North Dakota Department of Health Public Notice
Issue of an AFO Permit

Public Notice Date: 11/14/2018 Public Notice Number: ND-2018-029

Purpose of Public Notice

The Department intends to take public comment to ensure the following Animal Feeding Operations AFO Permit follows the authority of Section 61-28-04 of the North Dakota Century Code.

Permit Information

Application Date: 6/29/2018 Application Number: NDAFO0873

Applicant Name: Bromley Ranch, LLC

Mailing Address: 1258 44th St. NE, Drake, ND 58736

Telephone Number: 701.626.1838

Proposed Permit Expiration Date: 1/1/2024

Facility Description

The application is for a beef feedlot facility that is located 8.75 miles northeast of Drake, ND, in the NE 1/4 of Section 28, Township 153N, Range 75W, in McHenry County. The application indicates the facility will have a maximum of 1,500 beef cattle with an average weight of 700 lbs.

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. Comments or requests should be directed to the ND Dept of Health, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by December 15, 2018 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice. If you require special facilities or assistance relating to a disability, call TDD at 1.800.366.6868.

FACT SHEET FOR STATE AFO PERMIT NDAFO-0873

BROMLEY RANCH, LLC DRAKE, ND

DATE OF THIS FACT SHEET – SEPTEMBER 14, 2018

INTRODUCTION

The North Dakota Department of Health has the statutory responsibility to control the pollution of surface waters, groundwaters, and the air of the state. Water Quality Standards have been developed and adopted for the surface waters of North Dakota. An extensive Water Pollution Control Act, addressing among other things the control of livestock waste, was adopted by the 1967 state legislature. The Rules and Regulations for the Control of Pollution from Certain Livestock Enterprises were first issued in 1972 by the State Health Department and updated in 1989, 2005, and 2018.

The following rules or regulations apply to feedlot operations permits:

- Operations requiring a permit (NDAC chapter 33.1-16-03.1-05),
- Authority for issuing Feedlot Permits (NDAC chapter 33-16-03.1-01),
  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 33-16-03.1),
- Standards of Quality for Waters of the State (NDAC chapter 33.1-16-02.1)
- Control, Prevention, and Abatement of pollution of surface waters (NDCC 61.1-28-01)

According to the North Dakota Administrative Code (NDAC) section 33-16-03, 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. The period of comment may be extended at the discretion of the department.
In making its final decision on the application or draft permit, the department shall consider all comments submitted within a time frame specified in the public notice and all comments received at any public hearing. Within twenty days of the close of the public comment period,

the applicant, if any, may submit a written response to the public comments. The department shall consider the applicant's response in making its final decision. Pursuant to the requirements of this chapter and within sixty days of the applicant's response to the public comments, the department shall make a final determination as to whether the permit should be approved, approved with conditions, or denied. The department shall notify the applicant in writing of its final determination and provide to the applicant a copy of the final permit, if issued. Upon request, other interested individuals may also obtain copies of the final permit. (NDAC 33-16-03)

For more information regarding preparing and submitting comments about the fact sheet and permit, please see **Appendix A – Public Involvement**. Following the public comment period, the department may make changes to the draft feedlot permit. The department will summarize the responses to comments and changes to the permit in **Appendix D – Response to Comments.**

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BACKGROUND INFORMATION

Table 1 – General Facility Information

Applicant:	Andrew Bromley
Facility Name and Address:	Bromley Ranch, LLC 1258 44th Street Northeast Drake, ND 58736
Permit Number:	NDAFO-0873
Permit Type:	CAFO – Issue
Hydrologic Code:	09020310 – Park River

FACILITY DESCRIPTION

Bromley Ranch, LLC is located in the NE Quarter of Section 28, Township 153N, Range 75W or Latitude 48.048900 ºN and Longitude -100.308960 ºW, in McHenry County. The current facility has 400 beef feeders on an uncontained open lot system.

