



# SnapMaps Presentation

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DATCP Nutrient Mgt Update Meetings



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# Definitions

- SWQMA: Surface water quality management area
- Winter: unable to effectively incorporate due to frozen soil or snow cover
- N Restricted soil: Soils that have the potential for nitrate leaching to groundwater.
- Community Potable Water Well: 15 service connections & used by 25+ residents for 6+ months per year. (i.e. municipal well serving multiple homes)
- Non-Community Potable Well: Serves 25+ people for 6+ months per year (i.e. school, church, restaurant)
- Private Well: i.e. a well serving a single family home.



# Karst Features

- ❖ Karst is a landscape created by the dissolution of a soluble layer of bedrock, usually carbonate rock, like limestone or dolomite.
- ❖ “Silurian bedrock” are areas where the bedrock contains Silurian dolomite overlain by soils of 20 feet or less.
- ❖ Silurian dolomite bedrock typically contains numerous cracks and fractures that can allow water to rapidly flow into groundwater.
- ❖ Karst features are seen in both the Eastern and Western parts of WI, but Silurian bedrock is primarily in Eastern WI.

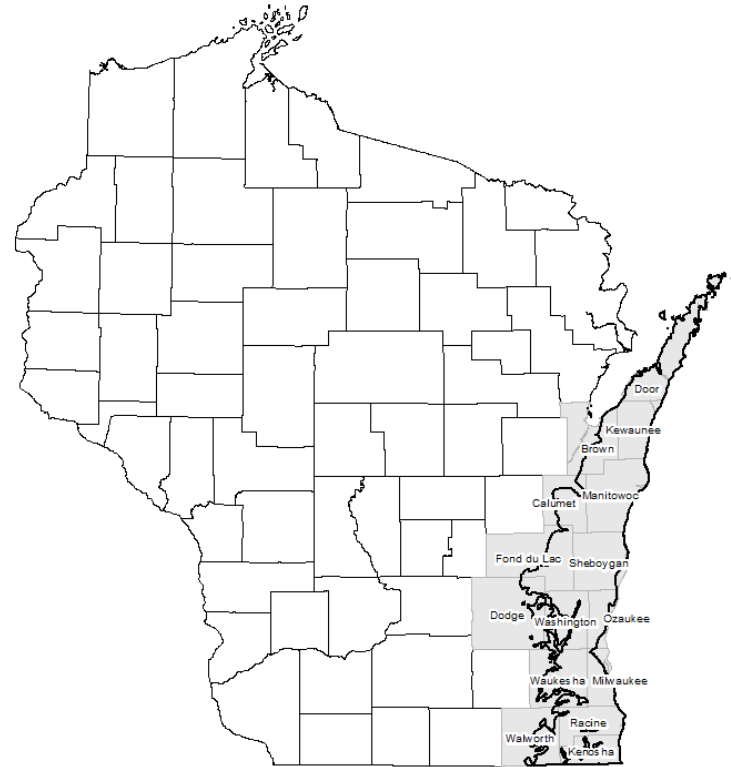


Photo courtesy of Cody Calkins, DATCP

# Silurian Dolomite Areas

Silurian dolomite areas  Turn on/off all

Thickness of Unconsolidated Materials over Silurian Bedrocks

Silurian 0-2ft

Silurian 2-5ft

5-20 ft to Silurian (16 ft. Door County only)



# SWQMA: 300 feet (stream/river)

- Time of Year: Winter & Non-Winter
- Spreading Restrictions
  - In the winter, nutrient applications are prohibited when frozen soils or snow prevent effective incorporation.
  - When it is not winter, nutrient applications are restricted. Any nutrient application must either be incorporated within 3 days or be accompanied by one of the following:
    1. Permanent vegetated buffers.
    2. Maintenance of more than 30% residue or vegetative cover (On long-term no-till fields with less than 30% residue or plant cover, nutrients can be applied within 7 days of planting).
    3. Crop or cover crop establishment before or immediately after application.
  - Unincorporated liquid manure application rates cannot be more than 12,000 gallons per acre at any one time.



# SWQMA: 1000 feet (lake/pond)

- Time of Year: Winter & Non-Winter
- Spreading Restrictions
  - In the winter, nutrient applications are prohibited when frozen soils or snow prevent effective incorporation.
  - When it is not winter, nutrient applications are restricted. Any nutrient application must either be incorporated within 3 days or be accompanied by one of the following:
    1. Permanent vegetated buffers.
    2. Maintenance of more than 30% residue or vegetative cover (On long-term no-till fields with less than 30% residue or plant cover, nutrients can be applied within 7 days of planting).
    3. Crop or cover crop establishment before or immediately after application.
  - Unincorporated liquid manure application rates cannot be more than 12,000 gallons per acre at any one time.

