FACT SHEET FOR STATE AFO PERMIT
NDAFO0916

BLACKHAWK FARMS
VALLEY CITY, ND

DATE OF THIS FACT SHEET – OCTOBER 30, 2026

INTRODUCTION

The North Dakota Department of Environmental Quality (department) has been designated the state water pollution control agency for all purposes of the Federal Water Pollution Control Act, as amended [33 U.S.C. 1251, et seq.], and is hereby authorized to take all action necessary or appropriate to secure to this state the benefits of the act and similar federal acts. The department's authority and obligations for the control of pollution from animal feeding operations in the North Dakota Administrative Code (NDAC) chapter 33.1-16-03.1 which was promulgated pursuant to the North Dakota Century Code (NDCC) chapter 61-28. The State of North Dakota is delegated primacy of the Animal Feeding Operation program by EPA. The Rules and Regulations for the Control of Pollution from Certain Livestock Enterprises were first issued in 1972 and updated in 1989, 2005, and 2018.

The following rules or regulations apply to feedlot operations permits:

- Operations requiring a permit (NDAC Section 33.1-16-03.1-05),
- Authority for issuing Feedlot Permits (NDAC Section 33.1-16-03.1-01), The Department of Environmental Quality has been authorized to provide and administer this chapter relating to the control of pollution from animal feeding operations under the provisions of North Dakota Century Code Section 61-28-04.
- Procedures the department follows for issuing Feedlot permits (NDAC Chapter 33.1-16-03.1),
- Standards of Quality for Waters of the State (NDAC Chapter 33.1-16-02.1)

According to the NDAC section 33.1-16-03.1-13, if the department determines a significant degree of public interest exists regarding new or expanding facilities, it shall issue a public notice requesting comment on applications for both individual permits and general state animal feeding operation permits. The department shall provide a period of not less than thirty days during which time interested persons may submit comments.

For more information regarding preparing and submitting comments about the fact sheet and permit, please see **APPENDIX A – PUBLIC INVOLVEMENT INFORMATION**. Following the public comment period, the department may make changes to the draft permit. The department will summarize the responses to comments and changes to the permit in **APPENDIX D – RESPONSE TO COMMENTS.**

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TABLE OF CONTENTS

FACT SHEET FOR STATE AFO PERMIT 1
BACKGROUND INFORMATION 3
FACILITY DESCRIPTION 3
GROUNDWATER AND SURFACE WATER 3
MANURE HANDLING AND DISPOSAL 5
ODOR CONTROL 6
CONSTRUCTION SPECIFICATIONS 6
NUTRIENT MANAGEMENT PLAN AND MANURE APPLICATION 8
PERMIT ISSUANCE PROCEDURES 10
APPENDIX A – PUBLIC INVOLVEMENT INFORMATION 11
APPENDIX B – DEFINITIONS 14
APPENDIX C – DATA AND TECHNICAL CALCULATIONS 20
APPENDIX D – RESPONSE TO COMMENTS 23

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BACKGROUND INFORMATION

Table 1– General Facility Information

Applicant:	Justin Roelofs
Facility Name and Address:	Blackhawk Farms 20th Street SE Valley City, ND 58072
Permit Number:	NDAFO0916
Permit Type:	CAFO
Hydrologic Code:	09020205 – Maple

FACILITY DESCRIPTION

Blackhawk Farms is located approximately 14 miles north and 7 miles east of Valley City, ND in Barnes County. The facility sits in the NW ¼ of Section 13, Township 142 N, Range 57 W, 5th Prime Meridian. The site coordinates are 47.12228°, -97.84198°.

An application submitted to the department on July 31, 2026, indicates the facility will be permitted for a maximum of 5,159 head of gestating swine (400 lbs), 1,116 lactating swine (450 lbs), 284 gestation gilts (200 lbs), 744 nursery swine (30 lbs), 42 boars (500 lbs), and 1,116 grower swine (150 lbs). The proposed facility will have two deep pit confinement barns (gestation and gilt development unit) and one shallow pit confinement barn (farrowing).

GROUNDWATER AND SURFACE WATER

Geology:

The facility lies within the Red River Basin section of the Central Lowlands physiographic province.

