How Do We Meet NRCS 590 Requirements?

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2025

POLICY OVERVIEW

NR151 (DNR)

- NR151.07 (3) – Manure, commercial fertilizer, and other nutrients shall be applied in conformance with a nutrient management plan.

ATCP50 (DATCP)

- ATCP50.04 (3) - Nutrient Management Plan

Conservation Practices (DATCP/NRCS/Counties)

- NRCS Practice Standards – 590 (Nutrient Management)

NRCS CONSERVATION PRACTICE 590 – NUTRIENT MANAGEMENT

- Definition - Managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments.

- Criteria – Establishes the requirements for planning, design parameters, acceptable management processes, and performance requirements for nutrient management plan development and implementation.

- Applies to all fields where nutrients and amendments are applied.

590 – NUTRIENT MANAGEMENT PRACTICE STANDARD

A. Criteria for Surface and Groundwater Resources
   1. Nutrient Criteria for All Sites (A2809 recs,. yield goals, maps etc.)
   2. Nutrient Application Prohibitions (Surface waters, wetlands, Winter Spreading)
   3. Nutrient Application Restrictions (Non-Frozen & SWQMAs)

B. Criteria to Minimize Entry of Nutrients to Groundwater
   1. N Restricted Soils; High Permeability or Rock Soils, wet soils etc.

C. Additional Criteria to Minimize Entry of Nutrients to Surface Water

WISCONSIN TECHNICAL NOTE 1 – NUTRIENT MANAGEMENT

Companion document to the 590 NM standard

Detailed Guidance For:

- Min. requirements for a 590 NM Plan
- Min. requirements for a Winter Spreading Plan
- Enhanced NM Planning
- Determining Manure Nutrient Credits

MINIMUM REQUIREMENTS FOR A NUTRIENT MANAGEMENT PLAN

- Plan narrative shall include:
  - An overview of the operation (crops grown, sources of nutrients, etc.)
  - Summary of P reduction strategies
  - An explanation of fields that are out of compliance and a schedule for bringing them back into compliance
- Aerial photographs and/or maps of the farm containing:
  - Boundaries, field names, and acreage
  - Soil series
  - Location and identification of spreading restrictions
- Field specific documentation of:
  - Planned crop rotation including previous crop and crop to be grown this year, projected yield goals
  - Dominant critical soil map unit and predominant soil map unit
  - Previous and current years nutrient application rates including form, rate and timing
  - Soil test information
  - NRCS soil loss estimates for erosion

590: SOIL SAMPLING REQUIREMENTS

- Soils shall be tested a minimum of once every four years by a DATCP-certified lab for:
  - pH
  - Phosphorus (P)
  - Potassium (K)
  - Organic Matter
- Refers to sampling requirements outlined in A2809

RESPONSIVE AND NONRESPONSIVE FIELDS

The field is considered to be in the responsive range if either soil test phosphorus (P) or potassium (K) levels are in the high (H) category or lower. A **nonresponsive field** is one where both soil test P and K levels are in the very high (VH) or excessively high (EH) categories.

Table 2.1. Recommended sample intensity for uniform fields.

Field characteristics	Field size (acres)	Suggested number of samples[a]
Fields tested more than 4 years ago **OR** fields testing in the responsive range	All fields	1 sample/5 acres
Nonresponsive fields tested within past 4 years	5–10	2
	11–25	3
	26-40	4
	41-60	5
	61-80	6
	81-100	7

[a] Collect a minimum of 10 cores per sample.

Responsive Fields

To figure out how many samples you need for a **responsive field**, take the acres in the field and divide by 5, then round to the nearest whole number of samples.

Rounding Note:
When rounding,
0-4 rounds down
5-9 rounds up

Example 1 : Field size = 36 acres

$$36 \text{ acres} \times \frac{1 \text{ sample}}{5 \text{ acres}} = \frac{7.2 \text{ samples}}{\text{acre}}$$

or $36 \div 5 = 7.2$

7.2 rounds to 7

7 samples are required

Example 2: Field size = 58 acres

$58 \div 5 = 11.6$

11.6 rounds to 12

12 samples are required

Example 3: Field size = 6 acres

$6 \div 5 = 1.2$

1.2 rounds to 1

1 sample is required

For fields that are less than 5 acres, take 1 sample for the entire field. Strips that are smaller than 5 acres can be combined for sampling if they have the same management history.

Nonresponsive Fields

If the field was sampled within the last 4 years and all samples were in the nonresponsive range, fewer samples are required.