An application submitted to the department indicates the facility will expand to a maximum of 1500 beef feeders with an average weight of 700 lbs. The application indicates the addition of a clean water diversion while collecting the dirty water from the feedlot to use for fertilizer on crop land.

GROUNDWATER AND SURFACE WATER

Geology:

> The facility, situated in north central McHenry County, lies within the Glaciated Plains section of the Central Lowlands physiographic province. The area is characterized by moderately thick glacial deposits that overlie bedrock deposits. Much of the northern half of the county is part of the glacial Lake Souris plain, an area that has been greatly modified by the wind and is now largely covered by extensive dune fields. The Glaciated Plains cover all of McHenry County except for the southwestern corner of the county, which is on the Missouri Coteau. The Glaciated Plains can be subdivided into two areas: the broad glacial Lake Souris plain over approximately the northeast 60 percent of the county and an expanse of till to the south of the lake plain. Much of the lake plain area has been modified by wind erosion and parts of it are covered by extensive dune deposits. The till plain, which lies south and west of the lake plain, is highly fluted in places and includes outstanding drumlin-like features (long, linear ridges. Approximately three-quarters of the glacial Lake Souris surface in McHenry County is mantled by a layer of eolian sediment. The McHenry County wind-blown silt and sand has been derived largely from well-sorted sand that accumulated in glacial Lake Souris in the upper parts of density-current fans. Prominent dunes reach heights greater than 65 feet in places. In fact, the McHenry County dunes are among the most spectacular in North Dakota. Over much of the lake plain, in places where dunes are absent, a veneer of wind-blown sand is found. (COUNTY GROUNDWATER STUDIES 33—PART I)

Topography:

Most of McHenry County has only low to moderate relief. Relief is highest over areas of dunes, where it may be 50 to100 feet locally. (COUNTY GROUNDWATER STUDIES 33—PART I)

Slope: The slope in the lot area will range from 1.3% to 3.4%.

Run-off: Runoff from the 14.0-acre feedlot will be managed in a containment pond.

Elevation:

1549 to 1550 feet (Approximately, based on United States Geological Survey Quadrangle maps)

Site Drainage:

The facility drains north to northeast toward Bromley Lake. The Lake is at an elevation of 1,529. This is a difference of twenty feet over 120 yards.

Water Bodies: Bromley Lake

Soils:

The primary soils at the site, as indicated by NRCS soil survey, include Sioux-Arvilla complex, Towner-Barnes complex, Dickey-Buse-Embden complex, and Lohnes-Claire coarse sands. These soils consist mostly of CL, CL- ML, ML, SM, SP-SM, SM-SC, SW-SM, GM, GP, and SP materials. The water table is from three to greater than six feet deep. (See Table 10 on page 21)

Aquifers: Does not overly and is located within 1 mile of a defined glacial drift aquifer.

Public Wells: There are no public wells or irrigation wells located within two miles of the site.

Private Wells:

Within two miles of the site there are 7 wells identified. Wells in the general area are from 46 feet to 388 feet deep.

MANURE HANDLING AND DISPOSAL

Facility Operation:

The facility will incorporate an access road with bunk line feeding. The access road will have 9” of gravel underlain with non-woven geotextile. The bunk line will be constructed of concrete. Livestock are planned to be confined at this site year-round in an open lot. The indicated vegetative treatment area must maintain sufficient vegetation and avoid excessive build-up of nutrients.

Manure Handling:

Pens 1-4 will be sloped to drain towards Basin 1 located in the southwest corner of the feedlot. Diversion 1 is located along the west side of the pens and also leads to Basin 1, ensuring no runoff leaves the feedlot to the west. An underground pipe will transfer the runoff from Basin 1 to the runoff containment pond.
Pens 5-8 will be sloped to drain east towards Basin 2 located on the east side of the pens. Diversion 2 will be located along the east side of the feedlot and captures any runoff leaving the feedlot to the east. Basin 2 and Diversion 2 will empty into the runoff containment pond by means of an underground pipe. Diversion 3 captures the runoff from pen 9 and the area north of pens 1-8. The runoff from Diversion 3 will be conveyed to Diversion 2 by means of an underground pipe. Diversion 4 will convey the runoff from the north part of the feedlot into Diversion 2 which leads to the runoff containment pond. A pipe and riser system will be utilized in Diversion 2, 3, and 4. A pipe and riser system will also be used in Basin 1 and 2 to empty into the runoff containment pond.