The site can be characterized as offshore sediment of laminated silt and clay: proglacial-lake sediment, flat-bedded sediment of low-lying plains. (U.S. Geological Survey,)

Shale of the Pierre Formation and Niobrara Formation underlies glacial drift in Barnes County. With a surface elevation of 1,340 feet at the operation, and a bedrock elevation around 1,200 feet, the glacial drift should be around 200 feet thick at the operation. (T. E. Kelly, Geology and Ground Water Resources, Barnes County, North Dakota, Bulletin 43 – Part 1, 1967, p. 1).

Topography:

This is an area with broad, undulating plains. (T. E. Kelly, Geology and Ground Water Resources, Barnes County, North Dakota, Bulletin 43 – Part 1, 1967, p. 1).

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Slope:

The slope is 0-6% on-site. Slope is used to calculate the runoff quantities and design runoff velocities.

Runoff:

The proposed facility is an indoor confinement operation. Any stormwater or precipitation from the land around the barns and site buildings will be directed away from the site. A stormwater basin will capture stormwater.

Elevation:

According to the United States Geological Survey Quadrangle maps, this facility is at an approximate elevation of 1,343 feet.

Site Drainage:

There is no defined drainage off-site.

Water Bodies:

The closest water body is an intermittent stream 0.38 miles to the south of the facility site. This stream flows into Minnie Lake.

Soils:

The primary soils at the site, as indicated by National Resource Conservation Service (NRCS) web soil survey, include Hamerly-Tonka complex, Barnes-Svea loams, and Barnes-Buse loams. These soils consist mostly of silty sands, and fine-grained lean silt and sand material (ML). (See Appendix C, Table 6)

Aquifers:

The facility does not overly an aquifer or sensitive groundwater area. The nearest aquifer is nine miles east of the facility site.

Public Wells:

There are no public wells or irrigation wells located within two miles of the site. (See Appendix C, Table 5)

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Private Wells:

Within two miles of the site there are five private wells. Wells in the general area range from 25 feet to 194 feet deep. (See Appendix C, Table 5)

MANURE HANDLING AND DISPOSAL

Facility Operation:

The facility incorporates two deep pit barns and one shallow pit barn with slatted floors as well as a loadout pit. Livestock resides within the facility for 365 days a year. All manure from the livestock is stored in the deep pits and shallow pit of the confinement barns.

Manure Handling:

Manure will pass through the concrete slatted floors of the barns to enter the manure storage pits. A transfer pump will be located in a pump station between the barns. Transfer pipes from the shallow pit barn outlet into this pump station.

Expected Manure Quantities:

The amount of manure estimated to be produced at the facility is detailed in the table below.

Table 2- Manure Quantities from Design Plans

Livestock Information	Amount	Type	Average Weight (*lbs*)	Manure Production (ft^3/day)	Wash Water (ft^3/day)
	5,159	Pigs, Gest.	400	908	1379
	1,116	Pigs, Lact.	450	482	298
	284	Pigs, Gest.	200	25	76
	744	Pigs, Nursery	30	38	25
	42	Pigs, Boar	500	7	11
	1,116	Pigs, Grow/Finish	150	167	75

Total Volume Needed for Manure Storage	$ft^3/year$	*Mgal*
	1,274,507	9.5

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Mortality Disposal:

The owners have chosen composting for the facility's disposal method. A compost shed will be constructed on the southwest corner of the site. Animal mortality shall be handled as outlined in the North Dakota Livestock Program Design Manual, Section 6.4:

"Livestock mortality shall be disposed of in a manner acceptable to the Board of Animal Health and in accordance with NDCC Section 36-14-19. Livestock mortality shall be disposed of in areas that will not discharge into waters of the state and where they will not detrimentally impact air quality. Livestock mortality shall not be disposed of in any structure used to store or treat liquid manure, process wastewater, or storm water unless the department-approved system is designed for such a purpose."

ODOR CONTROL

Potential Sources:

A source of potential odors are the barns. Odors from the barns may be minimized with good housekeeping practices. Land applications may present a source of short-term odor events. However, land application is exempt from state odor restrictions (NDAC Section 33.1-15-16-02(3)). The county regulates the nature, scope, and location of this operation. The facility received a Barnes County Conditional Use Permit, Permit No. 001-26, from Barnes County on March 17, 2026.

CONSTRUCTION SPECIFICATIONS

Manure Storage Structures:

The facility has two deep pit and one shallow pit manure storage structures. A transfer pit sits between the barns. A section of drain tile surrounds the pits and slopes towards a sump located in a manhole at the northwest corner of the site. This serves to relieve hydrostatic pressure from the storage pits. The following table show the dimensions of the ponds and the evaluation of design capacity.

