

Summary of TAC Meetings (Oct.-March.) up to 3/14/17 meeting

Sensitive Area Definition – Discussion to date

October TAC Meeting: the Committee brainstormed possible factors for definition of “Sensitive Areas”:

- The 5 ft. soil depth maps exist for the entire area of the carbonates and this could be the depth identified in the definition.
- The 20 ft. soil depth maps exist in the NE and this could be the depth identified in the definition for the parts of the state where it is available.
- The 50 ft. soil depth maps exist for the entire area of the carbonates and this could be the depth identified in the definition.
- The point of using the 50 ft map is to show that there is a greater risk of groundwater contamination which is evident from the groundwater susceptibility maps.
- Other maps could be developed.
- While we know that 20-50 feet represents a moderate risk for groundwater contamination, we did not propose any performance standards in this category
- The definition could just be for the Silurian Dolomite areas in the NE
- The definition could have two zones
- Consider Political boundaries approach, such as county boundaries, Kewaunee and Door.
- The definition could include soils, slopes, etc. It could be expanded beyond type of bedrock and depth of soil over the bedrock
- Alternatively, soils, slopes, etc. could be incorporated into the performance standards.
- Can the rule include a variance option?
- Is there a way to allow for a functional equivalent (such as treatment) and the flexibility to allow for future technology and innovation?
- Thickness of soil
- What is mapping reliability?
- Soil types (presence of macropores, % fines)
- Infiltration rates, rate of movement through soils minimize treatment time, or recharge rate.
- Depth to groundwater
- Consider topsoil and subsoil type (below topsoil 60” and above rock)
- Weather (saturation or drought), or as a treatment strategy to kill pathogens
- Proximity to groundwater conduits (position on landscape).
- What is growing on the field, land cover, placing manure into cover crops?
- How is manure applied? Recommend surface application over injection.
- How many wells are within the area? Well setbacks?
- Animal density
- Inorganic fertilizers
- Is a sensitive area going to be defined area, or are we defining activities?
- Need to consider multiple options for the farmer for better implementation.

November TAC Meeting: The Committee reviewed the brainstorm list from October (above), and additional factors from the definition of “areas susceptible to groundwater contamination” that included:

- Depth to water
- Depth to bedrock
- Type of soil (0-60”)
- Type of bedrock
- Characteristics of surficial deposits (> 60”)

The TAC identified two of the factors for inclusion in the definition of sensitive area - depth to bedrock and bedrock type.

Depth: There were multiple perspectives regarding which part of the carbonate bedrock area should be included in the sensitive area definition. There was a proposal to have soil thickness be set at 50’ since there is a map with that depth identified. There was discussion on how to define a useable tool to verify depth.

- Discussion was had on what soil depth map. What about 0-5’ soil depth map? Sherrill 1979 USGS for eastern WI 20’ map?
- What are we using to define sensitive area besides map availability?
- Point of the definition is to get you in the right part of the state. It doesn’t carry any standards or requirements in itself.
- Consider defining the ability of creating better maps going forward.

December TAC Meeting: The Committee learned more about the karst in the SW part of the state.

Type: The scope statement says ‘fractured bedrock’. The focus has been on carbonate bedrock. There was discussion about crystalline bedrock (north central part of state) where soils are also shallow. The TAC recommended not considering that type of bedrock at this time.

- Discussion occurred regarding staying on the dolomite area (Silurian).
- A recommendation was to allow many variables within the definition of sensitive area.

Performance Standards/Technical Standards

Notes from January TAC Meeting

- The rule scope is for pathogens impacts to groundwater.
- Encouraged to maintain flexibility in the rules to allow for options for the producers/agronomists. Defining hydraulic capacity rates may not be appropriate during saturation or drought conditions.

