MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Notice of Availability of an Environmental Assessment Worksheet (EAW)

Lass Farms Facility

Doc Type: Public Notice

Public comment information

EAW public comment period begins:	February 11, 2025
EAW public comment period ends:	March 13, 2025
Notice published in the EQB Monitor:	February 11, 2025
Permit public comment period begins:	February 11, 2025
Permit public comment period ends:	March 13, 2025

Facility specific information

Facility name and location:
Lass Farms Facility
*To Be Determined on 180th Avenue
Luverne, Minnesota 56156
Rock County
Vienna Township

Facility contact:
Activity Owner: George Lass, Lass Farms, LLC
Address: 1440 181 Street
Hardwick, Minnesota 56134
Phone: 507-920-3963
Email: gslass@frontiernet.net

MPCA contact information

MPCA EAW contact person:
Megen Kabele
Resource Management and Assistance Division
Minnesota Pollution Control Agency
520 Lafayette Road North
Saint Paul, Minnesota 55155
Phone: 651-757-2044
Email: megen.kabele@state.mn.us

MPCA Permit contact person:
Nick Timmerman
Watershed, West Feedlot – Marshall Office
Minnesota Pollution Control Agency
504 Fairgrounds Road, Suite 200
Marshall, Minnesota 56258
Phone: 507-476-7122
Email: nick.timmerman@state.mn.us

General information

The Minnesota Pollution Control Agency (MPCA) is distributing this Environmental Assessment Worksheet (EAW) for a 30-day review and comment period pursuant to the Environmental Quality Board (EQB) rules. The MPCA uses the EAW and any comments received to evaluate the potential for significant environmental effects from the project and decide on the need for an Environmental Impact Statement (EIS).

An electronic version of the EAW is available on the MPCA Environmental Review webpage at: https://mpca.commentinput.com/comment/search#. If you would like a copy of the EAW or permit or have any questions on the EAW or permit, contact the appropriate person(s) listed above.

Description of proposed project

Lass Farms, Inc. is proposing to construct a new feedlot consisting of one total confinement with a capacity of 1440 Animal Units[1] (AU) or 4800 head of swine. The proposed construction includes (1) 121-ft. by 336-ft. total confinement barn with an 8-ft. deep, below-ground pit and a stormwater detention pond. Water will be provided by the Lincoln Pipestone Rural Water Supply. The proposed Project is in the NW1/4 of SW1/4 of Section 15 of Vienna Township in Rock County.

To submit written comments on the EAW and Feedlot Permit

Written comments on the EAW must be received by the MPCA within the comment period listed above.

Comments may be submitted:

- Online at http://www.pca.state.mn.us/publiccomments; or
- By U.S. postal mail to the following address:

  Minnesota Pollution Control Agency
  Megen Kabele
  Resource Management and Assistance Division
  Minnesota Pollution Control Agency
  520 Lafayette Road North
  Saint Paul, Minnesota 55155

For information on how to comment on the Feedlot Permit, contact the MPCA Permit contact person listed above.

Note: All comment letters are public documents and will be part of the official public record for this project.

Need for an EIS

The MPCA Commissioner will make a final decision on the need for an EIS after the end of the comment period.

1 An "animal unit" or "AU" is a unit of measure developed to compare the differences in the amount of manure produced by livestock species. The "AU" is standardized to the amount of manure produced on a regular basis by a slaughter steer or heifer, which also correlates to 1,000 pounds of body weight. The "AU" is used for administrative purposes by various governmental entities for permitting and record-keeping.

Environmental Assessment Worksheet

Alternative EAW Form for Animal Feedlots

Note to preparers: This form is authorized for use only for the preparation of Environmental Assessment Worksheets (EAWs) for animal feedlots. Project Proposers should consult the guidance *Guidelines for Alternative EAW Form for Animal Feedlots* (also available at the Minnesota Environmental Quality Board (EQB) website http://www.eqb.state.mn.us/review.html or by calling 651-296-6300) regarding how to supply information needed by the Responsible Government Unit (RGU) to complete the worksheet form.

Note to reviewers: The Environmental Assessment Worksheet (EAW) provides information about a Project that may have the potential for significant environmental effects. This EAW was prepared by the Minnesota Pollution Control Agency (MPCA), acting as the Responsible Governmental Unit (RGU), to determine whether an Environmental Impact Statement (EIS) should be prepared. The Project Proposer supplied reasonably accessible data for but did not complete the final worksheet. Comments on the EAW must be submitted to the MPCA during the 30-day comment period which begins with notice of the availability of the EAW in the *Minnesota Environmental Quality Board (EQB) Monitor*. Comments on the EAW should address the accuracy and completeness of information, potential impacts that are reasonably expected to occur that warrant further investigation, and the need for an EIS. A copy of the EAW may be obtained from the MPCA by calling 651-757-2101. An electronic version of the completed EAW is available at the MPCA website: http://www.pca.state.mn.us/news/eaw/index.html.