Table 3-Required Manure Storage

Storage Pit Location	Dimensions	Storage Volume
Gestation Barn	2 cells x 448.3' x 121.75' x 9.7'	1,049,156 ft^3
GDU Barn	1 cell x 140.0' x 120.0' x 9.7'	161,694 ft^3
Farrowing/Nursery	14 cells x 114' x 41.8' x 1.7' 2 cells x 114' x 32.3' x 1.7'	123,745 ft^3
Loadout Pit Area	1 cell x 94.3' x 35' x 1.7'	5,346 ft^3
The facility has capacity to store manure generated with 1,340,211 ft^3 of storage.		

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Soil Summary:

The location is suitable based on soil survey and ground water survey information. The soils borings indicate that the Unified Soil Classification for the subsoil at the site is generally sandy lean clay (CL) to a relative depth of 22 feet. The soil was moist, and water was encountered 4 to 8 feet below ground level at the boring hole sites. (Appendix C, Table 7)

Non-Earthen Manure Storage Structures

The storage pits have 5” floors with #4 rebar. Pit walls are 10” thick with horizontal #4 rebar at 9” or 12” on center and vertical #5 rebar at 12” on center. Footers are 10-12” thick with #4 rebar. Wall joints have keyways and water stops to prevent seepage. Concrete used on site is rated for 4,000 pounds per square inch (PSI) of compressive strength for walls and floors.

Manure Transfer Components:

The manure storage pits drain to a loadout pit off of the gestation barn. The farrowing barn and GDU barn have 10” PVC pipe that drains to the loadout pit.

Earth Fill:

The design plans indicate vegetation and organic material will be stripped and removed from the footprint of the embankment. Organic materials or frozen soil will not be used in fill material. Rock larger than 6 inches will not be used in the fill material. Compaction will be achieved by either a minimum of 6 passes with a sheepsfoot roller or to 95% standard Proctor density. Appropriate topsoil as deemed by the engineer will used as cover material on diversions. The site will be seeded to a shallow rooted perennial grass.

Groundwater Monitoring Plan:

The site is not within a mile of surficial aquifers, sensitive groundwater areas, source water protection areas, or wells. For this reason, the Ground Water Protection Program does not require the installation of monitoring wells at this site. Although the project is not located over defined glacial drift aquifers, defined sensitive groundwater areas, or within wellhead or source water protection areas, care must be taken to avoid spills of any materials that may have an adverse effect on groundwater quality. All spills must be immediately reported to the Department and appropriate remedial actions performed.

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Operation and Maintenance Plan:

An operation and maintenance plan was submitted to the department along with the permit application. It included general provisions for reporting discharges, inspections, vehicle travel, grade maintenance, damage repair, vegetation upkeep, and system maintenance. Nutrient management provisions were included for storage limits and land application methods. Provisions for inspections and documentation were included for daily weather inspections, land application records, weekly system inspections, and annual nutrient management plan records. Provisions for odor, fly, and nuisance prevention were included for the removal of standing water, mortality management, feed storage, and insect management. Provisions for record keeping were included for required site documents.

NUTRIENT MANAGEMENT PLAN AND MANURE APPLICATION

General Conditions:

Managing and applying manure to ensure surface waters are not impacted and minimize nuisance concerns for nearby residents is a requirement. Factors to consider when choosing methods of management and application include but are not limited to: the volume of manure, the topography, location of surface and ground water sources, and distance from neighboring residents. Applicable records, listed below, must be kept and be available upon request.

Application Rates:

Liquid manure and wastewater are pumped from holding pond and injected into fields. Manure application on fields would be at agronomic rates. This rate is dependent on crop variety grown, crop yield goals, and soil test results. Manure is land applied at a rate not to exceed nitrogen levels recommended for the crop of the following production year.

Record Keeping:

The facility is required make the following records available to the department for review upon request for a minimum of five years from the date they are created:

- Document routine visual inspections of the production area and containment structures.
- How, when, and where the manure, litter, or process wastewater was reused or disposed.
- Weather conditions at the time and 24 hours prior to manure application.
- Mortalities management and practices used.

