lower their rates to 90 lbs. of N or surface apply, which neither seems like a good option, since the manure has to be applied, and the preferred application is injection to keep the nutrients where they need to be for next spring. Given the higher availability of N in the manure, and the changes to A2809, injecting the typical amount of manure will exceed 90 lbs. of available N. Shouldn't one of the options be to delay applications to late fall or when soil temperatures are below 50 degrees?

**Response:** *The differences in incorporation times are intentional. The longer wait period for incorporation on P and R soils reduces the risk of N loss to groundwater resources and destroys pathogens. The risk of manure or nutrients from manure reaching groundwater is much higher on P and R soils. This restriction is to address the higher amount of ammonium in this type of manure and protect groundwater resources.*

**V.B.1.a.3 & 4** (page 6)

508

There is a reference to V.B.1.a.5, however don't think there is a V.B.1.a.5.

**Response:** *Thanks*

535

Second bullet references V.B.1.a.5. This section does not appear in the draft standard.

**Response:** *Thanks*

520

This seems to limit application of manure to established or summer seeded alfalfa to 60 lb N/a if applied prior to 10/1, yet this crop likely has greater capacity to capture and utilize the nitrogen than any other crop or cover crop system or time of application.

Why aren't use of nitrification inhibitors on P and R soils recommended preceding field corn? Is this inappropriate for manure applications before 10/1?

Last bullet references V.B.1.a.5 which does not exist. I assume this is V.B.1.a.4.

**Response:** *There is research documenting the N uptake of summer seeded alfalfa. The potential uptake of the alfalfa balances with the release of N from the manure, and does not require additional mitigation protection.*

509 – Fall manure applications

Part V.B.1.a(3) and V.B.1.a(4) reduce the amount of manure allowed to be applied to P and R soils before and after October 1. These changes result in a 25% rate reduction from the previous standard.

This substantial rate reduction reduces the amount of manure a farmer can move prior to the winter season, forcing more manure to be spread in a smaller window of time. If the manure can't be spread in that window, farmers are left with too much manure on hand leading into the winter season, which is less ideal for application.

Further, we are concerned by the requirement that liquid manure applied to annual crops after October 1 not be incorporated for at least seven days. As we mentioned in the SWQMA section, this rigid



requirement eliminates flexibility and is unrealistic for farmers to implement. The seven day wait requirement does not take into consideration soils which may be appropriate for incorporation much sooner than the allotted seven days. Finally, a set number of days would ignore the fluctuations in weather that a farmer must manage.

**Response:** *The team recognizes that this is a reduction in rates for a potentially reduced period of time. After reviewing the research, it was very clear that the average soil temperatures reached 50 degrees much later in the year, more like October 15<sup>th</sup>. Therefore October 1<sup>st</sup> is a compromise from what the science suggests to reduce leaching. The standard is written to minimize nutrient loss.*

518

The new restrictions on R and P soils creates a very narrow window for fall application of manure onto annual crops, limits application to 90 pounds and, with liquid manure with less than 4% solids, requires use of a nitrification inhibitor or surface application. Pork producers have taken advantage of technologies to directly inject manure into the soil, which has been a proven conservation practice to minimize surface runoff, minimize losses of nitrogen, and minimize odor. The proposed changes in the standard are contradictory to what research and good management practices have proven, and to what conservation staff have been encouraging farmers to do. Due to the costs associated with the use of an inhibitor, surface application may be the preferred practice. Unfortunately, this leaves us susceptible to potential increases in surface runoff and complaints from neighbors due to odor concerns. In addition, waiting for 7 days to incorporate in some cases conflicts with the requirements in NR-243 for CAFO's, which require incorporation within 48 hours.

While limiting manure application onto R and P soils until after October 1, it would appear that the new standard would cause more farms to have to apply after soils are frozen or snow covered. Since CAFO's are prohibited to apply on frozen and snow covered ground, and will not be allowed to apply until after October 1, manure haulers could potentially have a very short window for CAFO application of liquid manure. Those farms will be given first priority. Smaller farms will receive secondary priority, which will likely occur as winter conditions begin. The impact will mean more manure application in less than ideal Wisconsin weather conditions.

**Response:** *The team recognizes that these revisions reduce the rates for a potentially shorter period of time. After reviewing the research, it was very clear that the average soil temperatures reached 50 degrees much later in the year, typically October 15<sup>th</sup>. Therefore October 1<sup>st</sup> is a compromise from what the data shows. The standard is written to minimize nutrient loss, which is more likely for this practice when temperatures are higher. The team understands the difficulty manure haulers face with scheduling and hopes the industry will change with increasing demand for service and environmental protection. The changes to manure hauling due to the Implements of Husbandry will further exasperate this problem. Farms will have to reassess their nutrient management strategy as a result of the interaction of these factors.*

517

As I read through the standard, I find it necessary to continue to go back to various sections to determine what does or does not apply. One example is where there are conflicts in the length of time following manure application that you may incorporate. This is only going to create added confusion to on-farm implementation of the new standard.

I am also concerned about not allowing incorporation of manure for up to seven days on certain soils. While I understand this can allow time for nitrogen to evaporate, incorporation leads to less runoff

of N and P. Incorporation of manure into the soil is considered to be one of the best management practices adopted by farmers. I am greatly concerned about how this change will impact P loss to surface water.

**Response:** *The delay in incorporation on P and R soils does allow for more nitrogen to evaporate and therefore reduces the risk of N leaching to groundwater on soils that have higher risk of leaching compared to W soils. The requirements in Criteria B are meant to minimize nutrient loss to groundwater.*

520

NR 243 requires surface applications of liquid manure to be incorporated within less than 7 days – does this not recommend this practice. Failure to incorporate liquid manure is contradictory to the air quality standard.

**Response:** *Yes, the team is aware of the contractions to concerns for air quality. The requirements in Criteria B are meant to minimize nutrient loss to groundwater. The delay in incorporation on P and R soils does allow for more nitrogen to evaporate and therefore reduces the risk of N leaching to groundwater on soils that have higher risk of leaching compared to W soils.*

523

V.B.1. a.2,3,4 seem to contradict themselves. This area needs to be clarified. Also I don't think there is a V.B.1.a.5

**Response:** *You are correct, there is no V.B.1.a.5. The delay in incorporation on P and R soils does allow for more nitrogen to evaporate and therefore reduces the risk of N leaching to groundwater on soils that have higher risk of leaching compared to W soils.*

526

Parts V.B.1.a.3 and 4 list the N restrictions on P and R type soils and they do not make any sense. I have primarily R soils and strongly believe in no-till, intense rotations and cover crops. So here is an example: I plant wheat, harvest the crop and straw in July, proceed to spread manure on the wheat stubble immediately and follow that with a heavy planting of forage oats for forage later that fall. This standard states that I can only apply 60lbs of N prior to October 1st on the forage oats even though my yields and forage samples indicate that I remove between 90 and 100lbs of nitrogen with the forage. Only applying 60 lbs of N would seriously limit my yields and protein content of the oats not to mention leave me seriously short on the crop's P and K needs.