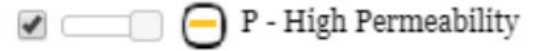






# High Permeability (P Layer)

- Time of Year: Late Summer/Fall Manure
- Spreading Restrictions
  - Fertilizer N in spring and summer have to be split applied with a majority post-planting or applied with a nitrification inhibitor or slow-release form.
  - Late summer and fall manure N is limited to 90 lbs nitrogen per acre for spring planted crops and 120 lbs per acre for all other crops.
  - Fall applications of manure N before spring-planted crops should be delayed until soil temps are less than 50 F or October 1st.
- Why
  - P, R, & W layers identify nitrogen restricted soils. The P layer refers to highly permeable soils, where water (and nutrients) move quickly during rainfall or irrigation events.





# Bedrock <20 inches (R Layer)

- Time of Year: Late Summer/Fall Manure
- Spreading Restrictions
  - R soils have the same late summer and fall manure N guidelines as P soils but do not have restrictions on spring or summer commercial fertilizer.
- Why
  - P, R, & W layers identify nitrogen restricted soils. The R layer indicates that bedrock is likely to be within 20 inches of the soil surface, making the area at risk for manure runoff and water contamination if manure guidelines are not followed.



# Wet <12" to Water Table (W Layer)

- Time of Year: Late Summer/Fall Manure
- Spreading Restrictions
  - Late summer or fall manure N is limited to 120 lb
  - For fall-applied manure with 4% or less dry matter, the application is limited to 90 lb N unless one of the following is used:
    1. Surface application
    2. Nitrification inhibitor
    3. Application to growing crop
    4. Cover crop established within 14 days
    5. Application delayed until soil temperatures are less than 50° F or October 1, whichever comes first.
- Why
  - P, R, & W layers identify nitrogen restricted soils. The W layer indicates a shallow water table, which can make local groundwater more susceptible to contamination.

W - Wet <12" to Watertable



# Winter Spreading Layers: Slopes >6%

- Time of Year: Winter
- Spreading Restrictions
  - Winter manure applications on fields with slopes greater than 6% require special management to protect against manure runoff
    - 2 of the following conservation practices must be followed
      1. Contour buffer strips or contour strip cropping.
      2. No residue removed, no fall tillage
      3. Intermittent applications on no more than  $\frac{1}{2}$  the field
      4. Applications on no more than 25% of the field at a time, with 14 days between applications
      5. Applications limited to the lowest of 3500 gallons or 30 lbs P2O5 per acre



# Winter Spreading Layers

Winter Spreading layers Turn on/off all

- Slopes > 6.6
- Wet. compensation
- Shallow Sturri c-5 ft bedrock
- Channelled Flow Loof Buffer
- Direct Conduit to CW 300ft
- Headland stacks

Winter Manure Prohibited Areas (Update to display/changes) Turn on/off all

Update winter manure prohibited areas

- Fe v/Mar liquid manure prohibited areas
- Winter manure prohibited areas

Slopes > 6%




# To Spread or Not to Spread

- How can we make more sense of a map like this one for manure applicators?





# Winter Manure Prohibited: Prohibited Areas

 Winter manure prohibited areas



- Time of Year: Winter
- Spreading Restrictions
  - Manure cannot be spread on these areas during the winter. In this example, two of the areas are non-farmed areas and one is within 300 feet of a private well. Concentrated flow channels (grass waterway, non eroding channel, ditch) would also be winter manure prohibited.
- Why
  - A manure prohibited area is an area that can be drawn by the planner to show manure is prohibited in this particular area of the field. These can be specific to winter only or for all seasons



# Making Winter Manure Prohibited Maps

Winter Manure Prohibited Areas (Update to display/changes) Turn on/off all

Step 1.

Feb/Mar liquid manure prohibited areas

Step 2.    Winter manure prohibited areas

- Important to get into habit of clicking “Update Winter Manure Prohibited Areas”, if there were any updates or changes to the maps, those items might not be captured if you don’t click the update button.



# Making Winter Manure Prohibited Maps

Each layer has a slide bar that you can use to change transparency.