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- The date, time, and estimated volume of any overflow outside of the containment area.
- Annual nutrient sampling of: manure, litter and/or process wastewater and soil samples where manure has been applied that year.
- An explanation of how the manure application rates were determined with calculations of the planned and actual total nitrogen and phosphorus to be applied to each field.
- The crops grown and crop yields for all fields where manure was applied.
- If manure, litter, or process wastewater is transferred to other persons or entities; the recipient's name and address, approximate amount transferred, and the date of the transfer should be documented.
- Any actions taken to correct deficiencies.

Land Application of Manure:

The endpoint for all manure produced at the proposed facility is land application on fields identified in the submitted nutrient management plan. The table below details the quantity of manure and nutrients estimated to be produced on the facility.

Table 5-Expected Manure Quantities

	Daily	365 Days
Volume of animal manure	12,173 gal/day 1,627 cu ft	9.5 Mgal 1,274,507 cu ft
Nitrogen (N)	726 lbs./day	264,902 lbs.
Phosphorus (P2O5)	554 lbs./day	202,218 lbs.
Potassium (K2O)	552 lbs./day	201,457 lbs.
Values from United States Department of Agriculture (USDA) "Agricultural Manure Management Field Handbook", Chapter 4		
Nitrogen losses anticipated		
Storage	30% for anerobic pit	
Land apply method	2% for knifing injection of liquid manure	

Estimate of land needed for manure application:

When estimating land needed for manure application, if the nutrient management plan's phosphorus risk assessment indicates a medium to low risk of movement of phosphorus, facilities are allowed to apply at agronomic nitrogen rates in accordance with the phosphorus index. If the nutrient management plan's phosphorus risk assessment indicates a high potential for movement or if a soil test show phosphorus levels in the high range, the facility is required to apply the manure at agronomic phosphorus rates.

Table 4- Agronomic Application Rates

Nutrient	Rate
Phosphorus	41.6 lbs P2O5/acre
Nitrogen	123.0 lbs N/acre

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Anticipated crops grown: grain corn, canola, soybeans, sunflowers, and wheat

Risk assessment for phosphorus: low

Amount of land needing for spreading on nitrogen basis: 1,817.23 acres
Amount of land identified by applicant for land application: 2,300.3 acres

The department realizes that the nitrogen in manure is not all available to the crop the first year and therefore the manure will typically be applied at rates higher than the rates listed above. However, the organic nitrogen becomes available the following year(s) so the manure cannot be applied at the same rate in subsequent years. These figures are used to estimate the total acres that would be needed over several years of application using proper rotation of cropland and/or calculating nitrogen that is carried over to the following years.

Disclaimer:

This design review is intended to assess a livestock facility's ability to contain, divert, store, and properly apply manure and/or runoff water to meet department requirements, to prevent detrimental impacts the quality of waters of the state, and to minimize the potential for odor concerns from livestock facilities. It does not include an assessment of the structural integrity of livestock facilities or manure handling structures such as those made of concrete, metal, wood, plastic, or other material.

PERMIT ISSUANCE PROCEDURES

PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

PROPOSED PERMIT ISSUANCE

This proposed permit application meets all statutory requirements for the department to authorize a State Animal Feeding Operation Permit. The permit application includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the State of North Dakota. The department proposes to issue this permit for a term of five (5) years.

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APPENDIX A – PUBLIC INVOLVEMENT INFORMATION

The department proposes to issue a state AFO permit to **Blackhawk Farms**. This fact sheet describes the facility and the department's rationale for requiring permit conditions.

The department will place a Public Notice of Draft on October 30, 2026 in the **Valley City Times-Record** to inform the public and to invite comment on the proposed draft North Dakota State AFO Permit and fact sheet.

The Notice-

- Indicates where copies of the draft Permit and Fact Sheet are available for public evaluation.
- Offers to provide assistance to accommodate special needs.
- Urges individuals to submit their comments before the end of the comment period.
- Informs the public that if there is significant interest, a public hearing will be scheduled.

You may obtain further information from the department by telephone, 701.328.5210, or by writing to the address listed below.

North Dakota Department of Environmental Quality
Division of Water Quality
4201 Normandy Street, 3rd Floor
Bismarck, ND 58503

The primary author of this permit and fact sheet is Rachel Strommen.

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North Dakota Department of Environmental Quality Public Notice
Issue of an State AFO Permit

Public Notice Date: 10/30/2026 Public Notice Number: ND-2026-030

Purpose of Public Notice
The Department intends to take public comment to ensure the following State Animal Feeding Operation Permit follows the authority of the Section 61-28-04 of the North Dakota Century Code.

