STATE OF MINNESOTA

Minnesota Pollution Control Agency

FACT SHEET

for the

2025 GENERAL STATE DISPOSAL SYSTEM (SDS)

ANIMAL FEEDLOT PERMIT

Permit Number MNG450000

1. INTRODUCTION

The Minnesota Pollution Control Agency (MPCA) proposes to issue a general State Disposal System (SDS) Permit for the construction, expansion, modification, or operation of animal feedlots in Minnesota. An SDS permit is required for any animal feedlot capable of holding 1,000 animal units (AU) or more, or the manure produced by 1,000 AU. Additionally, animal feedlots that are required to obtain an SDS permit may choose to obtain a National Pollutant Discharge Elimination System (NPDES) permit in lieu of the SDS permit.

This fact sheet has been developed to document the basis for the limitations and conditions of the 2025 General SDS Animal Feedlot Permit MNG450000 (Permit) in accordance with Minn. R. 7001.0100, subp. 3.

2. AVAILABILITY OF PERMIT

A paper copy of the Permit may be obtained by:

- visiting the MPCA website: https://www.pca.state.mn.us/business-with-us/npdes-and-sds-feedlot-permits; or
- submitting a request to the contact address provided in the public notice document.

3. BACKGROUND

The Permit contains state requirements for the construction, operation, and maintenance of animal feedlots in Minnesota. Coverage under the Permit will fulfill the requirements of Minn. R. 7020.0405, subp. 1(B)(1) for feedlots capable of holding 1,000 animal units (AU) or more, or the manure produced by 1,000 AU or more to obtain SDS permit coverage to obtain coverage under an SDS permit. Coverage under this Permit does not fulfill the requirements of 40 C.F.R. § 123.23(d) and Minn. R. 7020.0405, subp. 1(A) for Concentrated Animal Feeding Operations (CAFOs) to obtain coverage under an NPDES permit.

4. CRITERIA FOR COVERAGE UNDER THE GENERAL SDS PERMIT

There are two types of SDS permits, individual and general. A general SDS permit provides coverage to facilities that have substantially similar operations. An individual SDS permit is unique to each facility and includes special conditions to address specific issues.

Coverage under the 2025 General SDS Animal Feedlot Permit will not be granted to those facilities that require an individual SDS permit under state law or when any of the following apply:

- a schedule of compliance is required to address a pollution hazard;
- special conditions are required as the result of environmental review;
- a new technology for construction or operation which is not addressed by the Permit is proposed;

- removal of bedrock is proposed to comply with site restrictions under Minn. R. 7020.2100;
- feed for animals will be brokered or sold at the facility;
- the facility, including the feed storage area, does not meet the design standards of Minn. R. ch. 7020 and the Permit;
- the MPCA determines that the facility operations would be more appropriately controlled by an individual Permit;
- the owner is proposing to land apply manure in a manner that is not consistent with the requirements of the Permit;
- the owner is proposing to use a vegetative infiltration basin to control runoff from an open lot or manure storage area;
- the MPCA determines that discharges from a facility or the land application areas under the Permittee's control have the potential to cause or contribute to non-attainment of applicable water quality standards; or
- an anaerobic digester at the facility processes a mixture of organic materials (including manure) that is less than 90% (by volume) manure, process wastewater, or manure contaminated runoff regulated by Minn. R. ch. 7020.

5. TYPE OF DISCHARGES CONTROLLED BY THE GENERAL SDS PERMIT

The Permit prohibits the discharge of pollutants to waters of the State from the production area and land application areas except as allowed by the applicable effluent limitations (more discussion of the effluent limitations is found in part 7 of this document). The Permit also prohibits discharges directly to groundwater from the production area.

The production area means that part of the animal feeding operation that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The animal confinement area includes, but is not limited to, open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, calf huts/hutches, milkrooms, milking centers, cowyards, barnyards, medication pens, walkers, animal walkways, and stables. The manure storage area includes, but is not limited to, lagoons, runoff ponds, storage sheds, stockpiles, under-house or pit storages, liquid impoundments, static piles, and composting piles. The raw materials storage area includes, but is not limited to, feed silos, silage bunkers, and bedding materials. The waste containment area includes, but is not limited to, settling basins and areas within berms and diversions which separate uncontaminated stormwater. Also included in the definition of production area is any egg washing or egg processing facility, and any area used in the storage, handling, treatment, or disposal of mortalities.

6. PERMIT COVERAGE AND PUBLIC COMMENT PROCESS

A. Application for Coverage

To obtain coverage under the Permit the owner of a feedlot must submit a permit application to the MPCA for review and approval. The application must be completed using the MPCA standardized online application process and forms and include all required plans, including a manure management plan (MMP). The MMP must be completed using MPCA's online Nutrient Management Tool. The Nutrient Management Tool includes the necessary information to satisfy applicable manure management planning and record keeping rules and Permit requirements.

Access to the online application and Nutrient Management Tool can be found on the MPCAs website at: https://www.pca.state.mn.us/business-with-us/npdes-and-sds-feedlot-permits.

Note: Development of the Nutrient Management Tool is nearing completing. It is not currently available to applicants but will be made available before permit applications are accepted for the Permit. Initially access to the tool will be limited to registered feedlots but future plans include providing access to others.

B. Public Comment on Applications for Coverage

Applications for coverage under the Permit are open for public review except for any information determined to be not public under the Minnesota Government Data Practices Act (Minn. R. 7000.1300). The MPCA will public notice its intent to provide coverage under the Permit. The public notice will be posted for at least 30 days on the MPCA website www.pca.state.mn.us/public-notices. The public may submit comments by following the procedure identified in the public notice document. Public comments will be considered by the MPCA in the formulation of the final determinations concerning the permit application.

7. BASIS FOR GENERAL SDS PERMIT REQUIREMENTS

The Permit is based on requirements of Minn. Stat. chs. 115 and 116, and Minn. R. chs. 7001, 7009, 7020, 7053, 7060, and 7090. The Permit contains protections for surface waters, groundwater, and air quality.

Feedlots must meet construction, operational, and maintenance requirements for the production area and land application activities. The following items outline key requirements of the Permit.

A. Permit Coverage, Modifications, and Submittals

Parts 1 and 2 of the Permit require operation of the facility in accordance with the approved application materials unless it obtains approval for a modification of permit coverage. The term application materials include all information submitted by the applicant for coverage under the Permit and relied upon by the MPCA to make a decision on the request for permit coverage. This includes but is not limited to the application form, MMP, plans and specifications for facility components, emergency response plan, and required monitoring plans as approved by the MPCA. The requirements for modifications of the MMP are found in part 10 of the Permit.

B. Facility Construction

Parts 4 through 7 of the Permit include the requirements for construction of facility components. Any construction activity that disturbs less than five acres must comply with the most current MPCA Construction Stormwater General Permit requirements, as authorized by Minn. R. 7090.2020. Any construction activity that disturbs five or more acres must apply for coverage under a construction stormwater permit.

The Permit also has specific construction requirements for liquid manure storage areas (LMSA), permanent manure stockpiles, and feed storage area pads and runoff controls. Not all applicable technical standards are specifically included in the Permit because this information is provided within Minn. R. ch. 7020. The conditions listed in the Permit are in addition to or to clarify the requirements of Minn. R. ch. 7020. Other guidance documents available on the MPCA feedlot program website summarize the technical standards. Site-specific construction plans and specifications submitted as part of the application materials will be reviewed to ensure compliance with applicable technical standards.

C. Land Application

Part 9 of the Permit identifies the requirements the Permittee must comply with when manure ownership is transferred to another entity (manure recipient). In general, the Permittee is responsible for the manure until the manure recipient takes physical control of the manure. The Permit also prohibits transfer of manure to a recipient that will apply the manure in the winter when such application is prohibited to land owned or controlled by the Permittee.