	Field size (acres)	Suggested number of samples
Nonresponsive fields tested within the last 4 years	15-25	3
	26-40	4
	41-60	5
	61-80	6
	81-100	7

MINIMUM REQUIREMENTS OF WINTER SPREADING PLAN

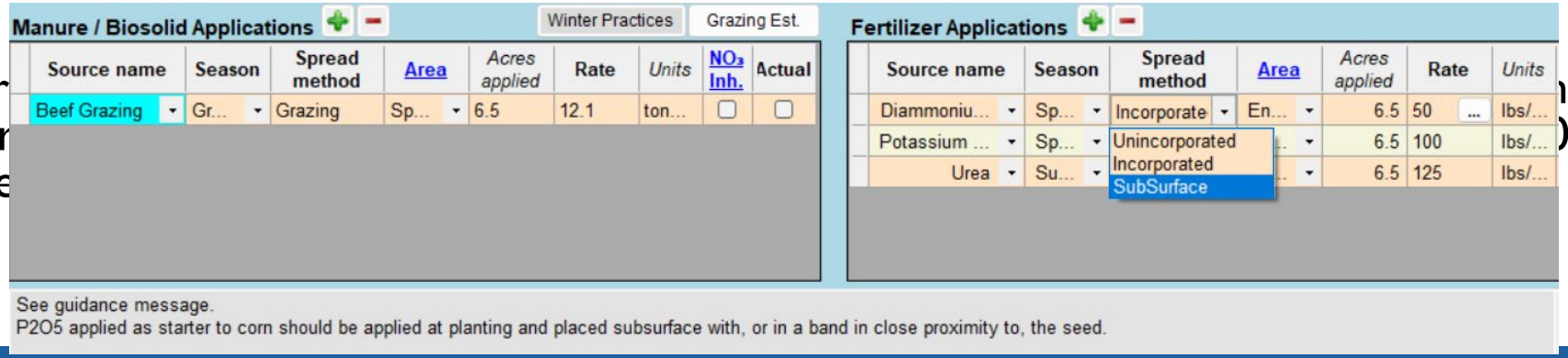
- A Winter Spreading Plan identifies:
  - Quantity of manure and/or organic by-products spread during periods of frozen or snow-covered soil, or generated in 14 days, whichever is greater;
  - Capacity of storage for each manure type generated;
  - Capacity for stacking manure that is ≥ 16% dry matter without permanent storage.
- Winter Spreading Implementation Maps that include:
  - Field boundaries, names, and acreage
  - Location of stacking areas
  - Planned mitigation practices
  - Identification of fields or portions of fields not spreadable due to nutrient management prohibitions.

NMP NEEDS TO DEMONSTRATE ADEQUATE ACREAGE

- Adequate Acreage – There is enough land described in the plan to use all the manure generated by the farm annually while maintaining compliance with the 590 standard.
  - This is done through planning and allocating manure amounts in SnapPlus.
  - If the past, present, and future planning years have all of (less than 10% of manure is left un-planned) the manure applied or planned SnapPlus will auto check yes on the 590 Checklist that the farm has adequate acreage for spreading manure.
  - Tip: you must have manure sources and amounts updated in SnapPlus for the program to calculate properly.

PHOSPHORUS AND POTASSIUM NUTRIENT RECOMMENDATIONS

- Annual P and K recommendations may be combined into a single application that does not exceed the total nutrient recommendation for the rotation.
- Commercial P fertilizers shall not be applied to soils testing excessively high in P for the crop except for:
  - Up to 20 lbs. per acre of P2O5 starter fertilizer may be applied to corn grown on soils testing excessively high, where no fertilizer is recommended.
    - Starter fertilizer - fertilizer applied at the time of planting and place with or in a band in close proximity to the seed.
      - In SnapPlus, you must choose SubSurface for Spread Method to get guidance message to disappear.
  - To account for … an commercial fer … lbs per acre of comme …



N, P, & K NUTRIENT APPLICATIONS SHOULD BE CREDITED AGAINST CROP NEED EXCEPT IN THE FOLLOWING SITUATIONS:

1. Up to 20 pounds per acre of P2O5 starter fertilizer may be applied to corn grown on soils testing excessively high, where no fertilizer is recommended.
2. To account for variability in N mineralization and manure application, when nutrients other than commercial fertilizers are used to meet 100% of the N requirement for corn, an additional 20 pounds per acre of commercial N may be applied as starter fertilizer.