Winter Manure Prohibited Areas (Update to display/changes) Turn on/off all

Update winter manure prohibited areas

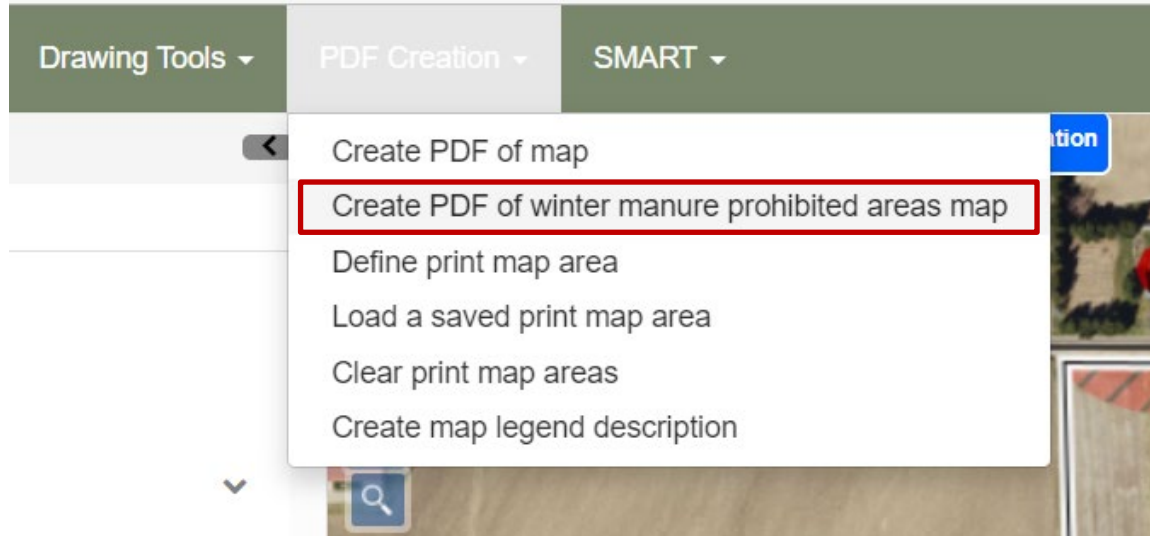
Fe 1/3 Mar liquid manure prohibited areas

Winter manure prohibited areas

- Users have the ability to change transparency of layers.
- It helps a lot specifically with the winter manure prohibited layer if you are interested in seeing the underlying reason for the prohibition. (i.e. a well, or intermittent stream, etc.)



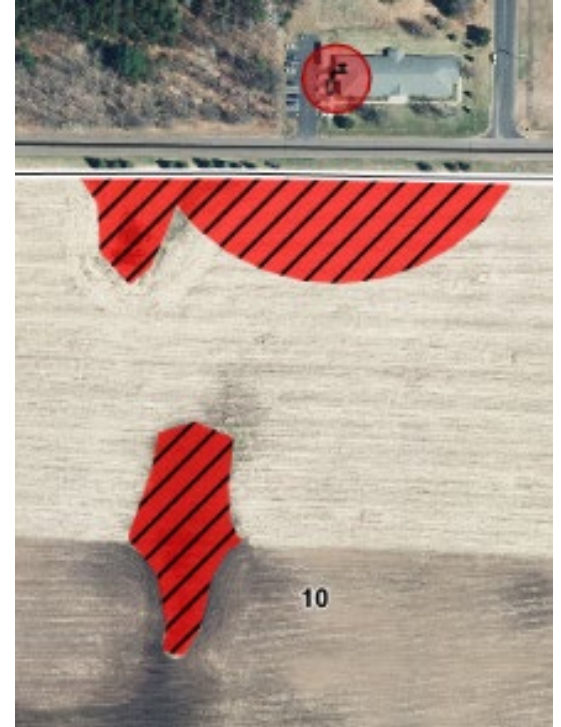
# Making Winter Manure Prohibited Maps



If you create a PDF Map, you do not have to click “Update Winter Manure Prohibited Areas”, the program will automatically do it for you.

# Spread/No Spread Maps

- In SnapMaps, for 590 farms, you can make a PDF Map that shows spread/no spread areas during the winter season.
- No Spread Areas in Non-Winter Seasons:
  - Direct Conduits to Groundwater
  - Municipal Wells
  - Concentrated Flow Channel



# Consider the User of your Maps

- Maps for Manure Applicators
  - Haulers want to see spread/no spread areas
- Maps for Farmers
  - Might be more interested in seeing/understanding what each restriction layer is.
- Maps for County Land Conservation Departments
  - Check with local County to identify which layers they look for.
  
- What has your experience been?