Part 10 of the Permit specifies that the MMP must include the requirements of parts 11 through 15 of the Permit (more discussion of these requirements below). To aid the Permittee, the Nutrient Management Tool includes these requirements automatically as part of the MMP. In accordance with Minn. R. 7020.2225, subp. 1(D)(1), any person receiving manure must comply with the MMP developed as part of the permitting process. The end result is that all manure generated at the facility will be land applied under the requirements of the Permit, including when manure is applied by a manure recipient.

To help manure recipients understand the requirements within the MMP of the Permittee, the Permittee is required to provide a "*Manure Transfer Tracking Form"* generated by the Nutrient Management Tool to the recipient at the time of transfer. This document provides the recipient with the requirements of the Permittee's MMP that the recipient must follow. Although the Nutrient Management Tool is still under development, an example of the anticipated Manure Transfer Tracking form is included as Appendix I.

Parts 11 through 15 of the Permit contain the requirements for land application of manure. Generally, land application of manure is required to be done in a manner to assure maximum utilization of the nutrients by agricultural crops and minimize movement of pollutants to surface water or groundwater. The Permit accomplishes this primarily via the implementation of setbacks to water features (Part 15) and application of the nutrients in the manure at agronomic rates (Parts 11 and 12) but also provides enhanced requirements for specific times of the year (Part 13) to minimize the potential for impacts.

Part 13 of the Permit requires certain best management practices (BMPs) based on the anticipated effectiveness given the typical weather and soil conditions associated with a specific time of year. Below is a summary of requirements based upon the date of land application, which also apply to manure recipients.

- **June, July, August, and September**
  - One of the following nitrogen BMPs are required:
    - application to a growing perennial or row crop, or
    - cover crop planted prior to or within 14 days of application.

- **October 1 through October 14**
  - Unless the requirements for vulnerable groundwater areas apply one of the following nitrogen BMPs are required:
    - soil temperature below 50°F at start of application,
    - cover crop or growing crop as required for June to September,
    - nitrification inhibitor, or
    - split application.

- **October and November in vulnerable groundwater areas**
  - Beginning January 1, 2028, one of the following nitrogen BMPs are required:
    - application to a growing perennial or row crop,
    - cover crop planted prior to or within 14 days of application, or
    - perennials crops are included in the rotation at least two years during any five-year period and the soil temperature is below 50°F at the start of application.

- **December, January, and February**
  - No liquid manure application to frozen or snow-covered fields.
  - Solid manure application to frozen or snow-covered fields allowed if all of the following apply:
    - field is approved in MMP,
    - manure is not applied to vulnerable groundwater areas,
    - 300 feet setback to waters/tile intakes,
    - some runoff storage in tillage furrows,
    - slope is 6% or less (2% or less in February),
    - under 50% chance of ¼ inch or more rainfall within 24 hours of application (24 hours increases to five days for application in February), and
    - if two or more inches of snow, temperature must be below 40°F for 24 hours after application (24 hours increases to 5 days for application in February).

- **March**

- No liquid or solid manure application to frozen or snow-covered fields.

The Permit includes additional requirements for vulnerable groundwater areas across the state of Minnesota. A vulnerable groundwater area is where nitrate can move easily through soil and into groundwater which includes areas with underlying karst susceptible bedrock, coarse textured soils, shallow depth to bedrock, and highly vulnerable drinking water supply management areas. A map of vulnerable groundwater areas in Minnesota that will be subject to the permit requirements is available at: https://www.pca.state.mn.us/business-with-us/npdes-and-sds-feedlot-permits. The vulnerable groundwater area map closely aligns with the Minnesota Department of Agriculture Fall Fertilizer Restriction map. This provides less confusion for farming operations that utilize both manure and commercial fertilizer and is logical given that nitrate, whether from manure or commercial fertilizer, behaves similarly in the environment.

There is a well-documented issue with elevated nitrate levels in Minnesota waters, especially in the agricultural areas of the state. More than 70% of the nitrate in Minnesota waters is coming from cropland, the rest are from other sources such as wastewater treatment plants, septic and urban runoff, forests, and the atmosphere. There is also the well-known hypoxic zone in the Gulf of Mexico resulting from high nitrate levels in the Mississippi river, which is impacted by Minnesota farming practices.

A number of surface water streams have a long-term upward trend in nitrate levels (figure 1). It is important to note that increasing trends do not directly equate to high risk, nor does a decreasing trend or no trend mean that water quality is good. However, there are very few areas where a downward trend is detected indicating more needs to be done to improve and protect surface water quality.

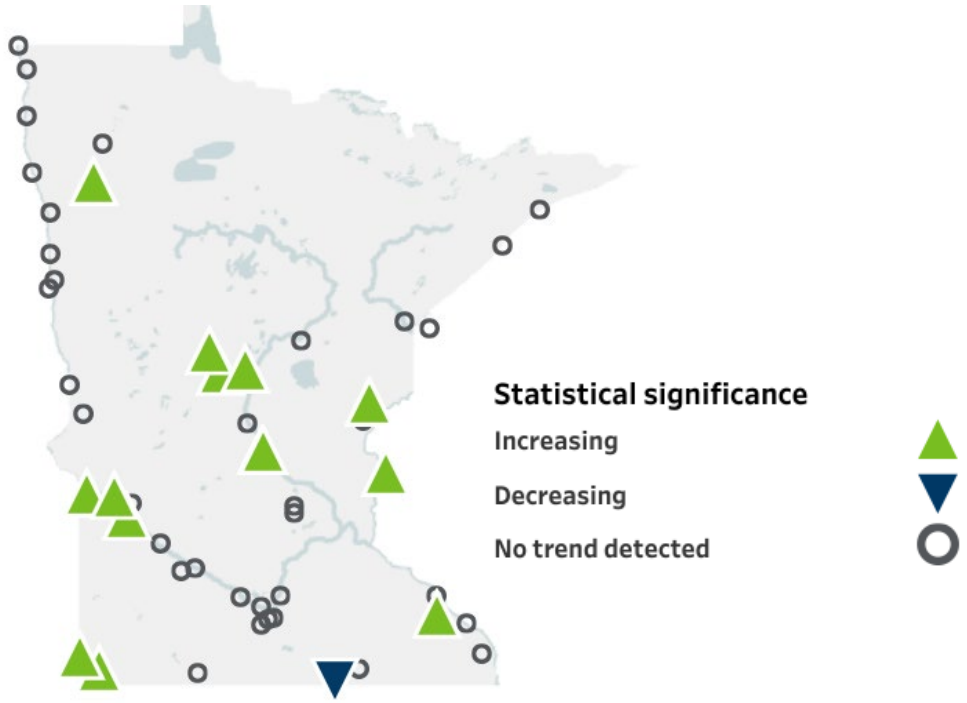

Figure 1: Long term stream nitrate concentration trends in Minnesota (2008-2020).

Groundwater nitrate trends (table 1) paint a similar picture to the trends in surface waters. Just looking at wells that are already above the Minnesota Department of Health drinking water standard of 10 milligram per liter (mg/L), about 82% of these wells show no trend or even an upward trend. Again, these trends show that more needs to be done to improve and protect groundwater quality, particularly in vulnerable areas.

Table 1: Groundwater monitoring nitrate trend between 2013 and 2023 (MDA, MPCA, DNR)

Most recent Nitrate concentration, in mg/L	Trending down	No trend	Trending up	Total
Not detected	15	58	0	73
< 3 mg/L	17	68	2	87
3 – 10 mg/L	12	49	11	72
> 10 mg/L	7	27	4	38
SUM	**51 (19%)**	**202 (75%)**	**17 (6%)**	**270**

The Minnesota Department of Agriculture (MDA) nitrogen fertilizer rule also documented significant issues with nitrates in private drinking water wells. Figure 2 illustrates the impacts to wells from cropland sources based on the MDA final nitrate testing results (May 2022). More than 10% of private wells in the 143 townships tested exceed the drinking water standard.