Expected Manure Quantities:

Table 2-Run-off quantities from design plans (open lot system with holding pond)

Feedlot area	14.0 acres	Sludge	0 cu yd x 14.0ac= 0 cu yd
25-year, 24-hour rainfall	3.7 inches	25-year, 24-hour runoff	2.51 inches
Annual rainfall	17.25 inches	365-day runoff	2.68 inches
Annual evaporation	32 inches		
Total volume needed for runoff storage		251,583 ft³ or 9,318 yd³ or 1.88 Mgal	

Mortality Disposal:

The owners have chosen burial for the facilities disposal method. Livestock mortality must be buried on the owner's land and be at least four feet below the ground level and covered with dirt to that depth. They cannot be buried in an area where there could be a surface or groundwater impact such as along river banks or in sandy soils with high water tables. The best locations for burying are on higher areas with heavy clay soil that are away from water and drainage ways. Livestock mortality must be managed in accordance to the guidelines in the North Dakota Livestock Program Design Manual (Section 6.4)

ODORS

Potential Sources:

A source of potential odors appears to be the storage pond or open lots. Odors from the lots may be minimized with good house-keeping practices. Land application may present a source of short term odor problems. Since this is an existing facility and the department has not had odor concerns in the past, odors are not anticipated to be a concern in the future. However, if odors are shown to be a concern, steps must be taken to control them. As the county does regulate the nature scope and location of this

operation, the state setbacks do not apply. The nearest residence is 1.5 miles from the feedlot.

SPECIFICATIONS

Manure Storage Structures:

Table 3-Required manure storage

Type: Runoff pond	
Pond Dimensions	
Design Volume	312,115 ft³ or 2.33 Mgal
Pump-out Depth	3 ft
Depth	5.3 ft
Dimensions are irregular. Volume was calculated using the area and the depth of each area. The bottom has a surface area 46,742 ft² and a top liquid area of 71,707 ft².	
Planned Freeboard	1.0 ft
Surface area	Approximately 1.76 acres or 76,604 ft²

Earthen Run-off Pond:

Location:
The proposed location appears suitable based on soil survey and ground water survey information. The borings indicate that the Unified classification for the subsoil at the site is generally sandy loam, sandy clay and sand to a depth of about 9 feet. The soil was moist, and water was encountered at 1460.2 feet. The bottom of the pond is proposed to be at an elevation of 1462.2 feet. See the chart of the borings found in Appendix C.

General Requirements:

Table 4-Pond Design

Inside slope	4:1	Outside slope	3.5:1	Top width	12 ft
Compaction & Settling Factor		5%			

Clay Liner Construction Testing:

A clay liner is required in the runoff storage pond area. The facility is going to install a geosynthetic clay liner. The liner will be covered by one foot of soil cover.

Table 5-Clay Liner

Liner Materials	Geosynthetic Clay Liner
Density	NA
Moisture Content	NA
Permeability	NA

Manure Transfer Components:

Manure Storage Structure Considerations:
The runoff containment system will consist of four dirty water diversions, two settling basins and one runoff containment pond. The runoff will gravity drain to the dirty water diversions and settling basins where it is then conveyed to the runoff containment pond by means of pipe and riser systems. The pipe and riser systems will be designed to have a vertical perforated pipe connected to the underground pipe that leads to the runoff containment pond. The perforated pipe is designed to separate the solids from the runoff, ensuring the solids don't enter the underground pipe and cause any issues.