- The performance standard notes didn't include the concerns voiced about the SW part of the state including but not limited to the concern for surface application without incorporation. Need to acknowledge that the SW part is different.
- The performance standard notes didn't include the concerns voiced about the SW part of the state including but not limited to the concern for surface application without incorporation. Need to acknowledge that the SW part is different.
- Recommended to expand on the geological differences between NE and SW.
- Consider ability to treat the manure would allow applications in all areas?
- There was discussion about what could be allowed if the manure was treated, if it was irrigated, or if some new technology came along.
- While having permanent markers can be a hindrance in the field, could the recommendation be that the information about shallow soils over bedrock and karst topography be passed on to future owners as maps?. Could the counties be the depository for this information so that future farmers and CCAs would have easy access to it?
- Recommend to require maintaining permanent markings for direct conduits, and pass along to next field operator. County GIS system?
- SNAP Maps could incorporate the features so that they could be geo-located on the tractor.

Soil Depth Suggestions

0-1 ft –

- No application of liquid manure
- No mechanical application of solid manure
- Bring all farms to CAFO standards

1-2 ft –

- No application of manure (any type)
- No application of liquid manure
- Avoid mechanical application of solid manure
- Bring all farms to CAFO standards
- Use Kewaunee recommendations to allow solid manure application
- Use Kewaunee recommendations with modification to allow fall cover crops and possible treatment options like composting
- No application of solid manure unless treated
- Incorporation may be a problem in the SW part of the state where no-till is encouraged. Non-incorporation may be a problem for surface water protection and odor.
 - Recommended to expand on the geological differences between NE and SW.
- Consider a variance option

2-3 ft. –

- No application of manure (any type)
- No application of any manure unless treated

- Treatment requirements must be clear (what pathogen, to what concentration, different for farms with digesters?)
 - Consider ability to treat the manure would allow applications in all areas?
 - There was discussion about what could be allowed if the manure was treated.
 - Consider the decisions that may limit changes in manure handling as technology advances/develops in the future.
- Timing is close to planting (whether spring or fall with cover crops)
- Follow Kewaunee recommendations
- Modify Kewaunee recommendations for hydraulic loading (e.g. split applications may be difficult in areas of the SW where there are significant slopes)
- Use low incorporation depths (incorporation may be a problem in SW part of state)
- No additional requirements on CAFOs until other farms are brought up to these requirements

3-5 ft. –

- No application of manure (any type)
- Follow Kewaunee recommendations
- Modify Kewaunee recommendations to allow flexibility on assessing saturation, surface application and incorporation
- Rate reduction to meet nutrient requirements may have a secondary effect of reducing pathogens
- No additional requirements on CAFOs until other farms are brought up to these requirements

2-20 ft –

- No application of manure (any type)
- No application of manure if a rainfall of greater than 1 inch is forecasted.
- Rainfall intensity should be considered
- Use Runoff Advisory System as a planning tool only
- No emergency spreading or headland stacking on frozen or snow covered ground (include a winter spreading plan)
- Build organic matter
- Recognize trade-offs with pathogen reduction and nutrient reduction to surface waters (e.g. no-till systems)
- Use pre-tillage
- Use Kewaunee recommendations
- Modify Kewaunee recommendations
- No additional requirements on CAFOs

5-20 ft --

3a. Avoid exceeding hydraulic load of the soil, greater than 36” depth to groundwater of bedrock NR 214.14

- Current rules don't allow applications on saturated soil conditions and no ponding of manure.
- There was discussion on split applications or apply all at one application. Is there better timing for manure applications to minimize nutrient loss and maximize uptake potential? Multiple applications are better than putting it all out at one time. Multiple passes may cause compaction issues.

3b. Solid manure applications according to A2809, and incorporate within 72 hrs.

- Discussion occurred regarding requirements based on site specific conditions.
Is the risk of daily hauling seasonally, generally or geographically problematic.

3c. Don't inject or incorporate below 8" depth.

- Consider keeping

3d. As many applicable mitigation practices for 2-3 ft to bedrock soils.