RESCUE N TREATMENT

- Where excessive rainfall has caused crop N deficiency, up to 46 pounds per acre of in-season supplemental N may be applied if the need for rescue N is documented using "Guidelines for Adaptive Nutrient Management", Technical Note WI-1, Appendix 3.
- To justify applying more than 46 pounds per acre, two different methods must be used to document the need.
- Methods:
  - PSNT
  - Tissue testing
  - Chlorophyll meter
  - Nitrogen Management Models

INFORMATION WHICH SHOULD BE CONSIDERED WHEN ESTIMATING N LOSS FROM EXCESSIVE RAINFALL INCLUDES:

- Date, rate, and form of N application
- Amount of time elapsed between prior N application and excessive rainfall
- Rainfall amount
- Duration of rainfall event(s)
- Soil water holding capacity
- Soil aeration/saturation
- Amount of time the soil was saturated
- Soil temperature
- Appearance of the crop

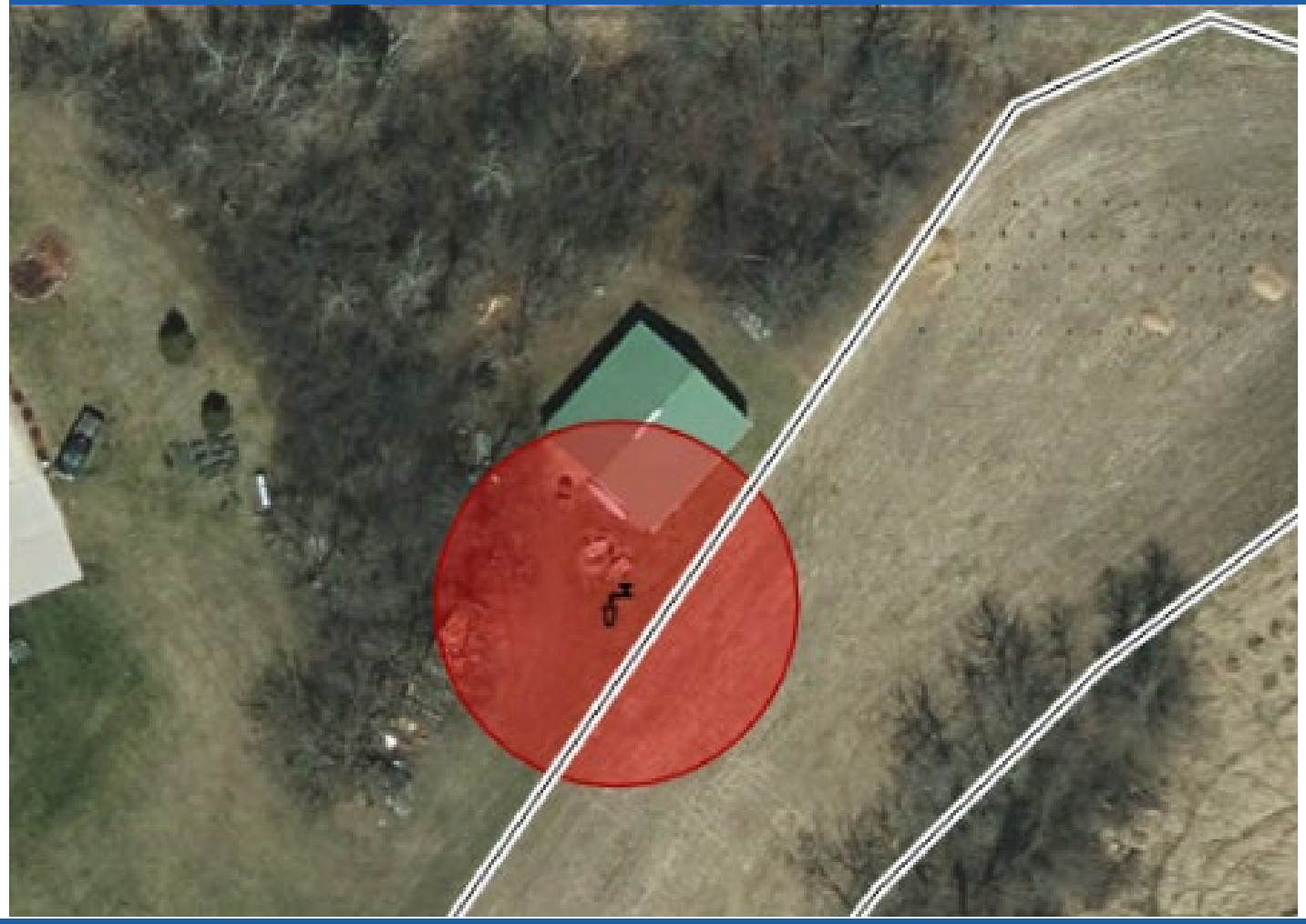
MANURE ANALYSIS

1. Manure samples shall be collected for three or more consecutive years, as necessary, to establish a representative baseline. After which, samples should be collected once every four years. If no operational changes occur, less frequent manure testing is allowable.
2. Use an average or "book" value of available nutrients. Follow Table 9.3 in UWEX Pub. A2809. See Part IV, Table 3 of the Technical Note WI-1.
3. Organic by-products other than manure shall be analyzed for total N, ammonium N, total P, total K, and solids content and applied to fields in accordance with this standard and any applicable regulations.