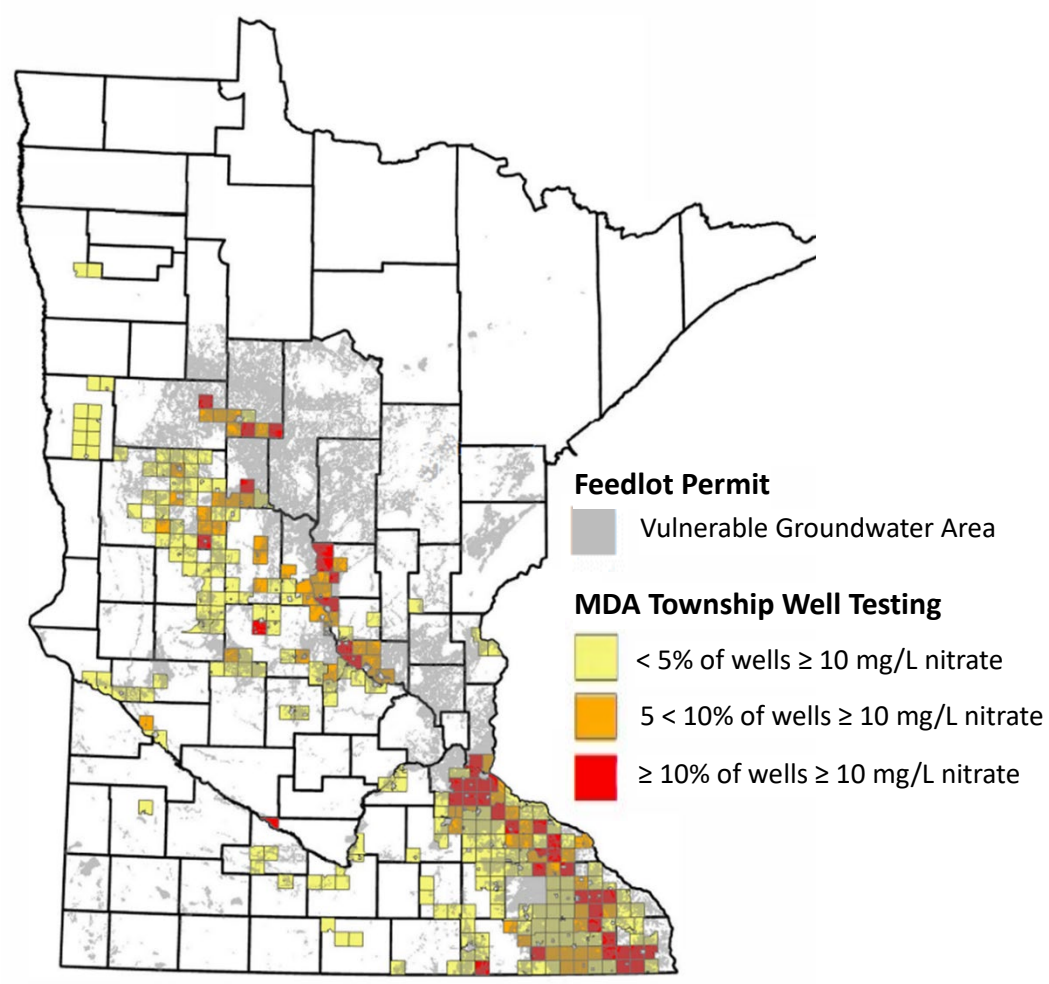

Figure 2: MDA final township testing results and the MPCA proposed vulnerable groundwater areas map.

The current corn and soybean row crop production system employed across the state of Minnesota is commonly referred to as a “leaky” system. The use of the term “leaky” primarily stems from the propensity of nitrogen loss to the environment in the form of nitrate due to the ease with which it is transported with water. Many factors, including those not under the control of the farmer, influence nitrogen loss in row crop systems. These include temperature, precipitation, soil type, organic matter, crops grown, tillage practices, and nitrogen application rates to name a few.

Studies, such as *Nitrogen Application Rate Effect on Nitrate-Nitrogen Concentration and Loss in Subsurface Drainage for a Corn-Soybean Rotation (Lawlor et al., 2008)* have documented over a 16-year study that nitrate loss can occur under different nitrogen application rates that range from well below to well above typical nitrogen application rates. The Strock et al., 2004 study *Cover Cropping to Reduce Nitrate Loss through Subsurface Drainage in the Northern U.S. Corn Belt* makes this point very succinctly, "Despite the use of best management practices for nitrogen (N) application rate and timing, significant losses of nitrate nitrogen (NO_3 –N) in drainage discharge continue to occur from row crop cropping systems."

Especially in areas of Minnesota susceptible to groundwater contamination, the additional measures of the permit are needed to further limit the potential for nitrate loss to water resources.

Just as MDA has requirements to address commercial fertilizer's contribution to the nitrate issues in the vulnerable areas of Minnesota (i.e., no fall application), the MPCA determined that it is necessary to enact similar measures for manure application to limit nitrate loss to the environment. Like MDA, the MPCA is focusing on moving manure application to spring to limit the amount of time nitrogen is in the soil profile and susceptible to conversion to nitrate that can lead to potential losses to the environment. The best management practices for nitrogen use in Minnesota developed by the University of Minnesota, also recommend eliminating fall application of nitrogen in areas with coarse textured soils or karst susceptible bedrock (the vulnerable groundwater areas of Minnesota). Even so, the MPCA acknowledges the challenges associated with spring manure application in some situations and has proposed to allow fall application, provided additional nitrogen BMPs are employed as part of the fall application.

Data from a midwestern state literature review done as part of the Iowa nutrient reduction strategy (table 2) shows that the practices allowed by the permit as part of fall manure application, cover crops and extended rotations, have the potential for reductions in nitrate leaching.

Table 2: Potential impact on nitrate-N reduction and corn yield.
Adapted from the Science Assessment section of the Iowa Nutrient Reduction Strategy (updated 2024)

Practice	Comments	% Nitrate-N Reduction Average (SD*)	% Corn Yield Change Average (SD*)
Cover Crops	Rye (rotational average)	28 (26)	0 (10)
	Rye (C/S rotation – following corn)	27 (30)	---
	Rye (C/S rotation – following soybeans)	30 (27)	---
	Oat	25 (6)	-4 (1)
Extended Rotations	At least 2 years of alfalfa in a 4 or 5 year rotation	27 (25)	7 (6)

* SD = standard deviation

The University of Minnesota also acknowledges cover crops as a viable way to reduce soil nitrate levels in Minnesota (see figure 5 below).

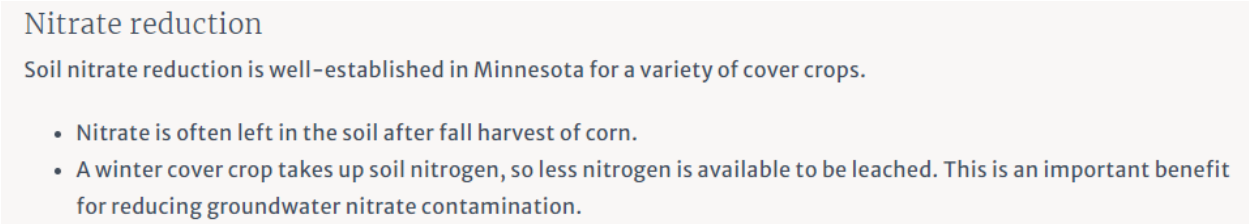

Figure 5: Benefits of cover crops
(Source: University of Minnesota - https://extension.umn.edu/soil-and-water/cover-crops)

Cover crops establish vegetative growth when the ground would otherwise be bare. Cover crops can utilize nitrogen in the soil profile before and after row crop utilization of soil nitrogen. Figure 3 (below) is a graphic from a presentation given by Anna Cates at the University of Minnesota that illustrates the nitrate leaching mitigation potential of cover crops.