**Response:** *This is an example of a double cropping system and the Oats/forage crop nutrients should be applied according to the UWEX A-2809 for that crop.*

Second example: I harvest corn silage the last week of August, immediately spread manure and follow that with cereal rye for forage in the spring. Again, this standard limits me to 60lbs of N which is nowhere near the amount of N the rye crop needs to maximize yields much less the P and K needed. So what do I do? Spreading manure over top of the growing rye later in the fall or spring substantially reduces stands. Purchasing and applying N, P and K in the spring is a complete waste of money when I already have the nutrients on farm. See where I'm going with this? Setting strict numeric standards when you have people employing new and progressive tactics to maximizing their productive acres will not work.

**Response:** *The lower fall rates are required to address the high risk for loss of Nitrate to groundwater. When manure is applied there is a substantial immediate loss of N as Nitrate when ammonium based N converts before the rye has developed an adequate root system. The nutrient management strategy for small grain production on these soils is to utilize a split application which does limit the use of manure on*

these soils. The standard is written to address statewide risk. The routine harvest of silage corn in Wisconsin typically lags behind the timeline stated which reduces the nutrient recovery efficiency of the system as described.

528

Williams Bedrock Bovines (WBB) currently has 2,084.3 acres in their 243 NMP. 1,695.9 acres contain R soils; 223.2 acres contain W soils; leaving only 165.2 acres without fall N restrictions. Last year WBB hauled 5,619,000 gallons during the late summer, early fall (prior to October 1). They hauled an additional 3,442,288 gallons beginning the end of October through early December for a total of 9,061,288 gallons applied in the fall. Additionally they spread 8,316,040 gallons during the spring. None of those applications were on perennial crops. The typical application rate is approximately 13,000 gal/ac, amounting to around 80 lbs of available N. The manure is injected or incorporated, and is typically treated with Instinct. Field verification has been done to confirm that bedrock is not present at 24 inches despite the soil classification given, and anhydrous is being applied in the fall on fields that have been field verified to not have bedrock present at 24 inches with the approval of DNR. Yield goals have remained consistent, soil tests have been remaining consistent; with no fields over 100 ppm on soil test P, and a majority under 50 ppm.

WBB has been trying to do the right thing, and based on their NMP it's evident.

Under the new 590, with the current soil classifications and practices, WBB will have to wait to spread fall manure until October 1st, as well as discontinue applying anhydrous in the fall. Facing that prospective change, the producer would rather wait to apply anhydrous in the spring, than give up the ability to apply manure in the late summer and early fall. Right now the custom haulers go to the CAFOs first, to ensure that manure is not being applied to frozen soil, as well as keep their big accounts happy. Being forced to wait until October 1st will put more pressure on manure haulers, likely resulting in more winter applications of liquid manure from unpermitted facilities. Those 5,619,000 gallons will still be applied; it's just a matter of when. Last year is a good example of weather not cooperating in the fall, there were frozen soils in November. There needs to be more flexibility on timing in the fall, or you will end up with more manure being applied in the winter. There is not enough liquid manure storage to hold the manure until spring, it will be land applied in fall or winter.

The new 590 should allow applications in the early fall on annual crops for P and R soils. If you allowed up to 90 lbs of N, with a nitrification inhibitor, it would more restrictive than the current standard but not so restrictive that it would drastically impact the current practices. Even if WBB put in a cover crop, which they typically do, the new standard would only allow 60 lbs of N, which is not enough based on their current practices.

The new 590 may be more protective to groundwater in theory, in practice it'll likely lead to a more negative impact on surface waters due to winter applications from non-point sources, and probably will have no positive impact to groundwater since applications will still be done in early fall with little to no regard to the standard. Small farms will continue to apply solid or liquid manure to their wheat stubble, or fields harvested for silage as soon as possible, regardless of soil temperature, regardless of soil type. As with DAP being applied in the fall, these applications will just go unreported as early fall applications for un-permitted facilities.

**Response:** *This version of the 590 standard increases the level of management required to apply nutrients (particularly manure) for crop production. It is by design NOT a zero discharge standard and continues to strike a balance the risks for discharge to the environment with crop plant health and*

condition. Individuals who submit false or inaccurate plan will need to be dealt with through ethics requirements of the certification entities (CCA/TechReg) or criminal prosecution for permit plans.

538

Question: Last line “use nitrification inhibitor or surface apply and do not incorporate for at least 7 days.” Why does it make sense not to incorporate ASAP?

**Response:** This strategy reduces the N concentration of the manure reducing the risk for leaching to ground water.

**V.B.1.b.**

508 & 529 (same comment)

With fluctuating water tables throughout the year, can understand that W soils should probably be managed differently than P & R soils. However, why are W soils managed separately from R & P soils in fall, but in spring R & W soils are managed the same but separately from P soils? Very confusing to keep straight. Makes it harder to plan in a way that a farmer can understand and implement. Would be much easier to understand, plan, and implement if R & P soils always grouped together and separate from W soils.

**Response:** W soils typically do not have a water table present late in the summer/early fall allowing application of nutrients during that period. The P and R soil characteristics are present year round. The team recognizes the risk for loss from the root zone to shallow ground water but also recognized that the R soils are finer textured than the P soils and have a greater ability to retain N for crop uptake during the growing season.

536

To better protect groundwater quality, we recommend including the following criteria for manure applications on P and R soils **in the spring**. This recommendation reflects language within the current (2005) standard for irrigated manure applications:

- On P and R soils, when manure is applied using irrigation equipment, do not exceed the crop N rate guidelines from all sources and apply one of the following management strategies:
  - A split or delayed application to apply a majority of N after crop establishment
  - Use a N inhibitor
  - Apply on a perennial crop, established cover crop, or an overwintering annual crop

**Response:** The team discussed this risk and determined that the N in manure is typically not as immediately available as N in commercial fertilizer. In addition these mitigation practices are not practical for irrigated manure applied in the spring.

**V.B.1.b.2** page 6

520

Only apply inhibitor to labeled crops

**Response:** Agreed, the edit will be added to the definition of nitrification inhibitors.

538

Add: Include R soils in addition to P

**Response:** The team recognizes the risk for loss from the root zone to shallow ground water but also recognized that the R soils are finer textured than the P soils and have a greater ability to retain N for crop uptake during the growing season.

## V.B.2

520

There should be appropriate mechanism for identification of areas susceptible or prone to P enrichment of groundwater and as well as an appeal process. This is vague and not well defined which leads to misinterpretation or misuse in regulating application of nutrients. Furthermore, there should be evidence of P movement from groundwater to surface water as a concern prior to identification of a 'conservation planning concern'.

**Response:** *The team was unable to find specific references or citable research to document that this a problem in Wisconsin.*

535

This section needs to have identified practices available for implementation or it should be removed from the standard or placed in considerations.

**Response:** *This is a required element from the NRCS national 590 practice standard. Retained to reflect the potential risk.*

## V.C.1.b. page 6

Question: Establish perennial vegetation in all areas of concentrated flow that result in reoccurring gullies. How are we defining reoccurring gullies? Every season, every rotation, has occurred x times within y years?

**Response:** *The gully erosion would be considered reoccurring if you see it more than once and should be addressed by seeding to perennial vegetation. These features are typically recognizable as a defined channel in the field.*

## V.C.2.

507

Notes are defined in the Definitions section as being recommendations rather than requirements, but the Note here is a requirement.