NUTRIENT APPLICATION PROHIBITIONS-NUTRIENTS SHOULD NOT BE SPREAD ON THE FOLLOWING

1. Surface water; saturated soils; areas of active snow melt where water is flowing; concentrated flow channels; or non-harvested vegetative buffers, except for the establishment of perennial vegetation in the concentrated flow channels, or non-harvested vegetative buffers.
2. A non-farmed wetland.
3. A potable well or direct conduits to groundwater and within 50 feet of these features, unless directly deposited by gleaning or pasturing animals or applied as starter fertilizer to corn.
4. Within eight feet of irrigation wells, except for nutrients applied through fertigation.
5. Land where vegetation is not removed mechanically or by grazing, except to provide nutrients for establishment and maintenance of a conservation practice.
6. Fields exceeding tolerable soil loss (T). Erosion controls shall be implemented so that tolerable soil loss (T) over the crop rotation will not be exceeded on fields that receive nutrients.

WELLS AND OTHER CONDUITS TO GROUNDWATER



No mechanical applications within 50' of direct conduits to groundwater.

- Gleaning or pasturing animals is allowed.

Examples of Direct Conduits:

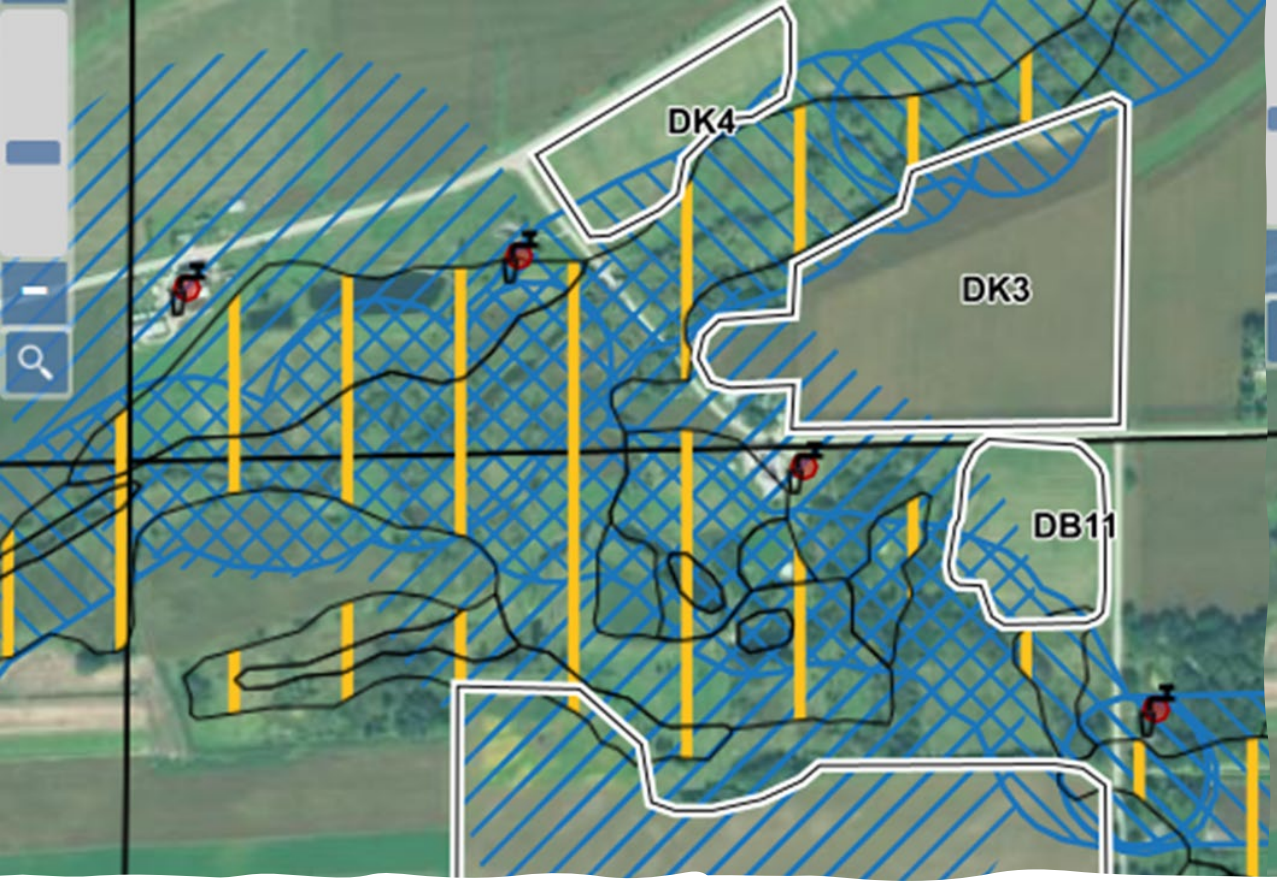
- Wells
- Sinkholes
- Swallets
- Fractured bedrock at the surface
- Mines/mine-shafts
- Quarries
- Tile inlets discharging to groundwater.