Permit Information
Site Name: Blackhawk Farms
Application Date: 5/7/2026 Application Number: NDAFO0916
Applicant Name: Justin Roelofs
Mailing Address: 1300 S. HWY 75, Pipestone, MN 56164
Telephone Number: (507) 825-4211

Proposed Permit Expiration Date: November 30, 2031

Facility Description
The permit application is for a proposed swine barn located 14 miles north and 7 miles east of Valley City, ND. The site is in the NW ¼ of Section 13, Township 142 N, Range 57 W, 5th Prime Meridian. The application indicates the facility would have a maximum of 8,461 head of swine, equivalent to 3,161 animal units.

Public Hearing
A public hearing has been tentatively scheduled to record oral comments regarding the proposed permit on **November 19, 2026**, from 5:00 p.m. to 8:00 p.m. at the following location

Barnes County Courthouse
230 4th St NW
Valley City, ND 58072

The public hearing will be held if there is sufficient public interest pertaining to the proposed permit or if a public hearing is specifically requested in writing. The specific issues to be raised should be stated in a request for a public hearing. If sufficient public interest is not raised and a Public Hearing is not requested by November 12, 2026, the public hearing will be cancelled. Please check the North Dakota Department of Environmental Quality website (deq.nd.gov) or call the department at 701-328-5210 on or after November 13, 2026, for confirmation of the public hearing.

Tentative Determinations
The submitted application and supporting documentation have been reviewed by the Department. They assure that State Water Quality Standards will be protected, and the system

will be constructed and can be operated in compliance with the North Dakota state requirements for storage and handling of manure and wastewater for an Animal Feeding Operation.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review on the department website at: https://deq.nd.gov/PublicNotice.aspx. Comments or requests should be directed to the ND Department of Environmental Quality, Division of Water Quality, 4201 Normandy Street, 3rd Floor; Bismarck, ND 58503-1324 or by calling 701.328.5210.

All comments received by November 30, 2026, will be considered prior to finalizing the permit.

The Department will consider every request for reasonable accommodation to provide an accessible meeting facility or other accommodation for people with disabilities, language interpretation for people with limited English proficiency (LEP), and translations of written material necessary to access programs and information. Language assistance services are available free of charge to you.

Requests for accommodation should be made as soon as possible and ideally at least five (5) business days prior to a scheduled program, service or activity. Depending on the nature and complexity of the request, requests may take longer than five (5) days to fulfill. Requests may be directed to the NDDEQ staff responsible for the program, service, or activity, or to the Nondiscrimination Coordinator directly. Contact the NDDEQ Nondiscrimination Coordinator directly at 701-328-5150 or deqEJ@nd.gov. TTY users may use Relay North Dakota at 711 or 1-800-366-6888.

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APPENDIX B – DEFINITIONS

DEFINITIONS Standard Permit (BP 2019.09.23)

1. "Animal feeding operation" means a lot or facility, other than an aquatic animal production facility, where the following conditions are met:

   a. Animals, other than aquatic animals, have been, are, or will be stabled or confined and fed or maintained for a total of forty-five days or more in any twelve-month period; and

   b. Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

2. "Bedding material" means an absorbent substance applied to dirt or concrete flooring systems, including wood shavings, wood chips, sawdust, shredded paper, cardboard, hay, straw, hulls, sand, and other similar, locally available materials.

3. "Best management practices" means schedules of activities, prohibitions of practices, conservation practices, maintenance procedures, and other management strategies to prevent or reduce the pollution of waters of the state. Best management practices also include treatment requirements, operating procedures, and practices to control production area and land application area runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

4. "Concentrated animal feeding operation" means an animal feeding operation that is defined as a large, medium, or small concentrated animal feeding operation or any animal feeding operation designated as a concentrated animal feeding operation under section 33.1-16-03.1-04. For purposes of determining animal numbers, two or more feeding operations under common ownership are considered to be a single animal feeding operation if they adjoin each other or if they use a common area or system for the disposal of wastes.

5. "Earthen storage pond" or "pond" means a topographic depression either below or above ground level, manmade excavation, or diked area formed primarily of earthen materials, although it may be lined with man-made materials or other seepage control materials, and used to store manure, process wastewater and runoff from the production area of a facility.

6. "Engineer" means a professional engineer registered to practice in the state of North Dakota.

7. "Facility" is an animal feeding operation.