Setback Distance Suggestions:

- Use Kewaunee Recommendations: Recommend permanently marking direct conduits to groundwater but not the drain tile language.
 - While having permanent markers can be a hindrance in the field, could the recommendation be that the information about shallow soils over bedrock and karst topography be passed on to future owners as maps. Could the counties be the depository for this information so that future farmers and CCAs would have easy access to it?
 - Recommend to require maintaining permanent markings for direct conduits, and pass along to next field operator. County GIS system?
 - SNAP Maps could incorporate the features so that they could be geolocated on the tractor.
- "Direct conduits to groundwater" is defined as wells, sinkholes, swallets, fractured bedrock at the surface, mine shafts, nonmetallic mines, tile inlets discharging to groundwater, quarries, or depressional groundwater recharge areas over shallow bedrock (NR 151.002(11m))
- Modify Kewaunee Recommendations to not include the drain tile language and/or to not permanently mark features.
- Setback distances
 - 1000 ft. community well
 - 250 ft to private potable and public "non-community" supply wells or 100 ft to private potable and public "non-community" supply wells
 - 100 ft to all other direct conduits to groundwater, and 300 ft during frozen or snow covered conditions
 - 100 ft. to defined channels that lead to a, b, or c – Delete concentrated flow path from recommendation. Setback not required if manure is incorporated.

- Consider exempting groundwater monitoring wells, or research based wells from setbacks
- Consult with local municipalities for wellhead protection area setbacks (if available?)

Challenges of nutrient management in southwest Wisconsin

Eric Birschbach, Ryan Temperly, Josh Noble

- Not as many marshes and lakes in the driftless area.
- 1-2 T soil loss, need to minimize tillage to meet this target.
- Have not seen the same type of karst at the surface in the southwest as the alfalfa field in De Pere.
- They haven't done a lot of soil pits but they believe there could be a gravel and stone layer where the county maps say it is bedrock.
- Soil pits have revealed root depths from corn 5 feet deep, and alfalfa roots much deeper.
- Have not seen as much fracture growth patterns in fields in southwest, but they do exist in southwest and are easier to see during drought conditions.
- Strip cropping can intercept surface runoff. Challenge of dealing with surface applied manure to incorporate and still meet T.
- Solids and liquid are generally not incorporated
- They use contour strips on slopes
- They don't till on slopes
- They typically apply liquid at 5,000 gallons up to 16,000 gallons in really dry conditions.
- Southwest has beef cow/calf operations, dairy, and cash grain operations. There is some swine and minimal poultry. The amount of liquid manure in Lafayette Co. has increased over the last 20 years.
- Small farms are generally not pulled into larger farms but purchased by Amish or Mennonite farmers and remain as small farms.
- There are pockets where grazing is common.
- Lafayette County has 6 CAFOs – Cottonwood Dairy is one of them and Jim Winn was at the TAC meeting as an alternate for John Holevoet.
- Cottonwood has 2500 acres in 350-370 fields. They inject all liquid manure and they use contour strips. They can meet the 1-2 T limit with their operation. They are in a part of Lafayette County that is flatter with deeper soils.
- Geology is different in southwest than northeast.
- Winter spreading ordinances (county reviews fields to spread) in Manitowoc Co. and Brown Co. has reduced the number of brown water events, but does not prevent brown water events. Winter manure spreading plans have been effective in reducing the risk of brown water events. It's still the responsibility of the producer to not cause an environmental impact.
- Haulers can be limited for non-CAFOs because CAFOs have to get down to 6 months storage by November so the haulers work with the CAFOs first.
- There is a lot of sandstone in the SW that the public may not realize is there.

- The SW doesn't seem to have brown water events but wells are still reported as contaminated in the Stevens Point database for bacteria and nitrates.
- Winter cover crops are popular in southwest, plant into it, not harvested. Surface broadcast or drill in covers after crop harvest cover seed has had effective establishment.
- Resource impacts have been mostly related to surface water so that is where public interest has been, there is less interest in groundwater data collection. The northeast has had more public interest in groundwater and less surface water.
- Discussion occurred around under reporting of NMP implementation in the SW. DATCPs data comes from NRCS 590 compliant checklists that are submitted to them. If there are more NMPs than recorded, it could be because they are not submitted by the counties to DATCP, the counties don't have them or they are not NRCS 590 compliant.
- There was discussion on the inaccuracies of the NRCS soils layer. The NRCS county soils maps were generated using bucket auger and push probes. This data needs to be enhanced.
- Characterization of the soils may be difficult.
- Farms with fields having only a section of a field in a shallow soil area, how are farmers dealing with these situations? We need to be clear on what tests are appropriate and what maps to rely on.