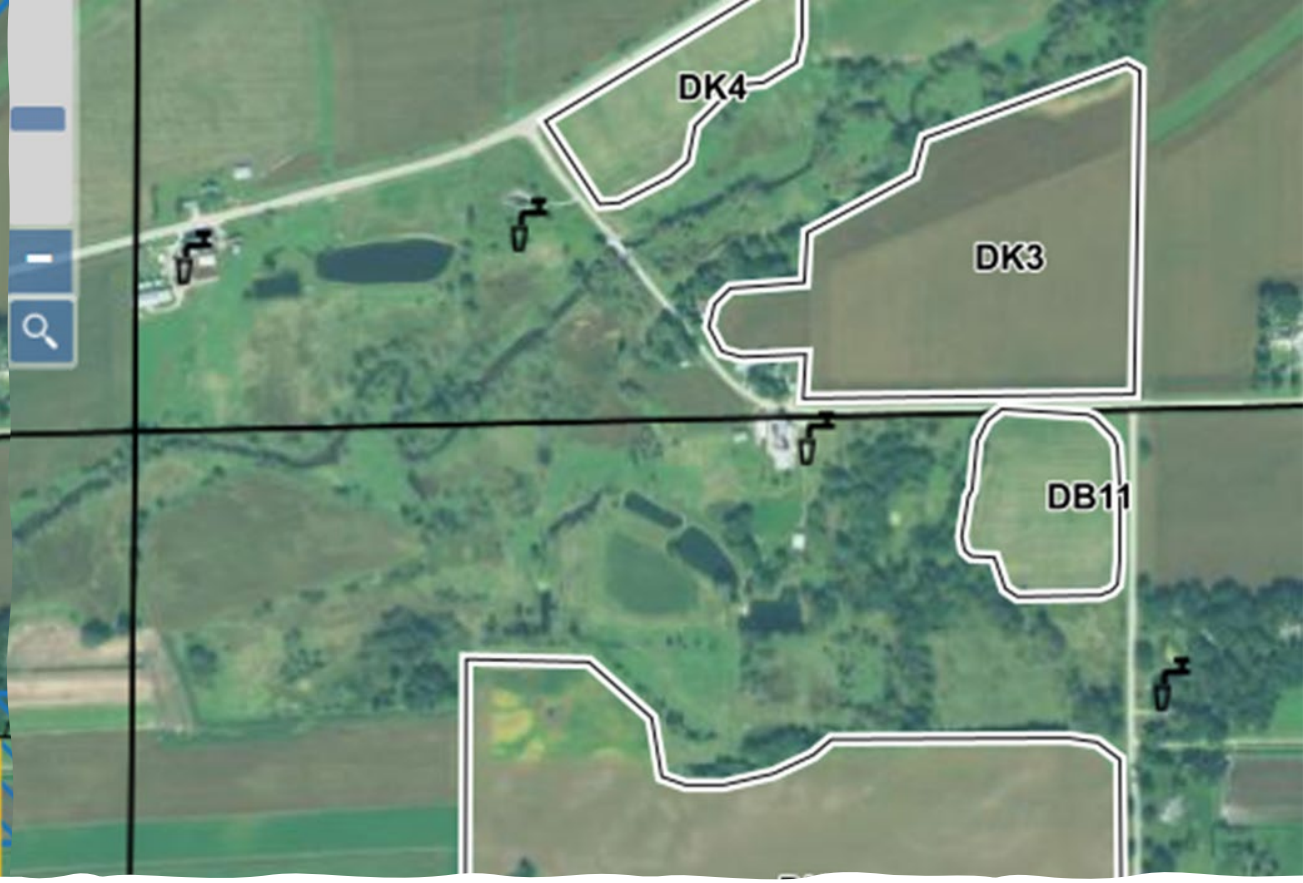
WELLS AND OTHER CONDUITS TO GROUNDWATER

No manure applications within:

1000’ of a community potable water well – (municipal well)	100’ of a non-community potable water well – Public (church, school, restaurant, etc.)

Unless manure is treated to substantially eliminate pathogens.