Inlet Lines and Outlet Structures:

The pipe and riser system underground pipes will outlet into the runoff containment pond with the protection of a 4-inch-thick concrete chute that will have a width of 5 feet. The chute will extend from around the top of the pipe to the bottom of the pond. The runoff will then continue onto a splash pad with 4-inch-thick concrete with a length and width of 5 feet and a concrete curb 6 inches high and 6 inches wide.

Plumbing:
- The minimum required pipe diameter is 10 inches for gravity drain, except when another size is recommended by a manufacturer for an appropriate equipment application.
- All pipes must be made out of corrosion-resistant material.
- Pipe must be sloped to allow good drainage and minimize plugging.
- Clean out ports must be provided every 200 feet or as needed based on access to jetting equipment, and at all junctions.
- Back-flow prevention must be provided.

Diversions:

The existing road that will be located on the west side of the feedlot will serve as protection from clean water entering the system.

Table 6-Design Criteria

Sizing	Expected runoff from a 25 year, 24 hour storm event
Freeboard	0.3 feet (minimum)
Side Slopes	3:1 max
	6:1 recommended when equipment crossing is expected
Ridge Width	4 feet minimum
Settlement Factor	10%

The channel grade must be designed such that the velocity will not cause excessive erosion for the type of soil and vegetation or other lining. The maximum acceptable channel velocity may range from 2.0 ft/sec on sandy soils with no vegetation to 3.5 ft/sec on clayey soils with vegetation.

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. Appropriate topsoil as deemed by the engineer will be used as cover material on the outside slopes of the embankment. The embankment will be seeded to a shallow rooted perennial grass. Pens will be sloped to drain properly towards the solids separators.

Groundwater Monitoring Plan:

Bromley Ranch is within ½ mile from a sensitive groundwater area. The soils at the site are sandy. Groundwater is shallow (2.5 to 6.0 feet bgs). Due to the proximity of the facility to the owner's residence, it may be in the operator's best interest to regularly test their own water, but this is not a requirement.
The site does not overlie any defined glacial aquifers, WHPA or other sensitive groundwater area. Groundwater monitoring does not appear to be necessary at this time.

Operation and Maintenance Plan:

The operation and maintenance plan calls for cleaning of settling areas and repair as needed to maintain original condition. Pond must be pumped when it reaches marker to maintain capacity. Earth work must be inspected annually and repaired as needed. Drains and diversions must be mowed and maintained when soil is dry and firm. Sediment buildup or erosion in drainage ways must be cleaned and re-graded to original condition. Vegetative buffer for feed stacking area must be maintained. Accumulated manure shall be removed annually and applied in accordance with the nutrient management plan.

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.

Application Rates:

Manure will be scraped from the lots, and will be land applied in spring, summer, and fall by broadcasting with a spreader. Manure will be land applied at a rate not to exceed high phosphorus levels, so it will be utilized for crop production and so manure will not get into waters of the state. Liquid manure from the pond will be land applied in accordance to agronomic rates as addressed in North Dakota Livestock Program Design Manual (Section 7.5).

Record Keeping:

The CAFO must make the following records available to the department for review upon request for a minimum of 5 years from the date they are created:

- Document routine visual inspections of the production area and containment structures.
- Maintain a rain gauge at the production area and record measurable rainfall events.
- 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.
- 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.
- Inspection of manure application equipment including method, frequency, dates and repairs made if leaks were found.
- Setbacks, vegetated buffers or other alternative practices used when land applying manure near surface water or potential conduits to surface water.
- 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.

Expected Manure Volumes and Nutrients:

Table 7-Expected Manure Quantities

	Daily	365 Days
Volume of animal manure	4,822.5 gal/day	1.8 Mgal
Nitrogen (N)	235.8 lb/day	86,094 lb
Phosphorus (P2O5)	169.0 lb/day	61,701 lb
Potassium (K2O)	198.9 lb/day	72,606 lb
Values from USDA Ag Manure Management Field Hand Book, Chapter 4		
Nitrogen losses anticipated		
Storage	45% for manure pack and open pond	
Land apply method	25% for surface applying and incorporating	

Land Application of Manure:

Estimate of 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 soil test show phosphorus levels in the high range, the facility is required to apply the manure at agronomic phosphorus rates.