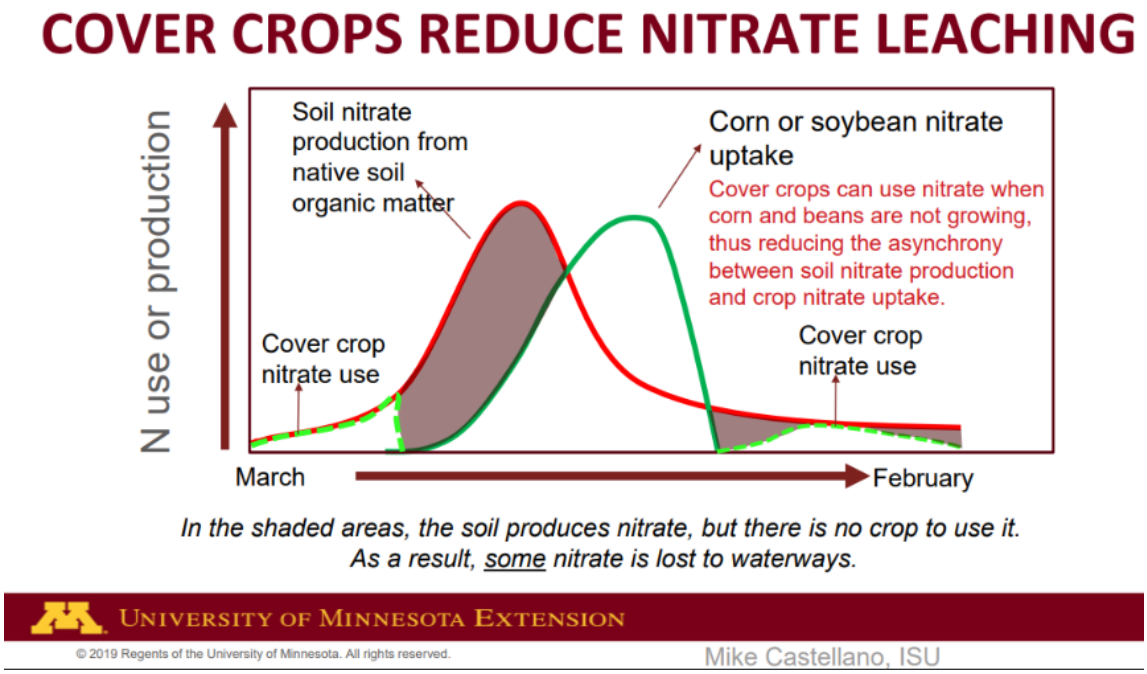

Figure 3: Cover crop nitrate mitigation potential (Source: Anna Cates - University of Minnesota)

Establishment of cover crops in Minnesota will also be influenced by some of the same factors mentioned above that influence nitrogen loss, in particular weather. It also is important to consider that the situations favorable for cover crop growth, warm fall/spring temperatures and adequate to above average soil moisture/precipitation are also conditions favorable for the natural mineralization of organic nitrogen into ammonium-N which can easily transform into nitrate. Both warm temperatures and wet soil conditions increase the potential for loss, whereas cool and dry conditions have less potential for loss. In other words, cover crops work the best when conditions are also most favorable for nitrate losses.

There have been a number of studies that illustrate cover crops are effective at reducing nitrate leaching potential for fall applied nitrogen. Some of these studies are listed below with a summary of the results of the study for nitrate reductions from cover crops.

One of the most directly applicable studies is *Managing nitrogen from manure with a winter rye cover crop: Results of on-farm trials in Minnesota (Everett et al., 2018).* This study specifically looked at the feasibility of using cover crops in conjunction with fall application of manure in Minnesota. The study documented nitrate reductions from cover crops in all 19 trials in the two-year period of the study, including those at a farm scale. Further this study concluded that even if dense fall growth of cover crops is not achieved prior to the winter season, nitrate reductions were still observed following spring termination of the cover crop. Planting dates over the two-year study ranged from September 25 to November 8 indicating that it is possible to establish cover crops in Minnesota during the months of September and October. Even when manure was applied in the late fall (November – early December), a common nitrogen BMP, fields with cover crops demonstrated a greater nitrate reduction than those without cover crops. This study also was able to show that manure injection to a standing cover crop could be accomplished with nitrate reductions still observed.

A study from the Morris area, *Winter Rye Cover Crop Management Influences on Soil Water, Soil Nitrate, and Corn Development (Krueger et al., 2011),* also found significant reductions in soil nitrate leaching when cover crops were used as part of a fall manure application to corn silage fields.

Cover Cropping to Reduce Nitrate Loss through Subsurface Drainage in the Northern U.S. Corn Belt (Strock et al., 2004) attributes a reduction in nitrate loss to cover crops planted after corn for grain harvest. While it does acknowledge difficulties in getting consistent cover crop growth it concludes, "Cover cropping with rye has the potential to be an effective management tool for reducing NO_3-N loss from subsurface drainage discharge despite challenges to establishment and spring growth in the north-central USA."

Another study from the University of Minnesota (*Vegetative Cover Crops as a Nitrate Reduction Strategy for Tile Drainage Water, Vetsch 2000*) concludes that cover crops can reduce nitrate leaching if weather permits adequate crop growth. Here are some direct quotes from that research. "Warm Sep and Oct in 2016 and Apr in 2017 were ideal for cover crop germination and growth, especially cereal rye that was terminated on 17 Apr. In 2017, NO3-N concentrations and flow-adjusted losses were 70 and 20% less with cereal rye and annual blend than no cover, respectively." "Even though a cold Apr in 2018 (13° F below normal) hindered rye growth, NO3-N concentrations and flow-adjusted losses were about 20% less with cereal rye than no cover." "A wet and cold fall in 2018 and spring in 2019 resulted in very little cover crop growth. Cover crops did not affect NO3-N concentrations, NO3-N losses or corn grain yields in 2019."

While it is true that cover crop growth is variable form year to year, it is very difficult to predict which year a cover crop will be most effective as growth is very weather dependent. As the Vetsch and Everett studies indicated even if one of the growing periods for cover crops (fall or spring) is cool and doesn't promote vigorous vegetative growth, a reduction of soil nitrate levels is still possible.

In the Vetsch study it was only when both fall and spring were cool and wet that the cover crop did not show a reduction in soil nitrate levels. Therefore, a cover crop should be planted each year with anticipation that weather conditions will allow adequate growth of the crop to limit nitrate leaching potential. Figure 4 (below) is a graph of the data from the Vetsch study that illustrates the reduction in soil nitrate concentration in 2016 through 2017 when the weather was favorable for cover crop growth.