SURFACE WATER QUALITY MANAGEMENT AREAS (SWQMA)

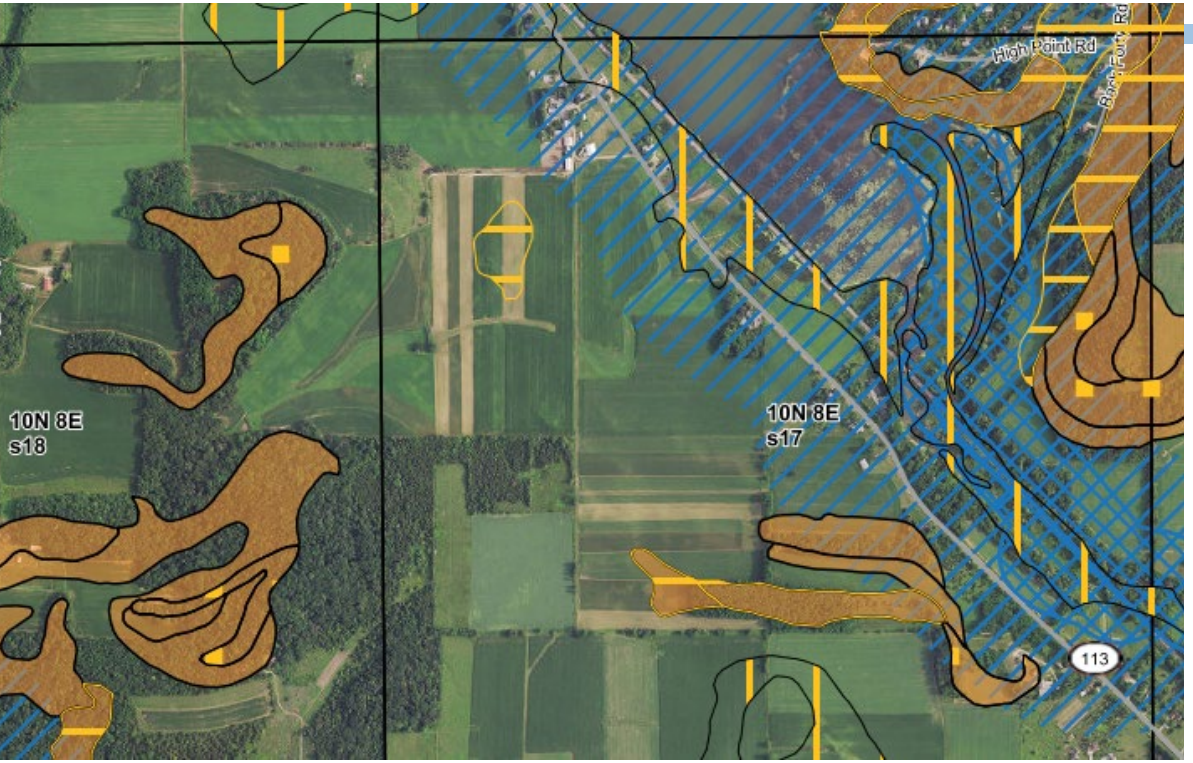
Mechanical applications of manure

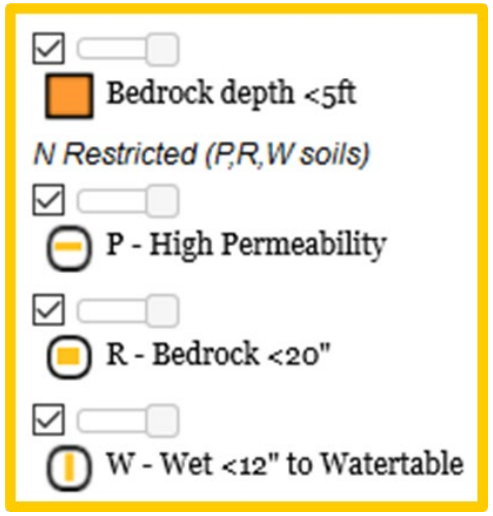
- 1000’ buffer from ponds or lakes
- 300’ buffer from rivers or streams

Limit unincorporated applications of liquid manure (11.0% or less dry matter) to 12,000 gal/acre

SURFACE WATER QUALITY MANAGEMENT AREAS (SWQMA)

- Install and maintain vegetative buffers or filter strips.
- Maintain ≥ 30% cover after nutrient application.
- Incorporate within three days after application.
- Plant a crop prior to, at, or immediately after application.
- Apply nutrients within seven days of planting on long term no-till soil with less than 30% residue.