**Response:** *The note was deleted as it was included simply as a reminder, but is redundant.*

## V.C.2.b.1-3.

520

For land that meets requirements described in V.C.2.a (P.I. less than 6) and with minimal risk for P enrichment of groundwater change soil test limits to:

- (1) <100 ppm
- (2) 100-150 ppm
- (3) > 150 ppm

The reason for adapting this approach would be to utilize manure in fields with greatest potential benefit while minimizing the potential risk of off-site movement of nutrients.

**Response:** *With the adoption of the PI of 6 as a performance standard and its alternative is the soil test P management requirement in the V.C., we believe surface water protection is consistent with the requirements of the national standard.*

## V.C.2.b.(3) & (4).

507

These two requirements should be combined and made consistent with each other. If the only exception that allows manure to be applied to soils with greater than 100 ppm soil test P is that the highest P demanding crop in the rotation requires P, then potato rotations are the only exception because they are the only crop in WI with a recommendation at soil test P greater than 100 ppm. Following A2809 (p.53-

54), a field in a potato rotation on a Loamy soil with 150 ppm soil test P would be Low for potatoes and therefore would have a recommendation in excess of crop removal for every crop in every year of the rotation. Suggest just saying that “P2O5 cannot be applied in any form in excess of UWEX recommendations when soil test P is greater than 100 ppm.”

**Response:** Thank you for the comment. Sections (3) and (4) were combined.

#### **V.C.2.b.(4)**

520

The restrictions on total P applications to potato rotation is duplicative to phosphorous application limitations described in V.C.2.b.(1-3). Inclusion of this limitation assumes farms regulated under WPDES permit do not grow potatoes which is not true as there are several dairies in Adams, Juneau, Langlade, Portage, Waupaca, Waushara, and Wood counties that spread manure on fields planted to potato. V.C.2.b.(4) would require a CAFO in Central Wisconsin to manage 3x as many acres to manage manure as livestock operations without potato in the rotation.

**Response:** Section (4) was combined with (3) to improve clarity. Since 2005 the 590 standard has required P to be managed to meet A2809 and if manure is also applied more flexibility is allowed under V.C. We must account for all P applied when doing a P assessment.

#### **V.D.1.** (page 7)

520

Not sure of the appropriateness of this in a water quality standard unless specifically concerned about off-site movement of soil particles onto water.

**Response:** This is a nutrient management standard which has the main goal of managing nutrients for plant production while minimizing risk of all potential pathways for nutrient loss to the environment. See II. Purposes.

536

We support the proposed air quality criteria, including V.D.2., because some field applied separated manures and other manure by-products may have sufficient density and dryness to be transported offsite, by wind, to other locations (surface waters, residences, etc).

**Response:** Thank you.

#### **VI. Considerations** (page 8)

538

Change: The following statements are optional management considerations and are not may be required to achieve nutrient management compliance practices.

**Response:** Sometimes less is more. The team prefers it as is.

519

New research findings highlight the potential of flue gas desulfurization gypsum (FGD) to ameliorate P losses through surface and sub-surface processes, such as in runoff and tile drain discharge. Gypsum has been identified as a material with a high potential to reduce P losses from agricultural soils (Stout et al., 1998; Callahan et al., 2002; Brauer et al., 2005; Favaretto et al., 2006; Watts and Torbert, 2009). In particular, the use of FGD is of interest since it is readily available. This gypsum source is relatively clean, with low levels of impurities (Stout et al., 1998). Compared to mined gypsum sources, heavy metal

concentrations are often lower. Additionally, FGD gypsum has been used in the manufacture of wallboard material for commercial and residential buildings, as well as other commercial uses.

There are number of studies that have focused on the impact of gypsum on reducing P losses from soil. Soluble P concentrations in manure loaded soils were reduced by 40 to 63%, and nitrate by 45% with gypsum application (Anderson et al., 1995). These P sorption reactions by gypsum have been considered rapid and stable with time (Callahan et al., 2002). Reductions as high as 85 and 60% in dissolved reactive P and total P mass losses in runoff, respectively, have been reported for a Miami silt loam in Ohio after FGD gypsum application equivalent to 2.2 ton/ac (Favaretto et al., 2006). In a study of five acidic soils in Ireland, gypsum decreased the solubility of molybdate-reactive P between 14 to 56%, and organic P by 10 to 53% (Murphy and Stevens, 2010). These five soils were on permanent grasslands and ranged in texture from silt loam to sandy loam. Gypsum applied to grass buffer strips was effective in reducing soluble P concentrations (32 to 40%) from poultry litter application after one runoff event regardless of application rate (Watts and Torbert; 2009). However, the effect of gypsum on soluble P was negligible during a second runoff event when overall soluble P concentrations in runoff were low.

A comprehensive study conducted by Stout et al. (1998) investigated five FGD gypsum rates applied to eight soils ranging from sandy loam to clay loam (0 to 47% clay content) from Delaware, Pennsylvania, Ohio, and Washington. Although the application rates used in this incubation study were relatively high, the low application rate (10 ton/ac) of FGD gypsum reduced water-extractable P to less than half of that for the control, but only decreased Bray-P1 and Mehlich III P by 7%. These authors concluded that FGD gypsum has the potential to reduce P losses in runoff from soil with high P concentrations, while maintaining adequate levels of plant available P. In a following runoff study of three Pennsylvania soils, however, total P losses from bare soil was more than double that from grassed soils (Stout et al., 2000). In this case, FGD gypsum application only effectively reduced dissolved P for the grassed soils by 43% regardless of rate of application, while there was no effect on bare soils. Most of the P losses in bare soils (90%) were in the particulate form since sediment losses were greater than in grassed conditions. As mentioned earlier, dissolved P concentrations in runoff water can be reduced if suspended sediments are present due to sorption mechanisms (Sharpley et al., 1981). These findings are similar to those of Brauer et al. (2005) where they reported significant reductions in dissolved reactive P, but no effect on Bray P1 values with annual applications of 2.2 ton/ac of gypsum. Contrary to these findings, a single application of 6.7 ton/ac of gypsum to a 10.4 acre subcatchment basin in Australia did not markedly change P concentrations in runoff, but did improve soil structure (Cox et al., 2005). Perhaps this enhanced soil structure aided in infiltration and vertical movement of dissolved P in the soil.

Research currently been conducted at The Ohio State University is showing reductions in dissolved reactive P from tile drain discharge and edge-of-field after 1 ton/ac FGD application. Preliminary results from Ohio show reductions in soluble P of between 0 to 93% for specific events from tile drains, with long term average reductions of 10 and 59% from eight different sites. Average reduction for all sites was 54%. The impact of FGD application on dissolved P losses has been observed 14 months after application, but at 20 months the effectiveness of a single FGD application was gone. Preliminary data from research conducted in Wisconsin in 2014 is encouraging in that a reduction of 30 to 50% in water extractable P from a silt-loam soil incubated after FGD application has been observed. Edge-of-field data is less conclusive, mainly due to significant rainfall events that occurred shortly after FGD application in the spring, which washed a considerable amount of the FGD away.