8. "General permit" means a general state animal feeding operation permit. This is a permit issued to cover multiple facilities of the same or similar type, without requiring each facility to be covered under an individual permit.

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9. "Large concentrated animal feeding operation" means any animal feeding operation that stables or confines as many as or more than the numbers of animals, not including unweaned young, specified in any of the following categories:

    a. Seven hundred mature dairy cows, whether milked or dry;

    b. One thousand veal calves;

    c. One thousand cattle other than mature dairy cows or veal calves. "Cattle" includes, but is not limited to, heifers, steers, bulls, and cow/calf pairs;

    d. Two thousand five hundred swine, each weighing 55 pounds or more;

    e. Ten thousand swine, each weighing less than 55 pounds;

    f. Five hundred horses;

    g. Ten thousand sheep or lambs;

    h. Fifty-five thousand turkeys;

    i. Thirty thousand laying hens or broilers, if the animal feeding operation uses a liquid manure handling system;

    j. One hundred twenty-five thousand chickens (other than laying hens), if the animal feeding operation uses other than a liquid manure handling system;

    k. Eighty-two thousand laying hens, if the animal feeding operation uses other than a liquid manure handling system;

    l. Thirty thousand ducks, if the animal feeding operation uses other than a liquid manure handling system; or

    m. Five thousand ducks, if the animal feeding operation uses a liquid manure handling system.

10. "Litter" means a mixture of fecal material, urine, animal bedding material, and sometimes waste feed.

11. "Manure" means fecal material and urine, animal-housing wash water, bedding material, litter, compost, rainwater, or snow melt that comes in contact with fecal material and urine, and raw or other materials commingled with fecal material and urine or set aside for disposal.

12. "Manure handling system" means all of the water pollution control structures used at the production area of a facility.

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13. “Manure storage pond” means an earthen storage pond that stores liquid manure and process wastewater from indoor confined animal feeding operations.

14. “Manure storage structure” means any water pollution control structure used to contain or store manure or process wastewater. It includes earthen manure storage ponds; runoff ponds; concrete, metal, plastic, or other tanks; and stacking facilities.

15. “Medium animal feeding operation” means any animal feeding operation that stables or confines the numbers of animals, not including unweaned young, specified within any of the following ranges:

    a. Two hundred to six hundred ninety-nine mature dairy cows, whether milked or dry;

    b. Three hundred to nine hundred ninety-nine veal calves;

    c. Three hundred to nine hundred ninety-nine cattle other than mature dairy cows or veal calves. “Cattle” includes, but is not limited to, heifers, steers, bulls, and cow/calf pairs;

    d. Seven hundred fifty to two thousand four hundred ninety-nine swine, each weighing 55 pounds or more;

    e. Three thousand to nine thousand nine hundred ninety-nine swine, each weighing less than 55 pounds;

    f. One hundred fifty to four hundred ninety-nine horses;

    g. Three thousand to nine thousand nine hundred ninety-nine sheep or lambs;

    h. Sixteen thousand five hundred to fifty-four thousand nine hundred ninety-nine turkeys;

    i. Nine thousand to twenty-nine thousand nine hundred ninety-nine laying hens or broilers, if the animal feeding operation uses a liquid manure handling system;

    j. Thirty-seven thousand five hundred to one hundred twenty-four thousand nine hundred ninety-nine chickens (other than laying hens), if the animal feeding operation uses other than a liquid manure handling system;

    k. Twenty-five thousand to eighty-one thousand nine hundred ninety-nine laying hens, if the animal feeding operation uses other than a liquid manure handling system;

    l. Ten thousand to twenty-nine thousand nine hundred ninety-nine ducks, if the animal feeding operation uses other than a liquid manure handling system; or

    m. One thousand five hundred to four thousand nine hundred ninety-nine ducks, if the animal feeding operation uses a liquid manure handling system.

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16. "Medium concentrated animal feeding operation" means a medium animal feeding operation that meets either one of the following conditions:

    a. Pollutants are discharged into waters of the state through a manmade ditch, flushing system, or other similar manmade device; or

    b. Pollutants are discharged directly into waters of the state which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation.

17. "North Dakota Livestock Program Design Manual" means the guidelines established for use by the department in the review and permitting process for animal feeding operations.