NITROGEN RESTRICTED SOILS- SOILS THAT ARE AT HIGH RISK FOR LEACHING OR SHALLOW DEPTH TO BEDROCK

- Late summer or fall manure or organic by-products
- Limit rates to 90 or 120 lbs. N/ac
- Rate depends on manure dry matter, crops, and restricted soil type—P, W, or R soils

FOR LATE SUMMER OR FALL MANURE OR ORGANIC BY-PRODUCTS WITH GREATER THAN 4% DRY MATTER:

On W or W combination soils:

- Limit to either 120 lbs. available N/acre OR rates from A2809 – whichever is LESS.

On P and R Soils:

- For established cover crops, overwintering annual crops, or perennial crops, limit rates to either 120 lbs. available N/acre OR rates from A2809 –whichever is LESS.
- For annual crops that won't be planted until spring or summer, delay application until soil temperatures are < 50 degrees F
- AND limit rates to either 120 lbs. available N/acre OR rates from A2809 - whichever is LESS.

FOR LATE SUMMER OR FALL MANURE OR ORGANIC BY-PRODUCTS WITH LESS THAN OR EQUAL TO 4% DRY MATTER:

On W or W combination soils:

- Limit to either 90 lbs. available N/acre OR
- Use 120 lbs. available N/acre AND do one of the following:
  - Apply on an established cover crop, overwintering annual crops, or perennial crop.
  - Use a nitrification inhibitor.
  - Establish a cover crop within two weeks of application.
  - Surface apply and do not incorporate for at least three days.
  - Delay application until after soil temperatures are < 50 degrees F.

On P and R Soils:

- Limit to 120 lbs. available N/acre
- Delay application until soil temperatures are < 50 degrees F.
- AND use a nitrification inhibitor
- OR surface apply and do not incorporate for at least three days.

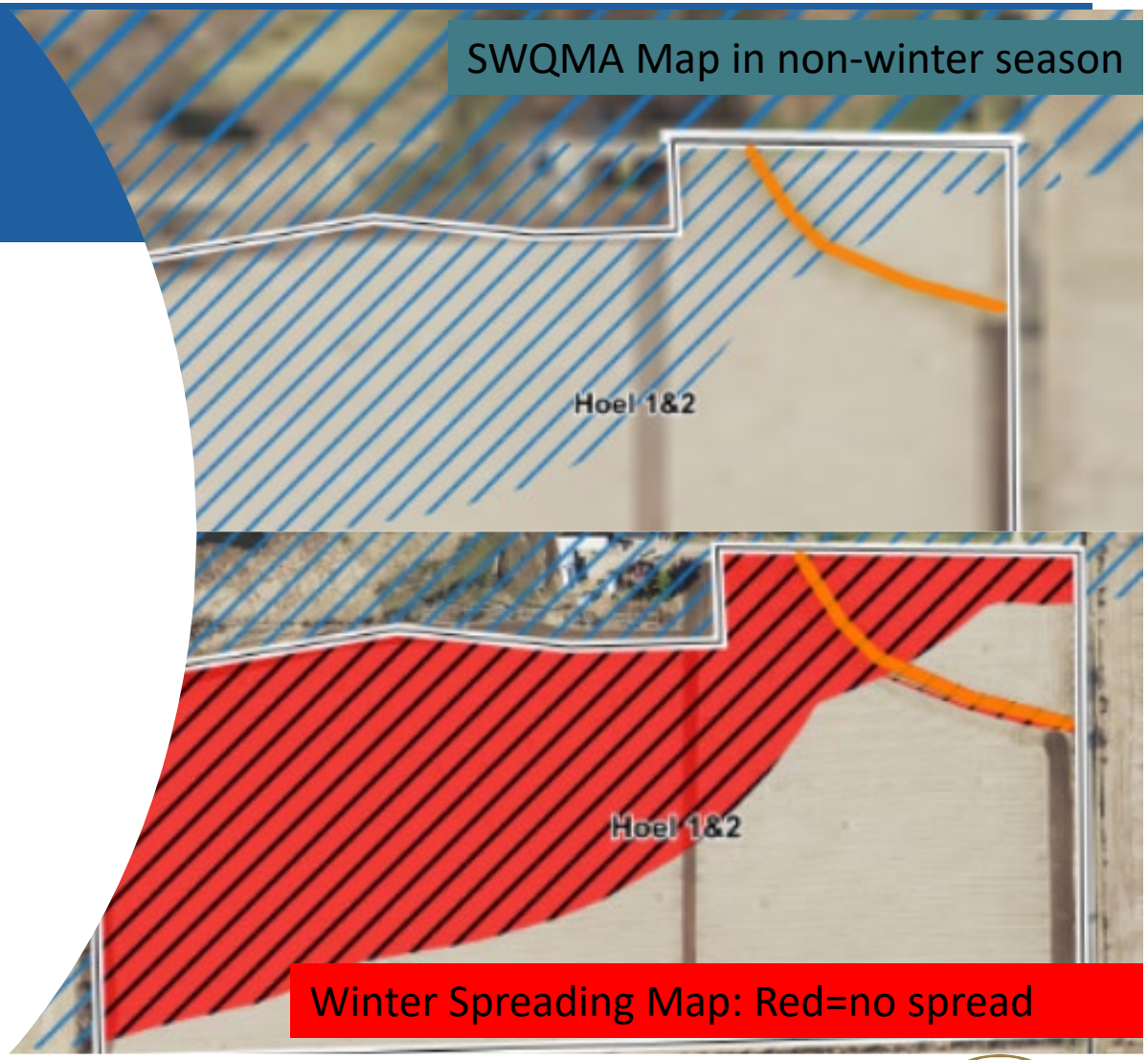
WHAT QUALIFIES AS WINTER?