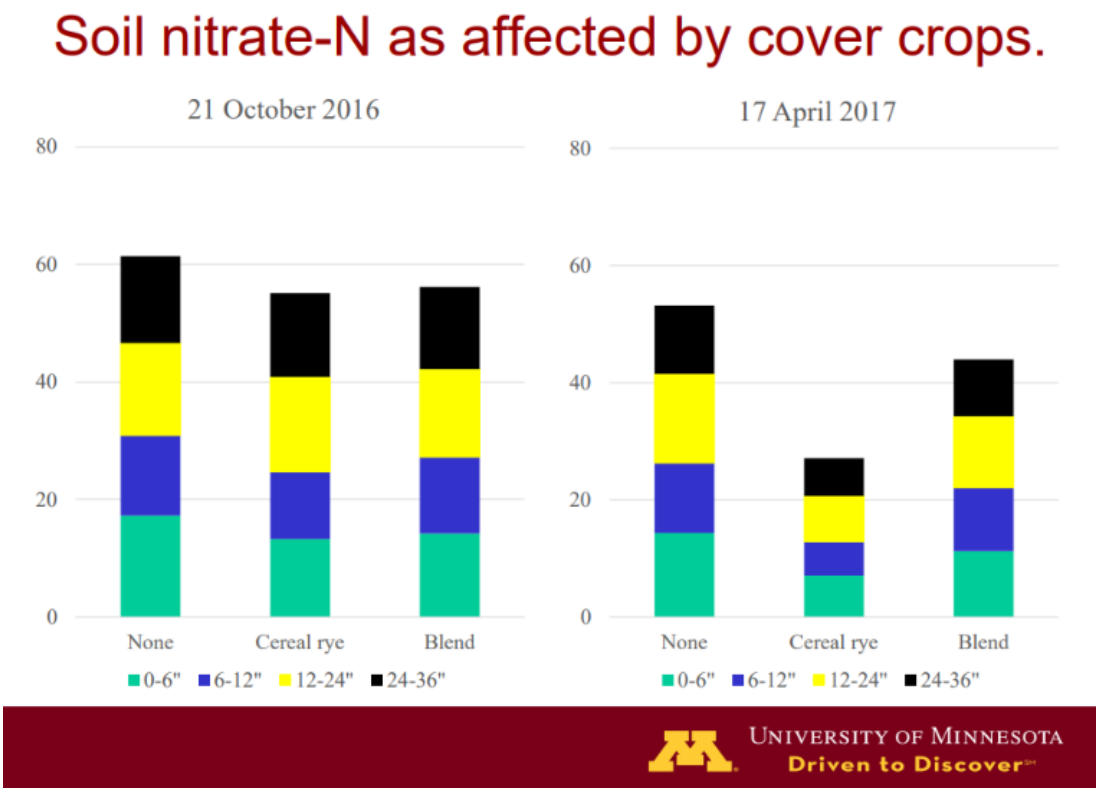

Figure 4: Cover crop effects on soil nitrate levels (Source: Brad Carlson University of Minnesota)

A study done by Tom Kaspar of the U.S. Department of Agriculture - Agricultural Research Service (USDA-ARS) in Iowa (*Cover Crops for Soil and Water Quality*) found significant reductions in nitrate concentrations of tile drainage from fields that planted a rye cover crop as part of their corn and soybean rotation. In all but one year of the study a rye cover crop reduced nitrate concentrations in the tile drainage to levels that meet the U.S. Environmental Protection Agency drinking water standard of 10 mg/L. This study also found that even when oats was used a cover crop for fall only, there were significant reductions in nitrate concentrations in the tile drainage. A summary of the results is found in Figure 5.

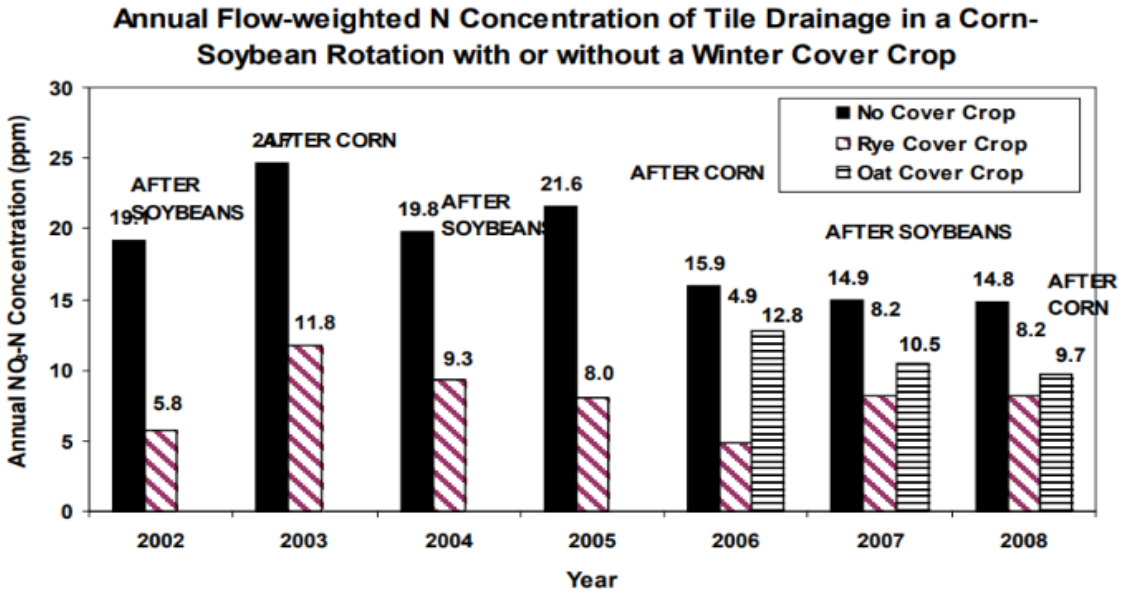

Figure 5: Nitrate concentration of tile drainage (Source: *Cover Crops for Soil and Water Quality* - Kaspar)

Furthermore, when looking at annual nitrogen loss in lbs/acre (Figure 6 below), this same study found that across all seven years of the study a rye cover crop prevented a total of 185 lbs of nitrogen loss or an average of 26 lbs per year of the study.

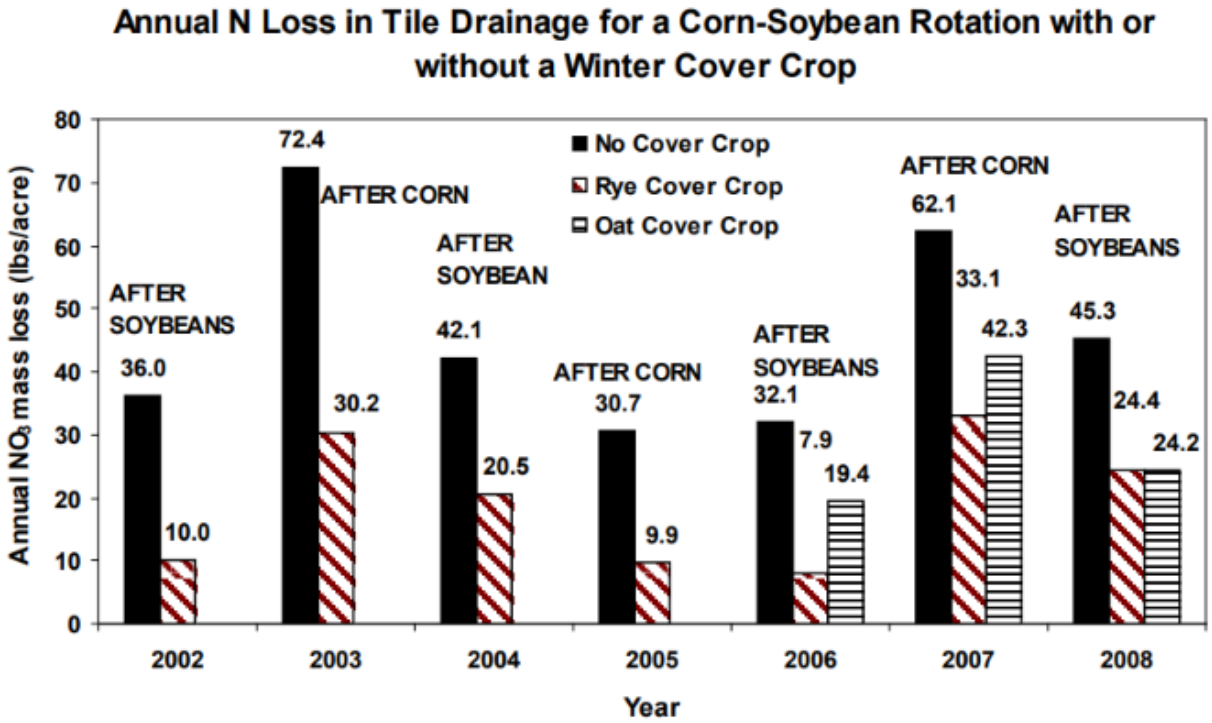

Figure 6: Annual nitrate loss in tile drainage (Source: *Cover Crops for Soil and Water Quality* - Kaspar)

There is also some recent research from the University of Minnesota (Wilson and Fernandez) that shows lesser reductions in nitrate leaching potential for cover crops than some of the older, yet relevant, studies presented in this document. This work, of which some has yet to be published, does acknowledge that limited growth of the cover crop was a major factor for the limited nitrate reduction. As discussed previously, cover crop growth is very weather dependent and there is no doubt that some years cover crops will not vigorously grow and in turn result in limited nitrate leaching reductions; however, the years that are favorable for cover crop growth also typically represent the years of greatest nitrate leaching potential.