The application of FGD to soil as a management tool to mitigate surface and sub-surface P losses seems apparent from the on-going research and already published data in the scientific literature. Additionally, Alabama's NRCS technical note AL-72 "Phosphorus Index for Alabama" mentions the use of gypsum to

reduce P solubility; “Surface applied manure or litter that has been treated with chemicals to reduce P solubility or the field has applications of gypsum at the same time as the manure/litter application should be considered as incorporated within 3 days of application. Both chemical treatments and gypsum application should be done in accordance with Alabama Cooperative Extension Systems recommendations for reducing P solubility.” Further, the national NRCS is working on a provisional national standard, Code 801 “Amending Soil with Gypsiferous Conservation Practice”, which has the following purposes: 1) Improve soil health by increasing infiltration and improving physical/chemical properties of the soil; 2) Improve surface water quality by reducing dissolved phosphorus concentrations; 3) Improve water quality by reducing the potential for pathogens transport; and 4) Ameliorate subsoil Al toxicity. Although all of these purposes might not fit for Wisconsin systems and soils, some of them could be of use in the state. The comments above are given in an effort to provide some guidance towards a management practice to reduce P losses from agricultural fields.

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- Stout, W.L., A.N. Sharpley, and J. Landa. 2000. Effectiveness of coal combustion by-products in controlling phosphorus export from soils. *Journal of Environmental Quality* 29:1239-1244.
- Stout, W.L., A.N. Sharpley, and H.B. Pionke. 1998. Reducing soil phosphorus solubility with coal combustion by-products. *Journal of Environmental Quality* 27:111-118.
- Watts, D.B., and H.A. Torbert. 2009. Impact of gypsum applied to grass buffer strips on reducing soluble P in surface water runoff. *Journal of Environmental Quality* 38:1511-1517.

**Response:** *Wisconsin NRCS will be adding a new conservation practice standard, 333 Amending Soil Properties with Gypsum Products, to take advantage of these potential benefits. The 590 Nutrient Management Practice Standard was determined to not appropriately capture the use of Gypsum as outlined above.*

#### VI.N. (page 9)

538

Change: Where cropland with less than 50' soil depth... to... 50”

**Response:** *It should read 50'. This is only a consideration but acknowledges that areas with less than 50 feet of unconsolidated material above Silurian dolomite bedrock are considered to have a significant risk of nitrate leaching to groundwater and where karst features are more likely to occur and effort should be made to identify them.*

#### VI.R.



511

Section VI contains only optional considerations, so it may seem odd to object to any of them. However, it simply does not make sense to include subsection R. A producer must obey any state or local regulations for recycling of nutrient containers, regardless of this subsection. It is simply strange to list obeying other tangentially-related laws as an optional consideration in NRCS 590.

**Response:** *This statement is contained in the NRCS national 590 practice standard.*

#### **VI.S.**

534

How is this measured? Wind speed? Distance? How is this enforced? Even though this is listed as a consideration, it has no merit nor any chance of reasonable enforcement aside from completely banning manure or other by-product application in WI.

**Response:** *The measurement would be “in field observation” of wind conditions at the time of application. As a consideration it is intended as a reminder to users of the standard and is not enforceable as a requirement of the standard.*

#### **VI.T.**

529 & 534 (same comment)

Has the Nitrogen Leaching Index been validated in Wisconsin through research? Know it is listed as a consideration, but if it has not been validated in WI, why include it as consideration at all?

**Response:** *The current NRCS National Practice Standard mandates that the “NRCS approved Nitrogen loss risk assessment process must be completed for all sites”. Wisconsin NRCS is working with the Agricultural Research Service (ARS) to validate a generalized Nitrogen Leaching Index model to meet this requirement. The Nitrogen Leaching Index has been placed in the “Considerations” section because the team recognized that sufficient research to validate the tool was not currently available in Wisconsin to make this a requirement of the standard.*

533

N Leaching Index is referred to as a possible option, this formula has not been validated and is in the research process, this should not be considered at this time.

**Response:** *See above response.*

535

Expand this to include N models that are commercially available. Adapt-N, Fieldview, Encirca, 360Yield are all worthy of consideration and may provide opportunities for improved N management. The considerations section can provide pathways for improved management rather than be restrictive...

**Response:** *The Nitrogen Leaching Index as proposed estimates the amount of N utilized by the crop and predicts the most likely loss path for the remaining N via leaching, runoff or denitrification based on soil type. NRCS will evaluate the applicability of models mentioned and focus on maximizing the efficient use of N as a crop production principle.*

#### **VII.A.** (page 9)

Producers would be required to identify the location of subsurface drainage systems to the “maximum extent practical.” However, the “maximum extent practical” is not defined. Producers will appreciate the recognition that subsurface drainage’s location may be unknown, but the proposed revision is vague about the true extent to which a producers must try to identify such drainage systems.

**Response:** *The team recognizes this is a good practice and necessary to meet the national standard. The team agreed to leave the language vague to allow flexibility of the planner to determine the maximum extent practical.*

534

Under the Field features, is there a way for county LCD/NRCS to provide maps for the second bullet point and WI DNR to provide maps for the third bullet point to planners or producers?

**Response:** *The MMAS maps used for 590 planning include DNR's hydro layer including wetlands and can be updated if it is incorrect. For concentrated flow channels, lands where established vegetation is not removed, and fields eroding at a rate exceeding tolerable soil loss (T), the planner and the farmer are in the best position to make that determination. If the county and/or DNR want direct conduits to groundwater added to the maps, they can be submitted to DATCP for posting. We agree we should have a consistent approach and currently we don't other than, planners should work with the operators to identify these field features.*

535

Plans and specifications. This portion of the standard has always been more of a wish list than an assessment of what is necessary for cost effective implementation of the standard. There are a number of required features that are very difficult to identify and delineate within the distance criteria of the standard including the following:

- Well locations on properties adjacent to fields. The tool available through DATCP for determining well locations is inadequate for the purposes of NM planning. Example: I spent a total of 10 hours last week trying to locate wells near fields that are part of a 600 acre NMP. I was able to locate 20 wells. There are at least 5 wells that I was unable to locate because I was unable to access the property. All of the residences have private wells. While this may not be a statewide problem, it is a serious challenge in SE Wisconsin or in any area on an urban fringe. The process of inventorying and locating the wells and similar features must be systematized to a level that allows compliance without the planner having to knock on doors and follow up numerous times without compensation. We must do better or provide language within the standard that recognizes the limitations of the process.

**Response:** *We agree with your comment. DATCP will pursue obtaining a well layer on the MMAS from DNR.*

- Slope delineations can and must be provided via internet at a scale available with LIDAR coverage. Our neighboring states have statewide coverage. Wisconsin has no central repository for this data intensive dataset, nor do we have a statewide plan for providing that coverage. Our agencies have very high demands and expectations in the delivery of NMPs but have failed to provide the tools necessary and available to deliver slope information at an accurate level within fields systematically. In Wisconsin the soil survey provides slope classes of 1-3%,3-6%,6-12% and so on. The standard requires delineation of 6-9% and 9-12%. This requirement has been in place for over 20 years yet the custodian of the standard and the state agencies have done nothing to implement the available LIDAR data on a statewide basis up to this point in time. This must be addressed. It is long overdue. The standard response is to have NM planners go to the field to shoot slopes with a clinometer... A 19th century technology solution when we have a 21st century solution available.