Table 8-Nutrients and Rates

Nutrient	Rate
Phosphorus (with no losses)	40 lb P2O5/acre
Nitrogen (with 47.5% losses)	100 lb N/acre

Anticipated crop grown: alfalfa, grass hay, wheat, winter wheat, corn silage, corn grain, barley, soybeans

Risk assessment for phosphorus: medium

Amount of land estimated for spreading at agronomical rates: 355 acres

Amount of land identified by applicant for land application: 1,314.7 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 subsequent years. These figures are used to estimate the total acres

that would be needed over several years of application using proper rotation of crop-land 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 meets all statutory requirements for the department to authorize a Concentrated Animal Feeding Operation. The permit 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.

APPENDIX A – PUBLIC INVOLVEMENT INFORMATION

The department proposes to reissue a permit to **Bromley Ranch, LLC**. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and the department's reasons for requiring permit conditions.

The department will place a Public Notice of Draft on **November 14, 2018** in the **McHenry County Record** to inform the public and to invite comment on the proposed draft North Dakota Pollutant Discharge Elimination System 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 Health
Division of Water Quality
918 East Divide Avenue, 4th Floor
Bismarck, ND 58501

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

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Tentative Determinations
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All comments received by December 15, 2018 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice.

APPENDIX B – DEFINITIONS

DEFINITIONS Standard Permit BP 2013.12.31

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.

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.

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.

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.

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).

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.

APPENDIX C – DATA AND TECHNICAL CALCULATIONS

Table 9-Water Commission Well Data:

Location	Use	Depth	Diameter	Aquifer
15307531 DCC	Domestic	46	4"	Lake Souris
15307531 CC	Domestic	46	4"	-
15307518	Domestic	104	4"	-
15307518	Domestic	130	4"	-
15307518 C	Domestic	388	4"	-
15207601 A	Domestic, Stock	169	4"	-
15207505 C	Domestic	210	4.5"	-

Table 10-Soil Survey Data:

Map unit	Name	Description	Bedrock depth	Seasonal water table	Unified soil class*	Perm in/hr	Lagoon Restrictions
G273B	Sioux-Arvilla complex, 2-6% slopes	The Sioux series consists of excessively drained soils formed in sand and gravel on outwash plains, terraces and eskers. They are very shallow over sandy-skeletal material. Saturated hydraulic conductivity is high or very high. The Arvilla series consists of very deep, somewhat excessively drained soils formed in moderately coarse textured glacial outwash and the underlying sand and gravel on glacial lake beaches, stream valley terraces and outwash plains. These soils have moderately rapid permeability in the upper part and rapid or very rapid permeability in the underlying material.	0-60"	> 6'	SM, SP-SM, GM, GP, SP	2.0 - 6.0 2.0 - 6.0 >20	Severe: seepage
G737B	Towner-Barnes complex, 3-6% slopes	The Towner series consists of very deep, well or moderately well drained soils that formed in wind and water deposited sands over glacial till or lacustrine sediments. Permeability is rapid or moderately rapid in the upper part and moderate or moderately slow in the 2Bk and 2C horizons. These soils are on sand-mantled till or glaciolacustrine plains. The Barnes series consists of very deep, well drained soils that formed in loamy till. These soils are on till plains.	0-60"	3.0 – 6.0	CL, CL-ML, SM, SM-SC, SW-SM	6.0 - 20 6.0 – 20 0.2 - 0.6	Severe: seepage, wetness.