Note: The studies presented in this document are not an exhaustive list of research done on the topic of cover crops effects on nitrate leaching but rather a list of regionally based research about the topic.

Similar to cover crops, perennials in the rotation also can achieve reductions in nitrate leaching potential. The most common perennial in Minnesota is alfalfa. The alfalfa plant does not require nitrogen application to promote growth as it is able to fix nitrogen from the atmosphere; however, alfalfa will utilize nitrogen in the soil before fixing its own nitrogen. The alfalfa plant also has longer roots than a corn or soybean plant which means it is able to reach nitrate at a greater depth in the soil. Finally, alfalfa provides living cover that will utilize nitrogen in the spring and fall when under a convention corn and soybean-based row crop rotation the ground is bare, which is very similar to the function of cover crops.

As outlined in table 2 (page 10), the Iowa Nutrient Reduction Strategy literature review found that having perennials in the rotation two out of five years can reduce nitrate leaching potential.

Additionally, some work from MDA, *Examination of Soil Water Nitrate-N Concentrations from Common Land Covers and Cropping Systems in Southeast Minnesota Karst (Kuehner et al.),* measured a drastic reduction of nitrate when alfalfa was a significant part of the crop rotation (second from the right in figure 7) in comparison to the typical corn and soybean crop production practices (far right in figure 7).

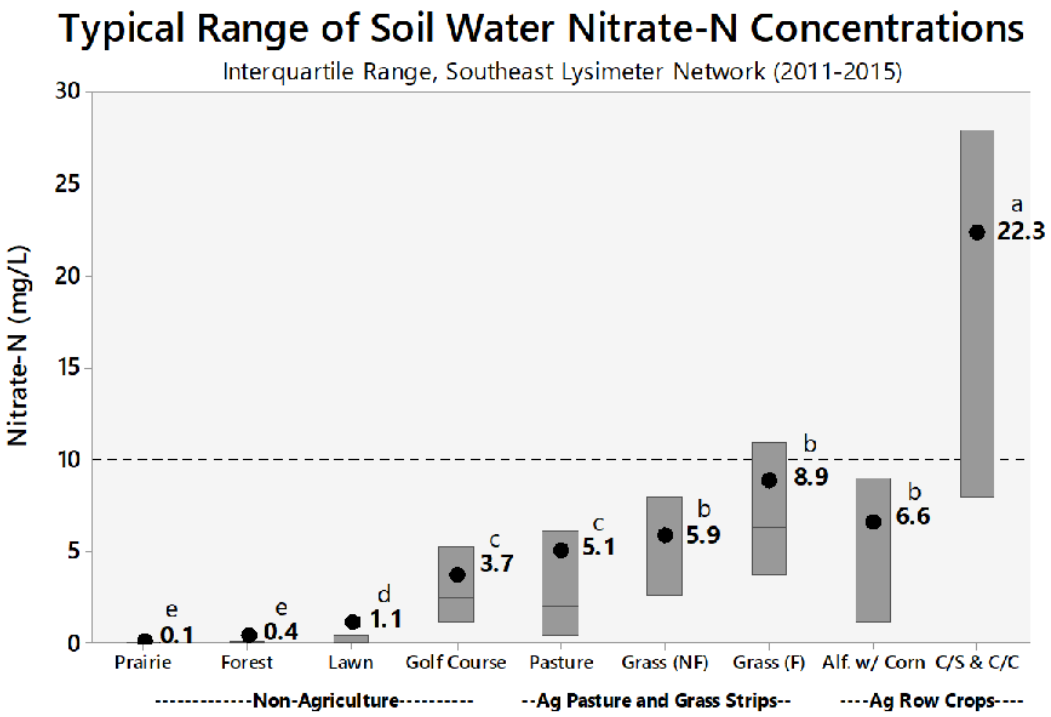

Figure 7. Soil water nitrate-N concentrations across nine different land types in SE Minnesota from 2011 to 2015.

A few final points to also consider about nitrogen BMPs in conjunction with fall manure application. The permit does allow for implementation of alternatives should new research indicate other practices provide similar nitrate leaching reduction capacity as the BMPs included in the Permit. Also, spring application remains an option for manure application and does not require nitrogen BMPs that are applicable when manure is fall-applied.

Part 14 of the Permit includes the requirement for visual inspections of land application sites. Inspections are required to look for signs of discharge from the field during the application, at the end of each workday, and after a ½ inch or greater rainfall event within 14 days of the application, unless the manure is injected or incorporated. Inspections must take place at all downgradient field boundaries and other potential discharge locations such as, water features, tile intakes, and ditches. If a discharge is observed, it must be reported to the Minnesota State Duty Officer and the MPCA. The responsible party must take all actions necessary to minimize the discharge, to recover the material released, and to mitigate impacts to waters of the State as specified by part 27 of the Permit. Manure recipients are also required to comply with these requirements.

D. Facility Operation and Maintenance

Parts 16 through 19 of the Permit contains conditions pertaining to the overall operation and maintenance of the facility and its manure storage areas and feed storage areas. At a minimum, the production area must be designed, constructed, operated, and maintained to contain all manure, process wastewater, contaminated runoff, and direct precipitation from a 25-year, 24-hour storm event.

The Permittee is required to visually monitor levels in liquid manure storage areas and notify the MPCA whenever the level encroaches in the freeboard of the structure, which is a minimum of one foot. The MPCA then works with the Permittee to return the levels back to a normal operating condition as quickly as possible.

The Permit also includes an exemption from the ambient air quality standards during manure removal activities as allowed in Minn. R. ch. 7020.

E. Required Inspections

Parts 20 through 22 of the Permit contain the schedule for the feedlot owner to complete routine inspections of the production area to assess conformance to the Permit. The Permit also identifies the schedule to correct any deficiencies found as result of the inspections.

F. Closure

Part 23 of the Permit provides the requirements for the permanent closure of all or part of the feedlot. These requirements address the removal of manure and manure contaminated material and notification to the MPCA.

G. Recordkeeping and Reporting Requirements

Part 24 of the Permit requires records of facility maintenance, required facility inspections, ambient air quality exemption requests, facility monitoring, and land application activities to be kept at the feedlot for a minimum of six years.

Part 25 of the Permit requires the submittal of an annual report of facility activities to the MPCA by March 1st of each year. The Permit requires the use of the MPCA online Annual Report service. The service is currently under development but is anticipated to be available by the time the first annual report required by the Permit is due. The online Annual Report will contain all the necessary information to satisfy applicable record keeping rules and Permit requirements. In the event of a delay in the availability of the online service, the Permittee is authorized to continue use of the current paper annual report form available at: www.pca.state.mn.us/water/npdes-and-sds-permits.

H. Effluent Limitations

The discharge limitations covered in Part 26 of the Permit are based on Minn. R. ch. 7020. Discharges covered by the Permit include discharges containing manure, litter, process wastewater and/or manure-contaminated runoff from the production area and land application sites.

As only an NPDES Permit can authorize a discharge to waters of the United States from a CAFO, the effluent limitation of the Permit includes one requirement for discharge to waters of the United States and another for discharge to waters of the State.

Waters of the United States - The Permit prohibits discharge of pollutants from the production area to waters of the United States.