Closed Depression Areas

Andrew Craig presented the recommendation of the Kewaunee County Workgroup and developed some drawings to illustrate the implications of the recommendations.

- There was some confusion about the recommendations that seemed to conflict. After the lunch break, the setback distance was clarified as having been developed for points that are areas susceptible to groundwater contamination and it didn't consider closed depressional areas at that time. This part of the recommendations would not include closed depressional areas.
- The closed depressional areas recommendation was for 20 feet of soil over fractured bedrock, which has been shown through research to be a problem in the NE, particularly during recharge events.
- There needs to be a tool if we have to determine the 20 feet. This already exists for the NE in the Sherrill maps. There are no maps for this in the SW.
- The discussion on whether we should consider if the groundwater elevation is less than 20 feet in this area determined that groundwater depth is a separate issue not to be covered by the scope of this effort.
- There continues to be concern that if these new rules and existing rules are not implemented then we will not see water quality improvement. Implementation is not part of the scope of this effort.
- The discussion on avoiding hydraulic overload by, for example, split applications became problematic where compaction and tillage are not desired.

New Issues to Consider

- Should we recommend winter spreading plans? Discuss in March meeting.

- Is it possible for NRCS or WGNHS to develop better maps with data that is behind the existing maps?

Site Assessment Criteria

Mary Anne presented the handout which was a compilation of the Kewaunee Workgroup Recommendations pulled into one place.

- (a) is only for 0-5 ft of soil over fractured bedrock
- (a) should the list of sources be an “and” or an “or” for field verification? Given that a list of maps are also included and not all would be available everywhere, the sentence structure would suggest it should be “or”.
- Discussion occurred regarding the liabilities of site assessment, abilities to site assess, and consistent methods identified across county boundaries. Verification may take a combination of assessment tools (i.e. NRCS soil surveys may not be accurate enough).

For soil depth ranges (20-40”), it would be encouraged to achieve the performance standards of the most restrictive depth (20”).

(b) and (c) are for 0-20 feet of soil over fractured bedrock

(b) Instead of yearly, consider spring because that is the time to see anything.

(c.) Discussion occurred on how to prove that the fields were verified. Recording this information and including it in the NMP is one way.

(d.) Create maps and show the restrictions.

(e.) Prioritize or rank fields in order from lowest to highest risk. Could this section also include something about a winter spreading plan?

The interim guidance used for review of NR 243 NMPs is to dig 2 test pits for every five acres of identified shallow bedrock areas (< 24” to R soils). If there are multiple areas in a field with R soils, they need to be verified separately.

General Discussion Topics

What is DNR authority for performance standards and DATCP authority for technical standards?

- DNR authority includes prohibitions and performance standards
- Some existing DNR performance standards were a compromise by industry
- DATCP should be writing technical standards

- Some of the Kewaunee Recommendations read like technical standards
- Need to find the line between performance standards and technical standards
- Need to find the balance between a performance standard with limited detail on how to implement and a performance standard with some specificity

How do we know that the current performance standards are inadequate and targeted standards are needed?

- Presentations were provided on the nature of the carbonate geology in both the eastern and southwestern part of the state and its similarity
- Presentations were provided on the incident of groundwater contamination in the eastern and southwestern part of the state and its similarity
- Kewaunee county has a high rate of farms with NMPs and there is still a groundwater contamination problem

No additional discussion occurred regarding this section. The group requested to bring any additional ideas regarding this section to us any time after this meeting or bring to the March TAC meeting