G738C	Dickey-Buse_Embden complex, 3-9% slopes	The Dickey series consists of very deep, well drained soils that formed in wind and water deposited sands over loam or clay loam till or lacustrine sediments. Permeability is moderately rapid or rapid in the upper part and moderate or moderately slow in the loamy material. These soils are on sand mantled till or glaciolacustrine plains. The Buse series consists of very deep, well drained soils that formed in loamy glacial till on moraines. The Embden series consists of very deep, well drained or moderately well drained, moderately rapidly permeable soils that formed in glaciofluvial and glaciolacustrine deposits. These soils are on lake plains, outwash plains, deltas and terraces.	0-60"	3.0 – 6.0 > 6.0	ML, CL, CL-ML, SM, SP-SM, SM-SC, SW-SM	6.0 - 20 6.0 – 20 0.2 - 0.6 0.2 – 2.0 0.2 – 0.6	Severe: seepage, wetness. Moderate: slope
G738E	Dickey-Buse-Embden complex, 6-25% slopes	The Dickey series consists of very deep, well drained soils that formed in wind and water deposited sands over loam or clay loam till or lacustrine sediments. Permeability is moderately rapid or rapid in the upper part and moderate or moderately slow in the loamy material. These soils are on sand mantled till or glaciolacustrine plains. The Buse series consists of very deep, well drained soils that formed in loamy glacial till on moraines. The Embden series consists of very deep, well drained or moderately well drained, moderately rapidly permeable soils that formed in glaciofluvial and glaciolacustrine deposits. These soils are on lake plains, outwash plains, deltas and terraces.	0-60"	> 6'	ML, CL, CL-ML, SM, SP-SM, SM-SC, SW-SM	6.0 - 20 6.0 – 20 0.2 - 0.6 0.2 – 2.0 0.2 – 0.6	Severe: seepage, slope.
G815B	Lohnes-Claire coarse sands, 0-6% slopes	The Lohnes series consists of very deep, well drained, rapidly permeable soils that formed in coarse and medium sands. These soils are on glacial lake and outwash plains. The Claire series consists of very deep, excessively drained, rapidly permeable soils that formed in coarse sand. These soils are on glacial outwash or delta plains.	0-60”	> 6’	SM, SP-SM, SP	6.0 - 20 6.0 - 20	Severe: seepage
CL – clay of low plasticity, GM-silty gravel, GP-poorly graded gravel, ML-silt, SC-clayey sand, SM-silty sand, SP-poorly graded sand, SW-well-graded sand							

Table 11-Soil Boring Information:

	TH 1	TH 2	TH 3
Elevation	1463	1463.7	1466.9
0 to 1	TS	TS	TS
1 to 2	ML	ML	ML
2 to 3	SC	SC	SP
3 to 4	SP	SP	SP
4 to 5	SP	SP	SP
5 to 6		SP/SW	SP
6 to 7		SW	SP
7 to 8			CL
8 to 9			CL
TS- top soil			

APPENDIX D – RESPONSE TO COMMENTS

Comments received during the public comment period will be addressed and placed here.

STATE ANIMAL FEEDING OPERATION PERMIT

NDAFO-0873

In compliance with Chapter 33-16-03.1 of the North Dakota Department of Health rules as promulgated under Chapters 61-28 and 23-25 of the North Dakota Century Code (NDCC), approval of the **Bromley Ranch, LLC** livestock facility located in the NE Quarter of Section 28, Township 153 N, Range 75 W, in McHenry County, North Dakota is granted provided the following conditions are met:

1. The application indicated the facility will house **1,500 beef feeders**. The department must be notified in writing if there is an expansion in the number of livestock, change in ownership of the facility, significant changes in the physical operation of the facility or if the lot area where livestock are concentrated is expanded. Changes may require an update to the permit.
2. Operation and Maintenance plans and standard operating procedures must be followed as submitted to the department. Changes to the Operation and Maintenance plan must be documented. These documents must be made available to the department upon request or during inspection. There must be regular and adequate maintenance and upkeep to prevent degradation of the structures, to ensure the system continues to operate as designed, to ensure the storage pond does not overflow, and to ensure manure or waste water does not discharge into waters of the state. Operation and maintenance plans mean description of the equipment, methods, and schedules for: inspection, monitoring, operation and maintenance of the animal feeding operation (manure storage structures, water pollution control structures, and the production area); and controlling water pollution and air pollution including odors to protect the environment and public health. (Design manual, 6.7, page 42)
3. Notice of Completion and all results of testing completed on the manure storage structures must be sent to the department within thirty days of completion of construction.
4. Mortality must be disposed of in accordance with NDCC section 36-14-19, in a manner acceptable to the North Dakota Board of Animal Health, and so they will not impact waters of the state.
5. Land application of manure must be in accordance with the nutrient management plan. Manure must be applied in a manner so it will not be washed into waters of the state. The department may require immediately incorporating the manure into the soil or leaving a buffer distance to prevent impacts to waters of the state or impacts from odors.
6. The following records pertaining to nutrient management must be maintained for a minimum of three years: The crops grown and an expected realistic crop yields; the dates(s) manure, litter or process waste water is applied to each field; test results from testing of manure, litter, and process wastewater, that are not more than three years old, and test results of the soil where manure was applied that are not more than three years old; and setbacks, vegetated buffers or other alternative practices used when land applying manure near surface water or potential conduits to surface water. (Design manual, 7.7, number 4, page 50)
7. This approval shall in no way permit or authorize the discharge of any objectionable odorous air contaminant which is in excess of the limits established in North Dakota Administrative Code Ch. 33-15-16 of the North Dakota Air Pollution Control Rules. If the department determines odors from the facility exceed limits, appropriate steps will be required, within a reasonable time, to control and reduce odors from the facility site. This may include requiring the installation of other odor control measures.
8. This permit shall in no way authorize the maintenance of a public nuisance or danger to public health or safety.
9. The department must be notified if there is a change in address or other contact information for the facility.
10. Any deficiencies discovered during the inspections shall be corrected as soon as possible; chemicals or other contaminants handled on site shall not be disposed of in a structure used for storage or treatment of manure, process wastewater or stormwater unless it is specifically designed for that purpose; and the operator of a livestock facility requiring a permit should maintain a rain gauge at the production area and record measurable rainfall events. (Design manual, 6.2, page 40)

11. There must be regular and adequate maintenance and upkeep to prevent degradation of the structures, to ensure the system continues to operate as designed, to ensure the containment system does not overflow, and to ensure manure or wastewater does not discharge into waters of the state.

The above conditions are considered part of the proper operation of the facility. If any of the above conditions are not met, the department must be notified in writing, within five (5) days. Any noncompliance with the approval conditions or with state requirements must be reported to the department as soon as possible after the facility becomes aware of the noncompliance condition. Failure to meet these requirements may result in monetary fines and/or revocation of this approval to operate.

Permission to begin construction becomes effective upon signature of this permit by the department. The permit is based on construction being completed as per the design plans reviewed by the department. If any structural changes are made that are different than these design plan, the department must be notified in writing and approval obtained, prior to making these changes.

Authorized department personnel shall be permitted access to the facility to determine compliance with department rules and regulations. Department inspections will abide by all security measures implemented by the owner or operator to protect the health and safety of the workers and animals at the facility.

The owner/operator of this facility shall comply with all State and Federal environmental laws and rules, and shall also comply with all local building, fire, zoning and other applicable ordinances, codes, and rules.

This permit becomes effective when construction is completed and Notice of Completion is received by the department.

I certify that I have read and understand the above information and agree to operate the facility in a manner that will meet all the conditions listed herein.

OWNER/OPERATOR CONSENT

By _____
(signature)

By _____
(print name here)

Date _____

FOR THE NORTH DAKOTA
DEPARTMENT OF HEALTH

By _____

By Karl Rockeman, Director
Water Quality Division

Date _____