When temperature or snow prevents effective incorporation.

- Frozen ground
- Snow depth

WINTER

- Do not mechanically apply manure within the SWQMA.
- Gleaning or pasturing of animals is allowed in SWQMA and on all slopes in winter.

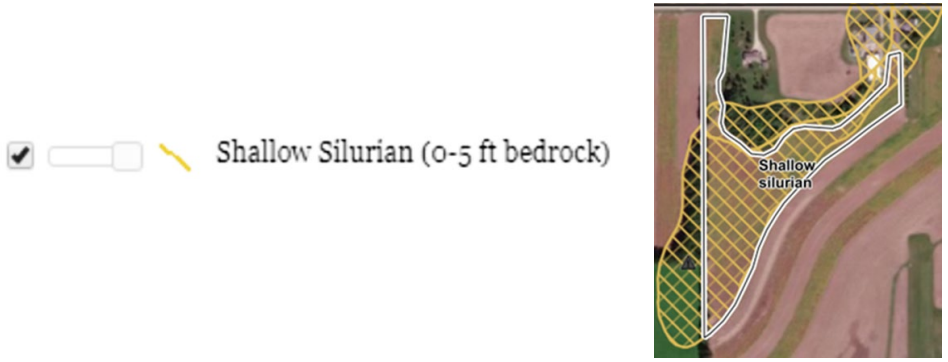


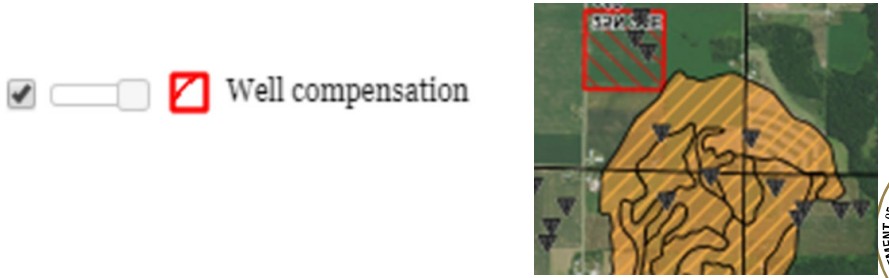
WINTER

- Manure applications cannot exceed the P removal of the following growing season's crop.
- Limit all winter manure applications to 60 lbs. of P2O5/ac or less.
- Limit liquid manure applications to 7,000 gal/acre.

WINTER

- Do not apply within 300 feet of direct conduits to groundwater.
- Do not surface apply liquid manure during February and March on:
  - DNR Well Compensation areas funds provided to replace wells when contaminated with livestock manure or;
  - Silurian dolomite within five feet of soils surface.





WINTER

Do not apply manure and/or organic by-products on slopes greater than 6%, unless the plan documents that no other accessible fields are available for winter spreading and two or more of the following are implemented:

- Contour buffer strips or contour strip cropping.
- Leave all crop residue and no fall tillage.
- Apply manure in intermittent strips on no more than 50% of field.
- Apply manure on no more than 25% of the field during each application, waiting a minimum of 14 days between applications.
- Reduce manure app. rate to 3,500 gal. or 30 lbs. P_2O_5, whichever is less.

WINTER

Do not apply manure and/or organic by-products to fields where concentrated flow channels are present unless two or more of the following are implemented:

- Contour buffer strips or contour strip cropping.
- Leave all crop residue and no fall tillage.
- Apply manure in intermittent strips on no more than 50% of field.
- Apply manure on no more than 25% of the field per application, waiting at least two weeks between applications.
- Reduce manure app. rate to 3,500 gal. or 30 lbs. P_2O_5, whichever is less.
- No manure application within 200 feet of all concentrated flow channels.
- Fall tillage is on the contour and slopes are lower than 6%.

Thank You!

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