Waters of the State - The Permit prohibits discharge of pollutants from the production area to waters of the State except when precipitation causes the discharge, and the facility is in compliance with the Permit and Minn. R. 2020.2003. In most situations, this means a discharge is authorized from the production area to waters of the State when it is the direct result of precipitation from a 25-year, 24-hour storm event.

Discharge from land application areas to either waters of the United States or waters of the State is prohibited unless the discharge is an agricultural stormwater discharge, which is a precipitation-related discharge from manure application areas where manure has been applied in accordance with the approved MMP.

I. Discharges, Spills, and Overflows

Part 27 of the Permit requires immediate reporting to the Minnesota Duty Officer any discharge, spill, or overflow, including those authorized by the Permit. The report must contain information about any associated fish kill or impacts to drinking water supply management areas. When a discharge, spill, or overflow occurs, whether authorized by the Permit or not, the Permittee must take all actions necessary to minimize the amount released, recover the material released, and mitigate impacts to waters of the State.

Part 28 of the Permit requires monitoring of any discharge to waters of the State, including spills or overflows that reach water of the state. A spill or overflow that does not reach waters of the State is not subject to the requirement of Part 28. A sample of the discharge is required to assess its impact to water resources and compliance with state discharge standards. Sampling is required of authorized and unauthorized discharges. If the conditions are not safe for sampling or if the discharge has stopped as a result of the Permittee's immediate actions to stop the discharge, sampling is not required.

8. PRELIMINARY DETERMINATION

The MPCA Commissioner's determination that the Permit should be issued is preliminary.

9. PROCEDURES FOR REACHING A FINAL DECISION ON THE PERMIT

The procedures for public participation in the MPCA's consideration of permit issuance are included in the public notice document.

Appendix I. Example of a Manure Transfer Tracking form generated by the Nutrient Management Tool.

Manure Transfer Tracking Form for 2024-2025
Created: 08/09/2024 10:12:18 AM

Feedlot Information
Feedlot name: Skyview
Dairy Inc Permit type:
NPDES General Permit
ID: MNG441937
Registration ID: 085-65347

Table 1. Manure sources identified for transfer during this crop year.

	Manure source	Date last analyzed	Total nitrogen	Inorganic nitrogen	Organic nitrogen	Total phosphorus	Total potassium	Units
1	Dairy Liquid	11/01/2023	30	8	22	18	22	lb/1000gal

Instructions

Step 1: Manure generator gives this entire document to the manure recipient.

Step 2: Manure generator or recipient records the applicable information in table 2 for any stockpiling activities.

Step 3: Manure recipient or commercial applicator applies manure at a rate calculated using the manure nutrient test results from table 1 (See appendix A for guidance on calculating rates).

- Make sure to observe all required setbacks, timing restrictions, soil phosphorus management, and any other applicable requirements.
- If you have a manure spill, contact the state duty officer at 800-422-0798.

Step 4: Manure recipient records the field, crop, and nutrient application information in tables 3 and 4.

Step 5: Manure recipient makes a copy of this completed document and **returns it to the manure generator**.

- Manure recipient keeps the original completed document for their records (up to six years).

Manure stockpiling activities

Table 2. Manure stockpile information (leave blank if not applicable)

County	Township	Range (circle E or W)	Section	Quarter	Quantity (tons)	Date established (mm/dd/yyyy)	Date land applied (mm/dd/yyyy)
	T ___ N	R ___ E/W					
	T ___ N	R ___ E/W					
	T ___ N	R ___ E/W					
	T ___ N	R ___ E/W					
	T ___ N	R ___ E/W					

Commercial animal waste technician

Leave blank if not applicable

Name: _____ License number: _____

Address: _____

City: _____ State: _____ Zip: _____

Field location and soils information

Table 3. Field location and soil test information

	Field ID and name	County	Township	Range (circle E or W)	Section	Soil phosphorus testing: Test year	Soil phosphorus testing: Field Average	Soil phosphorus testing: Bray or Olsen	Soil phosphorus testing: Organic matter Med/High or Low
Ex	Example	Brown	T 110 N	R 32 E(W)	17	2023	40	Bray	Med/High
F1			T ___ N	R ___ E/W					
F2			T ___ N	R ___ E/W					
F3			T ___ N	R ___ E/W					
F4			T ___ N	R ___ E/W					
F5			T ___ N	R ___ E/W					
F6			T ___ N	R ___ E/W					
F7			T ___ N	R ___ E/W					
F8			T ___ N	R ___ E/W					
F9			T ___ N	R ___ E/W					
F10			T ___ N	R ___ E/W					
F11			T ___ N	R ___ E/W					
F12			T ___ N	R ___ E/W					
F13			T ___ N	R ___ E/W					
F14			T ___ N	R ___ E/W					
F15			T ___ N	R ___ E/W					

Nutrient application records

Table 4. Nutrient application records

Field ID *from table 3*	Crops				Manure application							Nitrogen (lbs/ac)							Phosphorus (lbs/ac)		
												Applied this year			Carry-over				Applied this year		
	Crop grown to utilize the nutrients applied	Crop most recently harvested	Expected yield (crop receiving manure)	N Needs (lb/ac) (removal for legumes)	Manure source ID From table 1	Acres applied	Dates of application		Application rate per acre	Method Knife injection Sweep injection Coulter injection Tanker with discs Surface <12 hr Incorp Surface <4 day Incorp Surface 4+ day Incorp	Inspections [a] (check if completed)	Manure	Fertilizer (include starter)	Irrigation [b]	Manure [c] last year	Legume 2 years ago	Total plant available N1 + N2 + N3 + N4 + N5	Nitrogen BMP [d] Sept 1 – Oct 14	Manure	Fertilizer (include starter)	Total plant available P1 + P2
							Start	*End*				*N1*	*N2*	*N3*	*N4*	*N5*	*Sum*	*see list below*	*P1*	*P2*	*Sum*
Ex	*Corn*	*Corn*	200	195	*1*	*40*	*10/7/23*	*10/9/23*	*6000*	*Knife Injection*	☒	100	7	0	26	65	198	B	50	10	60
F1											☐										
F2											☐										
F3											☐										
F4											☐										
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F15											☐										

[a] Only required for manure from NPDES or SDS permitted sites 1) during event, 2) end of each day, & 3) after ½+ in. rain within 14 days of end of app (unless injected/incorporated)

[b] Crop available nitrogen from nitrate in irrigation water is calculated as follows: water sample nitrate (ppm) x acre-inches of water applied x 0.228 = N applied in lbs/acre

[c] Instructions on how to calculate this value are found within Appendix A to this document.

[d] Encouraged for all nitrogen application to minimize nitrogen loss and yield reductions. Only required for manure from NPDES or SDS permitted sites.
BMPs for September: A) Cover crop **BMPs for October 1 -14:** A) Cover crop, B) Soil temps 50ºF or less, C) Nitrogen stabilizer, D) Split application, E) Pre-approved alternative

Appendix A - Manure recipient minimum requirements

Anyone that receives manure must comply with the land application of manure requirements of Minn R. 7020.2225 summarized below.

I. Nitrogen rate limits

All sources of nitrogen must be considered when calculating nitrogen application rates. This includes commercial fertilizer (starter or supplemental), residual nitrogen from alfalfa grown two years ago, nitrates in groundwater, and manure applied last year. Estimated plant-available N from all sources combined should not exceed the nitrogen recommendations of the University of Minnesota.

For corn crops, maximum plant-available N to apply (from all sources) is:

195 lbs/N for corn following corn, and

150 lbs/N for corn following soybeans.

Plant-available N applied to legumes cannot exceed legume nitrogen removal rates:

3.5 lbs N per bushel of soybeans,

50 lbs N per ton of alfalfa, and

27 lbs N per ton grass hay.

Nitrogen best management practices (BMP)

A cover crop is required when manure is applied in June, July, or August (also encouraged for September).