**Response:** *We agree that LIDAR would be very useful in determining winter application restrictions and soil loss estimates. We will work towards providing these slopes on the maps. The agencies continue to pursue funding to complete the LIDAR coverage for Wisconsin.*

- We have new restriction areas that may or may not be mapped within the SSURGO dataset. N restrictions are now proposed for areas (not mapping units) with soil depth of less than 5 feet over bedrock, however, in many areas of the state, these areas may be inclusions within the soil mapping unit and as a result do not show up in the current soil inventory maps. This creates a point of vulnerability and liability for farmers, applicators and NM planners that must be addressed. Publication of a standard that requires delineation of these sensitive features on the landscape without effective tools for implementation is irresponsible and challenges the code of ethics of the ASA and CCA programs. The current cost sharing programs do not come close to covering the costs of implementation of the existing standard, much less the added expense of determining the depth of lithic contact of soils across the state.

**Response:** *Our group discussed that the entire state not have fall commercial N applications. We felt that restricting these applications according to the restriction maps would be more likely to be implemented. The restrictions identified by the current NRCS soil maps are the minimum data set that must be used to address this criteria.*

- Emergency action plan to address discharges of liquid manure is a requirement of this section. This bullet point references the Tech note. The Tech note Part III. D. Subsurface drainage resources, provides a link to Michigan State and UW Discovery Farms. If this is a criteria that must be implemented, the guidance is inadequate for implementation by NM planners. The references available on the MSU site only identify risks but offer no recommendations or information for development of an emergency response plan. Similar results were found in the UW Discovery Farms documents. None of the referenced documents directly identified what to do to address discharges of liquid manure from tile lines. How does a planner proceed? Are issues like emergency spills better addressed in an Emergency Response Plan rather than a NMP? Laundry lists don't work for systems management.

**Response:** *We removed the Emergency Action Plan in the Plans and Specification section. These plans usually contain more than NM issues. If runoff occurs during the application or immediately after V.A.n. provides the requirements.*

536

We support the requirements for identification of drain tiles and emergency action plans to address potential discharges from tile lines criteria and references to the tech note. We believe this criteria works in tandem with V.A.3(b) and part III.D tech note drain tile criteria. When used together, it will help protect surface water quality by identifying drain tiles and then preventing or reducing manure or nutrient losses to drain tiles. We also support this criteria because it will help improve implementation of nutrient management plans by both small and large (CAFO) farms and it meets the National 590 requirements for drain tiles (i.e., conservation practices coordinated to avoid, control or trap manure and nutrients before they can leave the field by subsurface drainage (e.g., tile); number of applications and application rates must be considered to limit transport of nutrients to tile; total single application of manure must be adjusted to avoid loss to subsurface tile drains).

**Response:** *Thanks.*

538

Add: reoccurring and defined concentrated flow. to... Areas prohibited from receiving nutrient applications: Surface water, established concentrated flow channels with perennial cover, reoccurring and defined concentrated flow channels, non-farmed .....

**Response:** *The gully erosion would be considered reoccurring if you see it more than once and should be addressed by seeding to perennial vegetation. These features are typically recognizable as a defined channel in the field.*

Add: Maps shall be drawn at scales that allow map users to not only visualize the location of identified restrictions but accurately scale their placement and/or read symbols and information related to placement of nutrients. Maps depicting ¼ Section of land area or less on a should be Depending on the complexity of restrictions.

**Response:** *The MMAS maps include scales and will be part of SnapMaps for most NM plans.*

**VII.B.** (page 10 of standard)

509 – Winter Spreading Plan

Parts V.A.1.c, and VII.B add requirements for a “Winter Spreading Plan” as well as a “Winter Manure Spreading Risk Assessment,” a landbase analysis for any nutrient management plan developed in the state in which manure is to be spread during the winter months. While we recognize the importance of thoughtful planning in order to mitigate risks from applying manure in the winter, we feel the requirements proposed are far too complicated and go far beyond what is necessary for a winter spreading plan.

Farmers will be overly burdened by the demands of the proposed Winter Manure Spreading Risk Assessment; so much so that we believe they will be forced to hire a professional nutrient management planner to write their plans for them. This will greatly reduce the number of farmer-written plans and will add an increased layer of cost to an already tight-margin industry. Further, this added layer of complication will likely result in fewer farmers participating in the Wisconsin 590 standards; a result that is unfavorable for the entire state.

We believe that the current system (SNAP+) could be used to generate a report of winter spreading risk, which a farmer could then use to develop a simple and realistic plan for winter spreading. Practical and realistic principles, partnered with farmer-driven solutions and voluntary best management practices often lead to the best results and greatest level of engagement.

**Response:** *We have revised this section and believe it will be easier to understand and implement. We are hopeful that requirements can be programmed into SnapMaps. The NRCS national 590 practice standard requires a risk assessment if manure is applied on frozen and/or snow covered ground. The team determined that prohibiting the application of manure on frozen and/or snow covered ground was not an acceptable alternative. As a result a winter spreading plan and risk assessment process had to be developed.*

525

The winter spreading risk assessment will be cumbersome to planners, and I believe unnecessary where a farm has demonstrated that they have 180 days worth of manure storage. If it in fact does get included in Wisconsin's standard, would it be possible for a rating given perhaps to soil types and slopes in Wisconsin that could then be modified by a planner or farmer to fine tune on his or her operation? If the phosphorus trading does get implemented, it seems that there would be a great amount of money available to County LCDs to task staff with this project. I am sure that if we are required to outline a winter spreading risk that many planners and farmers will all be doing duplicate work that could have been simplified and available on a website or somehow incorporated into Snap Plus.

**Response:** *See above response.*

529

Agree producers should have a Winter Spreading Plan IF they apply manure during the winter months. If a farm demonstrates at least 180 days of storage they should not have to include a winter spreading plan. Clark County should not be allowed to write a section into this standard.

**Response:** *The 590 team recognized that most farms have some manure that must be winter applied (frozen alley manure, pen manure etc.). As a result the team decided to retain some minimal winter spreading planning requirements for farms to ensure that these applications are planned prior to application.*

The easiest way to do this process is to have the Winter Acute Loss Index available for Non CAFO's in Snap Plus. Simply rank fields by their index number and create winter spreading maps for the appropriate fields.

The Winter Acute Loss Index though needs some revision because of its over sensitivity to no-till. Also too much weight appears to be given to tillage. Corn grain residue left alone over winter appears to be very good at keeping manure in place.

535

The Winter Spreading Plan cannot be efficiently implemented in the current state. This process is screaming for a GIS solution but the committee has provided a paper and table solution. It cannot be implemented in this format. It needs to be tabled until a cost effective, efficient method of delivery is developed.