18. "Nutrient management plan" means a written description of the equipment, methods and schedules by which:

    a. Manure, litter, and process wastewater is beneficially reused in an environmentally safe manner such as being applied to land at appropriate agronomic rates as nutrients or fertilizers; and

    b. Water pollution and air pollution, including odors, are controlled sufficiently to protect the environment and public health.

19. "Open lot" means livestock pens, feeding or holding areas at the production area of an animal feeding operation which are outside and not under roof, and where rain can fall directly on the lot area.

20. "Open manure storage structure" means an earthen pond or storage tank for holding liquid manure which is not covered so rainfall can fall directly into the pond or tank.

21. "Operation and maintenance plan" means a written description of the equipment, methods, and schedules for:

    a. Inspection, monitoring, operation, and maintenance of the animal feeding operation, including manure storage structures, water pollution control structures, and the production area; and

    b. Controlling water pollution and air pollution, including odors sufficient to protect the environment and public health. It includes emergency response actions for spills, discharges or failure of a collection, storage, treatment, or transfer component.

22. "Operator" means an individual or group of individuals, partnership, corporation, joint venture, or any other entity owning or controlling, in whole or in part, one or more animal feeding operations.

23. "Overflow" means the discharge of manure or process wastewater resulting from the filling of wastewater or manure storage structures beyond the point at which no more manure, process wastewater, or storm water can be contained by the structure.

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24. "Pollutant" means "wastes" as defined in North Dakota Century Code section 61-28-02, including dredged spoil, solid waste, incinerator residue, garbage, sewage, sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

25. “Process wastewater” means water directly or indirectly used in the operation of the animal feeding operation for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other animal feeding operation facilities; direct contact swimming, washing, or spray cooling of animals; or dust control. Process wastewater also includes any water which comes into contact with any raw materials, products, or byproducts, including manure, litter, feed, milk, eggs, or bedding material.

26. “Production area” means those areas of an animal feeding operation used for animal confinement, manure storage, raw materials storage, and waste containment. The animal confinement area includes open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milking rooms, milking centers, cattle yards, barnyards, medication pens, walkers, animal walkways, and stables. The manure storage area includes lagoons, runoff ponds, storage sheds, stockpiles, under-house or pit storages, liquid impoundments, static piles, and composting piles. The raw materials storage area includes feed silos, silage bunkers, and bedding materials. The waste containment area includes settling basins, areas within berms, and diversions which separate uncontaminated storm water. 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.

27. “Runoff” means rainwater or snow melt that comes in contact with manure at an open lot or open manure storage area and, therefore, is defined as manure.

28. “Runoff pond” means an earthen storage pond that is used to collect and store runoff from an open lot or from a manure storage area.

29. “Seepage” means the volume of flow through a manure storage structure.

30. “Sensitive groundwater area” means vulnerable hydrogeologic settings as determined by the department such as glacial outwash deposits or alluvial or aeolian sand deposits that are critical to protecting current or future underground sources of drinking water. Areas designated as sensitive groundwater areas by the department include alluvial or aeolian sand deposits shown on Geologic Map of North Dakota (Clayton, 1980, North Dakota geological survey) and glacial drift aquifers listed in North Dakota Geographic Targeting System for Groundwater Monitoring (Radig, 1997, North Dakota department of health), or most recent editions of these publications, with DRASTIC scores greater than or equal to 100 based on methodology described in DRASTIC: A Standardized System For Evaluating Groundwater Pollution Potential (Aller et al, 1987, United States environmental protection agency).

DRAFT

31. “Small animal feeding operation” means any animal feeding operation that stables or confines less than the numbers of animals specified for a medium animal feeding operation.

32. “Small concentrated animal feeding operation” means a small animal feeding operation designated as a concentrated animal feeding operation under section 33.1-16-03.1-04.

33. “State animal feeding operation permit” means a permit issued by the department under this chapter to an animal feeding operation.

34. “Surface water” means waters of the state that are located on the ground surface, including all streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, and all other bodies or accumulations of water on the surface of the earth, natural or artificial, public or private.

35. “Unconfined glacial drift aquifer” means a glacial drift aquifer that does not have an impervious soil layer which acts to prevent or minimize movement of water into, through, or out of the aquifer.

36. “Water pollution control structure” means a structure built or used for handling, holding, transferring, or treating manure or process wastewater, so as to prevent it from entering the waters of the state. The term also includes berms, ditches, or other structures used to prevent clean water from coming in contact with manure.

37. “Water quality standards” means the water quality standards contained in chapter 33.1-16-02.1.