Although not required, the following BMPS are encouraged for manure applications October 1 to October 14:

soil temps are less than 50°F at the start of manure application,

use a nitrogen stabilizing agent/product at the recommended rate, and

cover crop.

How to calculate a manure application rate for the upcoming crop

Desired amount of N from manure ÷ Availability factor (# from table 5/100) ÷ Manure N Test **X** 1000 (Liquid only) = Application Rate (tons or gal/acre)

How to calculate N available from manure applied for the upcoming crop

Application Rate (tons or gal/acre) **X** Availability factor (# from table 5/100) **X** Manure N Test ÷ 1000 (Liquid only) = N available this year (lb/ac)

How to calculate N available this year from manure applied to the previous crop

Application Rate Last Year (tons or gal/acre) **X** Availability factor 0.15 for swine 0.25 for all others **X** Manure N Test Last Year ÷ 1000 (Liquid only) = N available this year from manure last year (lb/ac)

Table 5. Percent of total manure nitrogen available the first year

	Application via surface broadcast				Application via injection		
Animal Type	**Incorporation after 4 days**	**Incorporation 12 - 96 hrs**	**Incorporation within 12 hrs**	**Tanker with double discs**	**Coulter**	**Knife**	**Sweep**
Beef	25	45	60	60	50	50	60
Dairy	20	40	55	55	50	50	55
Swine	35	55	75	75	70	70	80
Poultry	45	55	70	70	70	70	70

II. Manure application timing and setbacks

Setbacks and proper timing of manure application are critical to avoid potential impacts from runoff. Avoid manure application when rainfall is likely or when soils are saturated. Also avoid application to frozen or snow-covered ground during the month of March and other times during the winter when snowmelt is likely.

Always be sure to observe the required setbacks summarized below.

Table 6. Required manure application setbacks (county setbacks may be more restrictive)

Feature	Minimum for all applications (including injection)	Surface applied with incorporation after 24 hours
Lakes, rivers, streams, intermittent streams [a]	25′	300′[b]
Wetlands (10+ ac)	25′	300′ [b]
Drainage ditches without berms	25′	300′ [b]
Open Tile Intakes	0′	300′
Sinkholes without berms	50′	50′ (downslope) & 300′ (upslope)
Wells and quarries	50′	50′

[a] *Does not include stretches of intermittent streams managed as grassed waterways.*

[b] *100' vegetated buffer can be used for non-winter applications (50' buffer for wetlands/ditches).*

III. Soil phosphorus (P) management

You must test soils for P at least once every four years.

Where soils test P levels exceed 21 Bray P-1 or 16 Olsen within 300 feet of waters [c], the rate and frequency of manure applications must not allow soil phosphorus build-up over a six-year period, unless a 50 to 100 feet vegetative buffer is established along the waters. Single year applications can be based on nitrogen if the remaining phosphorus is removed by subsequent crops.

Avoid manure application onto fields where soils exceed:

150 ppm Bray P-1 or 120 parts per million (ppm) Olsen, and

75 ppm Bray P-1 or 60 ppm Olsen within 300 feet of waters [c] or tile intakes.

[c] "waters" refers to lakes, streams, intermittent streams, wetlands over 10 acres, and drainage ditches without berms

IV. Short-term stockpiling

Stockpiles are prohibited on/within:

shoreland or floodplain;

land with greater than a 2% slope (6% slope if clean water diversion is installed);

land where soil texture to a depth of five feet is entirely coarser than a sandy-loam;

sand/gravel pits, quarries, on bedrock;

land that has a seasonal high-water table within two feet of the surface;

land previously used for a short-term stockpile that has not had cover/crop for one full growing season.

Table 7. Required short-term stockpile setbacks (county setbacks may be more restrictive)

Feature	Minimum setback
Waters of the State, tile intakes, road ditches, sinkholes, non-farmed wetlands, and rock outcrops	300 ft of flow distance and at least 50 ft horizontal distance
Private well	100 ft [d]
Public water supply well	1,000 ft
Drain tile with less than 3 ft of soil cover	100 ft

[d] *Setback increases to 200 ft for vulnerable wells (lack of casing and/or confining layer)*

Appendix B – Additional manure recipient requirements when manure is generated at a NPDES or SDS permitted facility.

In addition to the requirements of Appendix A, anyone receiving manure from a facility with a NPDES or SDS permit must comply with the requirements of the manure generators permit to minimize the risk of surface or groundwater contamination. This appendix summarizes the minimum requirements.

In general, manure or process wastewater must be land applied in a manner that will not:

- result in a discharge to waters of the state during the application process; or
- exceed the hydraulic loading capacity of the land application site based on soil conditions.

I. Timing requirements

Figure 1: Manure application requirements based on application date

September 1 – 30

Cover crop or growing crop required

- Cover crop must be planted prior to or within 14 days of manure application

December 1 – February 29

Winter application restrictions for frozen or snow-covered fields

- No liquid application
- Solid application is allowed if...
  - the field is not located within a vulnerable groundwater area
  - 300 ft setback to waters/intakes
  - Some runoff can be contained in tillage furrows *(not filled with snow/ice/water)*
  - Slope is 6% or less *(6% reduces to 2% or less in Feb)*
  - Under 50% chance of 1/4+ inch rainfall within 24 hours after application *(24 hours increases to 5 days in Feb)*
  - If 2+ inches of snow, temp under 40 F for at least 24 hours after application *(24 hours increases to 5 days in Feb)*

March 1 - 31

Winter application prohibited to any frozen or snow-covered field

- No liquid application
- No solid application

Manure can be applied to fields that are not frozen or snow covered.

October 1 – November 30

You must first determine if the field is located in a vulnerable groundwater area

- A map of vulnerable areas is found at: www.pca.state.mn.us/feedlots

Vulnerable groundwater areas

Note: Vulnerable area requirements begin in 2028, until then follow the nitrogen BMPs for non-vulnerable areas

Pick 1 of 3 options below

- Application to an actively growing perennial
- Cover crop planted prior to or within 14 days of manure application
- Crop rotation has perennial 2 out of 5 years and soil temp 50 F or less at application start

Non-vulnerable groundwater areas

Nitrogen BMP required Oct 1 – 14 only

Pick 1 of 4 options below

- Soil temp 50 F or less at application start *(MDA soil temp network or in-field measurement)*
- Cover crop or growing crop *(same as Sept)*
- Nitrification inhibitor
- Split application *(max of ½ crop N needs)*

June 1 – August 31

Cover crop or growing crop required

- Cover crop must be planted prior to or within 14 days of manure application

Note: This is required for all feedlots in MN

II. Inspections of all fields

Visual inspections of all land application fields to check for manure discharge are required at the following times:

- at least once during the land application event;
- at the end of the application event or at the end of each working day; and
- as soon as possible within 24 hours of a rainfall of ½ inch or greater that occurs within 14 days of the end of the application, unless the manure is injected or incorporated.

If a discharge is discovered, it must be reported to the Minnesota Duty Officer (800-422-0798).

III. Other requirements

- Manure must be immediately incorporated/injected if there is at least a 50% chance of rainfall of at least ½ inch predicted within 24 hours of the end of the application period.
- Manure application is prohibited within 100 ft of a well, mine, or quarry.
- Manure application is prohibited within 100 ft of an unbermed sinkhole.
- Manure must be hauled in such a way as to prevent manure from leaking, spilling, or otherwise being deposited on a road surface or in the right-of-way.
- Manure deposited on a roadway or in the right-of-way must be promptly removed and properly disposed of by the hauler of the manure.
- Equipment used for land application must be:
  - calibrated according to University of Minnesota Extension System (MES) or Natural Resources Conservation Service (NRCS) procedures so that actual application rates are known, and
  - periodically inspected for leaks.
- Soil erosion conservation practices must be utilized when manure will be applied to fields during frozen or snow-covered soil conditions and all areas of fields within 300 feet of all special protection areas, surface tile intakes, sinkholes without constructed diversions, and uncultivated wetlands.