**Response:** *See above response.*

536

We support the Winter Spreading Plan requirements and the Winter Manure Spreading Risk Assessment and mitigation practices for manure spreading in part II of the Tech Note. We believe the field risk assessment, required mitigation practices, minimum manure production, stacking sites and record keeping requirements are a substantial improvement upon the current (2005) standard and meet the National 590 requirements for winter manure applications (i.e., adequate setback distances to protect local water quality; specified conditions are met and adequate conservation measures are installed to prevent delivery; concurrence with the state water quality authority). We believe these requirements reflect some of the 2013 and 2014 Discovery Farm considerations for Winter Applications of manure (cited in the tech note) and will help farms that spread manure in the winter months to better prevent manure runoff from fields and thereby protect surface and ground water quality (as well as public health from reduced bacteria/pathogen exposure). Collectively, the requirements help to better define and reduce the risk for winter runoff and corresponding surface or groundwater pollutant loading associated with mid and late winter manure applications. Last, we also believe these requirements will help reduce the differences between small and large farm (CAFO) winter manure spreading requirements.

**Response:** *Thanks for the support. See above response.*

537

Winter Manure Spreading Plans: WFBF suggests that additional methods to develop a winter manure spreading plan be included in the standard. The provision included requires a farmer or the nutrient management planner to do have calculations to determine where manure can be spread in the winter time. WFBF encourages you to look at utilizing SNAP Plus to develop winter manure spreading plans.

Winter Manure Spreading: WFBF encourages ways to spread manure appropriately in the winter time. We need to encourage split applications and partial field application when weather conditions are appropriate.

Further, we need to recognize the difference between liquid, semi-solid and solid manure. Lastly, we cannot regulate manure spreading by the calendar. In April of 2014, manure applications conditions were not appropriate in most parts of the state. Whereas, in April of 2015, conditions were completely different and manure applications was appropriate.

**Response:** *We have revised this section and believe it will be easier to understand and implement. We are hopeful that requirements can be programmed into SnapMaps. The NRCS national 590 practice standard requires a risk assessment if manure is applied on frozen and/or snow covered ground. The team determined that prohibiting the application of manure on frozen and/or snow covered ground was not an acceptable alternative. As a result a winter spreading plan and risk assessment process had to be developed.*

510

Concerns remain regarding whether it is feasible for some small farms to find three separate manure stacking sites, with no more than two stacking sites per 40 acres per year, that meet the standards outlined in NRCS 313. It may be unnecessary for a smaller operation to go through the process of identifying three stacking sites if that operation: (1) does not haul manure on a daily basis, and (2) has identified enough areas with low risk assessment scores on which to spread the total estimated quantity of manure produced on their farm.

**Response:** *The requirements for stacking have been clarified.*

#### **VIII.B.**

509

Part VIII.B requires farmers to “visually monitor accessible tile outlets before, during, and after liquid manure applications for potential discharge of manure...” This requirement is not practical for a farmer to implement. Farmers often work alone; therefore, a visual monitor *during* an application is clearly impossible. Additionally, given the distance between farms and the many other demands on a farmer’s time, it is unreasonable to expect that a farmer will be able to regularly monitor every tile outlet on every farm on which they may apply nutrients.

**Response:** *Thanks for the comment. The requirement to monitor tile outlets is included to comply with the national standard requirements to minimize nutrient delivery to surface waters through subsurface drainage because discharge of manure by drainage tile has been identified by EPA as a reoccurring problem. During the planning of land application of manure the location of drainage tile must be identified. The location of all tile systems may not be known on rented land but poorly drained and somewhat poorly drained soil types that are routinely cropped can be assumed to have tile and managed accordingly.*

518

The requirement to monitor tiles (VIII.B.) before, during and after liquid manure applications for potential discharge of manure – many of our members are small farmers, and the ability to monitor before, during and after application would be difficult. The identification of all tiles on a farm also poses a challenge.

**Response:** *Thanks for the comment. The requirement to monitor tile outlets is included to comply with the national standard requirements to minimize nutrient delivery to surface waters through subsurface drainage. See above response.*

536

We support these requirements and believe they work in tandem with V.A.3.(b), VII.A and part III.D tech note drain tile criteria. When used together, they will help protect surface water quality by identifying drain tiles and then preventing or reducing manure or nutrient losses to drain tiles. We also believe this criteria will not only help improve implementation of nutrient management plans by both small and large (CAFO)

farms, but also meet the National 590 requirements for drain tiles (i.e., conservation practices coordinated to avoid, control or trap manure and nutrients before they can leave the field by subsurface drainage (e.g., tile); number of applications and application rates must be considered to limit transport of nutrients to tile; total single application of manure must be adjusted to avoid loss to subsurface tile drains).

**Response:** *Thanks.*

**VIII.H.** (page 11)

535

The last segment of this sentence after the comma should be repeated in other areas of the standard where concentrated flow channels are discussed.

**Response:** *This clarification will be added to the definition of concentrated flow channels.*

538

Section Move: Concentrated flow channels where...etc. to Section VI Considerations.

**Response:** *The team believes this is an important practice to require for water quality protection.*

**X. Definitions.**

538

Apparent Water Table (page 13)

Add "or bedrock": Continuous saturated zone in the soil to a depth of at least 6 feet or bedrock without an unsaturated zone below it.

**Response:** *The definition, "Continuous saturated zone to a depth of at least 6 feet without an unsaturated zone below it.", is a soil survey definition and is used to clarify that it excludes perched water tables and is not meant to require a minimum of 6 feet of soil depth.*

Concentrated Flow Channel (page 13)

Explanation needed. The path of flow to surface water or direct conduits to groundwater must be documented. What specific items need to be in the documentation?

**Response:** *We will clarify that we mean on the map. The 590 standard continues to require that the location of all concentrated flow channels be documented on the plan maps BUT the CURRENT DRAFT no longer requires an assessment of proximity/connection to surface water.*

Conservation Plan (page 14)

Modify: A conservation plan must be signed by the land operator and approved by county Land Conservation Committee or their representative. Land operator may not be land owner. Although the goal is to have all parties agree, an operator/owner may refuse to sign. None the less a responsibly done plan should still be the guidance document.

**Response:** *We agree. This definition relates to local nutrient application restrictions and a NM plan could also be used.*

Documented yield (page 14)

Change: Should be a 3-5 year average. Two years is too short of interval for average.

**Response:** *We believe this needs no edits. Plans are updated with the actual yield and the P and K recommendations are based on broad ranges. This term applies to V.A.1.b which states "Yield goals should not be higher than 15% above the previous 3-5 year average." We believe this is adequate to keep yield goals realistic in the event of two exceptionally high yields, yet still allow for growers to reasonably increase P and K applications if there is documentation of increasing yields.*

Gleaning or Pasturing (page 14)

Clarify: An area of land where animals graze or otherwise see feed in a manner that maintains the vegetative cover over all the area (Does Not include "Sacrifice" type Paddock, where concentrations of animals are used to alter or remove existing vegetative cover in preparation for new seeding or alternative land use)

**Response:** *The standard does not exclude gleaning fields if the applications meet the requirements.*

Saturated Soils (page 16)

Revise: The definition states that saturated soils are where ALL pore spaces are occupied by water and where any additional inputs of water or liquid wastes cannot infiltrate into the soil. This is way too high a standard and porosity exists even on extremely high saturation levels. Since the purpose of determining saturation is to identify how much liquid nutrient can be captured, a more accurate determination needs to be made. A modified "PERK" type test should be developed which would reliably identify the infiltration and capture capability of the soil based on its current saturation extend. The test would provide information on the quantity of liquid that could be expected to be captured without quick loss to ground or surface water.