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APPENDIX C – DATA AND TECHNICAL CALCULATIONS

Table 5-Water Commission Well Data:

Location	Use	Depth (ft)	Dia.	Aquifer
14205722	Domestic, Stock	82	16”	-
14205706CDD	Domestic	55	4”	
14205718	Domestic	25	16”	-
14205718DCC	unknown	62	4”	-
14205717DCC	Domestic	194	4”	-

Table 6-Soil Survey Data:

Map unit	Name	Description	Bedrock depth	Seasonal Water Table	Unified soil class*	Ksat µm/s	Lagoon Restrictions
G100A	Hamerly-Tonka complex, 0-3% slopes.	The Hamerly series consists of very deep, somewhat poorly drained soils that formed in calcareous loamy till. Permeability is moderate in the upper horizons and moderate or moderately slow in the lower horizons. These soils are on flats on lake plains and on convex slopes surrounding shallow depressions and on slight rises on till plains. The Tonka series consists of very deep, poorly drained, slowly permeable soils that formed in local alluvium over till or glaciolacustrine deposits. These soils are in closed basins and depressions on till and glacial lake plains.	0- 60"	0-3’	ML, CL	7.8300	Very limited: Depth to saturated zone, Seepage, Ponding, Slope
G143B	Barnes-Svea loams, 3-6% slopes.	The Barnes series consists of very deep, well drained soils that formed in loamy till. These soils are on till plains and moraines. The Svea series consists of very deep, well or moderately well drained soils that formed in calcareous till and local alluvium from the till. Permeability is moderate in the solum and moderate or	0 - 60"	3-5'	ML, CL	7.8170	Somewhat limited: Slope, Seepage, Depth to saturated zone

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		moderately slow in the C horizon. These soils are on concave positions on till plains.					
G144 B	Barnes-Buse loams, 3-6% slopes	The Barnes series consists of very deep, well drained soils that formed in loamy till. These soils are on till plains and moraines. The Buse series consists of very deep, well drained soils that formed in loamy glacial till on moraines.	0-60”	3-5’	ML, CL	7.8170	Somewhat limited: Slope, Seepage, Depth to saturated zone
ML-silt and fine sand, CL-clay of low plasticity							

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Table 7-Soil Boring Information:

Rel. Elevation	BH1	BH2	BH3	BH4	BH5	BH6	BH7	BH8
0 to 1	TS	TS	TS	TS	TS	TS	TS	TS
1 to 2	CL	CL	CL	CL	CL	CL	CL	CL
2 to 3	CL	CL W 3.2’	CL	CL	CL	CL	CL	CL
3 to 4	CL W 4.4’	CL	CL	CL	CL	CL	CL	CL
4 to 5	SC	CL	CL	CL	CL	CL	CL	CL W 4.7’
5 to 6	SC	CL	CL	CL	CL	CL	CL	CL
6 to 7	CL	CL	CL	CL W 6.8’	CL	CL	CL W 6’	CL
7 to 8	CL	CL	CL W 8’	CL	CL	CL	CL	CL
8 to 9	CL	CL	CL	CL	CL	CL	CL	CL
9 to 10	CL	CL	CL	CL	CL	CL	CL	CL
10 to 11	CL	CL	CL	CL	CL	CL	CL	CL
11 to 12	CL	CL	CL	CL	CL	CL	CL	CL
12 to 13	CL	CL	CL	CL	CL	CL	CL	CL
13 to 14	CL	CL	CL	CL	CL	CL	CL	CL
14 to 15	CL	CL	CL	CL	CL	CL	CL	CL
15 to 16	CL	CL	CL	CL	CL	CL	CL	CL
16 to 17	CL	CL	CL	CL	CL	CL	CL	CL
17 to 18	CL	CL	CL	CL	CL	CL	CL	CL
18 to 19	CL	CL	CL	CL	CL	CL	CL	CL
19 to 20	CL	CL	CL	CL	CL	CL	CL	CL
20 to 21	CL	CL	CL	CL	CL	CL	CL	CL
21 to 22	CL	CL	CL	CL	CL	CL	CL	CL
TS- top soil, ML- silt and fine sand, GC-clayey gravel, GP-poorly graded gravel, SM-silty sand, CL-sandy lean clay, W - Water encountered								

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APPENDIX D – RESPONSE TO COMMENTS

Comments received during a public comment period will be placed here.

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