**Response:** *Thank you for the suggestion. We feel that V.A. 1.n which states "Manures, organic byproducts, and fertilizers shall not run off the field site during or immediately after application." addresses this concern. The minimum 7 day waiting period required between successive manure applications is also included to address this risk. For the purposes of where this term occurs in the standard, we are comfortable with the current definition.*

Surface Water Quality Management Area (page 16)

Clarify: What is a POND? Ponds mean many things to many people. There are navigable ponds, there are mapped ponds, there are ponds on private land, there are landscape ponds, there are perennial ponds, ephemeral ponds, lined and unlined ponds with natural or synthetic liners, surface runoff pond and spring fed ponds to name a few. Then we get to their location on the surface waters. Do the ponds have a large watershed or is their elevation such that they are groundwater controlled? Bottom line, we have no consistent determination on when to apply SWQMA as there is disagreement on what defines a pond.

Clarify: What additional evaluation and documentation needs to be done and who is authorized to determine OHWM of river or stream?

**Response:** *Ponds are defined under SWQMA and refers to the Ponds that show up on the restriction maps because they are a perennial water. If fields drain to them within 1000' then the field is in the SWQMA and must follow 590 requirements in the NM plan. We assume the NM planner is qualified to make this decision.*

## **WI Conservation Planning Technical Note 1**

### **Part I C. 3.**

507



Should be predominant “soil series” rather than just “soil group”, as loamy soils can have differences in corn yield potential that affect N recommendations.

**Response:** *Thanks for the comment. The language was changed to soil map unit.*

### **Part I.C.10**

516

It is unclear whether the revision intends that using the acres/animal unit guides is sufficient to meet this section’s requirement. Simply using the 1.2/2.0 acres of cropland per animal unit guides will not be adequate to comply with this section, but rather a more sophisticated calculation that accounts for large variation depending on species, feed, and location (e.g., as outlined in Ch. 11 of NRCS’s Agricultural Waste Management Field Handbook) is required.

**Response:** *The completed 590 plan will need to demonstrate that any generalized evaluations generated early in the planning process are supported by the final plan. Several calculations exist, and this section was included to suggest options. The team feels confident the resources are readily available to managers, and therefore decided to delete this section to allow managers to use the most appropriate calculation for their operation.*

### **Part I.C.11.**

518

Other issues that have been identified include:

- Inclusion of pastures in nutrient management plans, when they are not well-documented in Snap-Plus

**Response:** *Pastures are able to be documented in SnapPlus.*

525

If pastures are going to be included as a requirement of a plan, there should be some options available to farmers and planners that could be printed and discussed when planning. I believe strongly that the purpose of Nutrient Management is to protect our environment and our farms jointly, I am greatly concerned with the cookie cutter templates and documentation requirements that simplify plan review by agency staff but complicate the whole process for plan writers and farmers.

**Response:** *The team will recommend the development of additional reference materials for 590 planning on pastures to address this newly revised portion of the standard. Snap Plus already offers resources on pastures within the program. Additional UWEX resources were added to this section.*

### **Part II.**

505

I went through this process with two farms on different landscapes in my county. It was confusing. (Part II. B.2) The concentrated flow area should or shouldn’t be in the plan?! Some parts but not all? A very tedious process especially for farms with contour strips. I don’t believe that most consultants will be able to accurately generate these maps from their limited exposure to individual farming operations. As for identifying mitigation practices- conservation practices that normally would increase soil erosion, are being encouraged, even though they were already identified as part of the Fall Soil Factor. It was an exercise in futility. Increasing education and outreach directly aimed at livestock farmers to encourage better timing of manure spreading will be more valuable than mounds of maps.

It appears as though the standard is attempting to regulate all livestock farmers into manure storage. I do not believe that is necessary. The Pleasant Valley Watershed project in Dane County reduced phosphorus loading to streams by implementing simple conservation practices, while no manure storage

facilities were installed. Storing the manure to apply it all at once may sometimes work out, but if applied in that year it doesn't- could be catastrophic for the environment.

Thank you for your consideration.

**Response:** *The revised winter spreading plan and high risk features will offer a simplified process that should address some of these concerns.*

510

This is probably too late in the game, but did or is NRCS running any pilot projects taking place in the field to test whether the new requirements are going to be both implementable and effective?

**Response:** *The team did revisit current monitoring for runoff of winter spread manure and was reminded that is event driven. The revised mitigation strategies focus primarily on reducing load vs. trying to retain runoff on land.*

516

1. Given the high risk nature of winter spreading, fields draining to Outstanding/Exceptional surface waters or nutrient impaired water bodies should be identified in the winter spreading planning process, and fields draining to these waters should be given lower priority than other fields with similar risk assessments.

A suggested way to incorporate this:

In Part II.B (Winter Spreading Risk Assessment Maps) and Part II.E (Winter Manure Spreading Plan Implementation Maps), fields draining to Outstanding/Exceptional surface waters or nutrient impaired water bodies should be identified (or, alternatively, these waters be identified on the maps).

Then, in the "Additional Considerations and Resources for Winter Spreading" section, add: "Fields draining to Outstanding/Exceptional surface waters or nutrient impaired water bodies should be given lower priority than other fields assigned the same Winter Spreading Risk Category."

**Response:** *Interesting idea, will ask the team to consider.*

2. There should be a section establishing limits on emergency application of liquid manure for farms not subject to Wis. Admin. Code ch. NR 243. Under the current revision, there does not appear to be any consideration of the need for such emergency spreading from smaller farms in the Winter Spreading Plan requirements.

This section should at a minimum 1) define what circumstances legitimately qualify for an emergency exemption; 2) establish restrictions on what types of fields emergency application is allowed and at what rate; and 3) require identification of fields to be approved for emergency spreading. The emergency spreading regulations in ch. NR 243 could be a good starting point for such a section.

**Response:** *The revised winter spreading plan development strategy 590 does not prohibit winter/emergency spreading for surface water protection but will limit the rate that manure is applied to reduce the risk for runoff. Monitoring data does not show a consistent risk for winter applied manure runoff but demonstrates loss is event driven.*

517

Winter spreading risk assessment – I find the calculations in the risk assessment to be cumbersome, and I can't make the numbers work. In addition, we have hogs and do not winter apply as the manure is stored in pits, but yet I am still required to complete the assessment.

**Response:** *The revised winter spreading risk assessment will offer a simplified process that should address some of these concerns. The standard does require that an emergency winter spreading plan be*

developed to address 14 days of manure and wastewater generation. If a farm can demonstrate the no manure is ever winter spread (including emergency spreading and frozen manure), then they could request a variance.

529

The Winter Spreading Plan and Risk Assessment seem laborious and will cause the cost of NMP in WI to go up considerably. Will this process be automated somehow? Would be in favor of deleting Part II of the Tech Note completely.

**Response:** *The revised winter spreading plan and high risk features will offer a simplified process that should address some of your concerns.*

534

Please consider deleting this entire section and refer to my comments regarding this in “Response to Draft Standard 590, Nutrient Management.”

**Response:** *The revised winter spreading plan and high risk features will offer a simplified process that should address some of your concerns.*

507

Is there evidence that residue reduces runoff risk for winter applied manure?

**Response:** *The runoff modeling utilized within SNAP+ has always utilized soil surface roughness as a factor when modeling surface runoff. The current version of the model does not provide substantial credit for soil surface roughness during frozen soil conditions. For the portions of the year between the cropping period and frozen soil conditions (partially included within the “winter” planning period) the value of residue to retain runoff has been documented. Residue related practices will be retained as manure runoff mitigation practices.*

## **Part II. B.**

507

Drop the phrase “specific winter spreading high-risk features” from what must be identified, as the items in #1 are not necessarily high risk features.

**Response:** *This section has been revised.*

510

1. Is there a plan in place to address disputes and questions surrounding differing interpretations of the winter spreading risk assessment maps?

**Response:** *NRCS will continue to address through training and quality assurance.*

2. In some cases hydrologic features and drainage patterns are difficult to understand and are not always known or correct. As a result, there may be a need some additional ground truthing.

**Response:** *Nutrient management planners should physically verify drainage features on site to ensure accurate planning.*

533

Agree with the use of the Winter Acute Loss Index in Snap Plus for non CAFO's.

**Response:** *Thanks for the previous support. This section was revised and simplified and hopefully will address most of the comments received.*

## **Part II. C**

508

The Winter Acute Loss Index appears to be over sensitive to no-till, strip-till, and vertical tillage.

**Response:** *The team discussed this concern during development of the initial DRAFT and determined that based on multiple data sources these tillage types can result in a higher discharge of dissolved P.*

510

(Step 1): While a generalized visual estimate could lead to inaccuracies, it is a “user friendly” approach that allows farmers to assess the total risk area of their fields. Using this approach will make this step in the review of winter spreading field maps less burdensome for farmers.

(Step 2):

1. Clarify when manure is to be applied in relation to tillage.
2. Clarify that “Fall Soil Factor” means “during the portion of winter when the ground is frozen”.
3. The risk of nutrient loss associated with winter spreading of manure may be overestimated for no-till and cover crop scenarios and may be underestimated overall for the tillage scenarios.
4. Including no-till farming as both a risk (with a very high associated factor) and a mitigation practice could be confusing for readers. I understand that this is a way to reconcile the fact that no-till probably represents some amount of risk of nutrient loss on the one hand, but presents opportunities for conservation on the other. Perhaps adding an explanation to that effect would clarify things.
5. May want to modify the fall soil factors for Fall Chisel and Fall Moldboard Plowing. In this draft, the table gives a much lower score to Moldboard plowing than Chisel plowing. However, moldboard texture across the surface isn’t always rough; it can be even and at times have less surface roughness than a chisel.

**Response:** *See above for No-till comment. The first DRAFT recognized soil roughness as a major factor to reduce winter runoff. The revised option looks more at delivery risk and reduction of load available for loss.*

514

The “no risk” designation of 0% seems awfully conservative. Mapping of soil type boundaries, slopes, wetland designations are not on the level of detail necessary to substantiate a 0% risk, and introduction of field borders superimposed on maps introduces more error. The technical note refers to using a generalized visual estimate to determine the portion of the field surface area occupied by risk. If there is a substantial part of the field that is obviously no risk common sense should prevail and an in depth assessment should not be necessary. The dilemma lies in where this line should be drawn. We already use the 10% cutoff for determining dominant critical soil type, this same rationale could be used for using 10% in determining no risk.

**Response:** *The revised winter spreading risk assessment will offer a simplified process that should address some of these concerns.*

### **Part III.A.2**

534

First sentence should read “Minimize nutrient applications on frozen or snow-covered soils” In order to maintain consistency with NRCS 590 wording using “nutrient” instead of singling out “manure”.

**Response:** *The standard prohibits the application of other commercial fertilizer nutrients on frozen and/or snow covered ground. This statement is to minimize the remaining alternative to apply manure. No change.*

### **Part III. B.**

515

Control ammonia losses from dairy farms by removing excess protein from the cow's diet. Incorporate manure in the field being aware of the potential for increased erosion and P losses. Cover manure storage structures or use organic matter in bedding to form a crust cover. Consider diverting urine away from feces. Technote page 10: remove the phrase diverting urine.

**Response:** *Construction of barn alleys with a crown and gutters to collect urine have been documented to reduce Ammonia loss from livestock production buildings. The Agricultural Research Service (ARS) has example designs for these types of facilities.*

### **Part III.B.1.i**

534

Possible to delete all of "i"? Will NRCS be developing guidelines for diverting animal urine away from feces?

**Response:** *See above response.*

### **Part III.B.3.c:**

525

The proposed Nitrogen Leaching Index in the Tech Note is very complicated and affected by so many factors, I hope it will not be included in the new Standard. As proposed funding cuts are realized in certain areas, it seems there may not be support for research in Wisconsin which is critical to the nutrient management planning process. I realize that the SOC doesn't get to decide which areas are funded or not, but simplification or on farm studies and yield mapping could be used to help us plan applications. The grazing calculator in Snap Plus V2, revised March 3 is easy to use, but there is not a way to print the results considering various scenarios with farmers to help in their decision making processes, for example, I can tell when I have too many animals on a certain site, but just have to make scribble notes to take to the farm.

**Response:** *The current NRCS National Practice Standard mandates that the "NRCS approved Nitrogen loss risk assessment process must be completed for all sites". Wisconsin NRCS is working with the Agricultural Research Service (ARS) to validate a generalized Nitrogen Leaching Index model to meet this requirement. The Nitrogen Leaching Index has been placed in the "Considerations" section because the team recognized that sufficient research to validate the tool was not currently available in Wisconsin to make this a requirement of the standard.*

534

This is a great idea and will be a valuable tool if it is proven to work in Wisconsin. Should the last sentence read "soil organic matter" instead of "organic soil matter?"

**Response:** *Soil organic matter is the commonly utilized term to represent the organic fraction of the soil.*

### **Part III. Table 3**

523

It has been a somewhat common and agronomically recognized practice to apply manure prior to seeding alfalfa. Research has shown that alfalfa will use 60 lbs of N per ton of dry matter yield. If seeding year alfalfa yields 3 tons of DM per acre that means there is 180 lbs/ac of N utilized. Table 3 does not concur with that.

**Response:** *The table reflects updated interpretation of historic data on the ability of legumes to utilize N present in the soil. The rates were adjusted.*

529

It has been a somewhat common and agronomically recognized practice to apply manure prior to seeding alfalfa. Research has shown that alfalfa will use 60 lbs of N per ton of dry matter yield. If seeding year alfalfa yields 3 tons of DM per acre that means there is 180 lbs/ac of N utilized. Table 3 does not concur with that. On small farms this could mean a big problem with limited area to spread manure (Clark-Marathon County's come to mind).

**Response:** See above response.

**Part III.C.1:**

534

Great pictures and examples of soil erosion. This is information not contained within Snap-Plus and exactly what would be expected in a NRCS Tech Note.

**Response:** Thanks.

**Part IV.**

507

P. 18-19. The boxes that describe the percent of P and K available in the first and second year have not been updated and still use the system with 60% P<sub>2</sub>O<sub>5</sub> available in first year and having second year credits for P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O.

**Response:** The team reviewed this section and decided to refer to the primary information sources to ensure they would be kept more up-to-date.