1. Project information

Lass Farms Feedlot:	**Technical Contact Person:**	**MPCA Contact Person:**
George Lass	Jessica Mulder	Megen Kabele
Lass Farms, LLC	Extended Ag. Services, Inc.	Project Manager
1440 181st Street	202 South Highway 86	520 Lafayette Road North
Hardwick, Minnesota 56134	Lakefield, Minnesota 56150	Saint Paul, Minnesota 55155
gslass@frontiernet.net	jessica@extendedag.com	megen.kabele@state.mn.us
507-920-3963	507-662-5005	651-757-2044

A. Reason for EAW preparation:

EIS scoping	Mandatory EAW	Citizen petition	RGU discretion	Proposer volunteer
	X			

If EAW or EIS is mandatory, give EQB rule category subpart number and name:

Minn. R. 4410.4300, subp. 29(A).

Facility location	
County	Rock
City/Township	Vienna
NW	¼

Facility location	
SW	¼
Section	15
Township	103N
Range	44W
Watershed (name and 4-digit code)	Rock River Watershed: 10170204
Latitude	43.719610
Longitude	-96.109943
Nearest road intersection:	180th Street and County Highway 8
County Tax Parcel ID	12-0036-000

B. Attach each of the following to the EAW:

Attachment A: General Location Map
Attachment B: USGS 1:24,000 Topographic Map
Attachment C: Project Site Aerial Map
Attachment D: Manure Application Site Summary Map
Attachment E: One-mile Radius Map
Attachment F: Minnesota Department of Natural Resources Review of Natural Heritage Database
Attachment G: Minnesota Department of Health Public Water Supply/DWSMA Map
Attachment H: Minnesota Historical Society – State Historic Preservation Office Data Report
Attachment I: Air Modeling Report
Attachment J: Phosphorus Index Modeling Results
Attachment K: Cumulative Potential Effects Map
Attachment L: Groundwater Pollution Sensitivity Map
Attachment M: Odor OFFSET Results
Attachment N: Soil Survey Reports
Attachment O: Operation and Maintenance Plan, SDS
Attachment P: Office of State Archaeologist (OSA) and Minnesota Indian Affairs Council (MIAC) Cultural Sites Map
Attachment Q: Minnesota Indian Affairs Council Review
Attachment R: Minnesota Climate Trends for Rock County
Attachment S: U.S. Climate Resilience Report for Rock County
Attachment T: State Historic Preservation Office (SHPO) Review Comment Letter
Attachment U: Land Use Changes Calculator
Attachment V: Lass Farms Swine Feedlot GHG Calculations
Attachment W: SGEC Calculator – EPA – Construction
Attachment X: SGEC Calculator – EPA – Post Construction
Attachment Y: Engineering Plans – ProAg Engineering

C. Project Summary of 50 words or less to be published in the EQB Monitor.

Lass Farms, Inc. is proposing to construct a new feedlot consisting of (1) total confinement with a capacity of 1,440 Animal Units[1] (AU) or 4,800 heads of swine. The proposed construction includes (1) 121-feet by 336-feet total confinement barn with an 8-foot deep, below-ground pit and a stormwater detention pond. The proposed Project is in the NW1/4 of SW1/4 of Section 15 of Vienna Township in Rock County.

D. Please check all boxes that apply and fill in the requested data:

Animal type		Number proposed	Type of confinement
Finishing pigs	X	4,800 heads	Total confinement
Sows			
Nursery pigs			
Dairy cows			
Beef cattle			
Turkeys			
Layer hens			
Chickens			
Pullets			
Other (please identify)			

E. Project magnitude data.

Total acreage of farm: 1,007

Number of animal units proposed in this Project: 1,440

Total animal unit capacity at this location after Project construction: 1,440

Acreage required for manure application: 461.2 acre/year

F. Describe construction methods and timing.

Lass Farms, Inc. (Proposer) intends to construct a new swine finishing feedlot in Section 15, Vienna Township, Rock County (Attachments A and B). The Project consists of building (1) 121'-8'' by 336'-0'' total confinement, power ventilated barn with an 8-foot-deep concrete Liquid Manure Storage Area (LMSA) and a temporary animal mortality storage area with walls measuring 12-foot by 12-foot by 4-foot (Attachment C). The facility will house up to 4,800 hogs (1,400 AUs).

Lass Farms plans to begin construction in Spring 2025 by installing stormwater erosion prevention and sediment control Best Management Practices (BMPs), including silt fence and topsoil stripping and stockpiling. Soils excavated from the location of the proposed barn will be used to create the site

1 An "animal unit" or "AU" is a unit of measure developed to compare the differences in the amount of manure produced by livestock species. The "AU" is standardized to the amount of manure produced on a regular basis by a slaughter steer or heifer, which also correlates to 1,000 pounds of body weight. The "AU" is used for administrative purposes by various governmental entities for permitting and record-keeping.

driveway, the berm for the stormwater infiltration basin, and as material to grade stormwater away from the barn. The perimeter drain tile will be placed below the footing elevation at the construction limits of the reinforced concrete LMSA for the proposed barn to relieve seasonal saturation and limit hydrostatic pressure on the concrete LMSA walls and to dewater the Project excavation area if necessary due to saturated soils or precipitation events.

Lass Farms plans to install the LMSA, perimeter drain tile, additional driveway, and utilities at the same time. Construction includes the placement of concrete for the LMSA floors and building and column footings after the placement of specified reinforcing steel and concrete forms, followed by placing precast beams and slats after the design engineer has approved the wall and column construction. Lass Farms will then grade the surface to direct stormwater away from the buildings. The proposed project will create more than 1 acre of impervious area (39,279 square feet); therefore, a stormwater retention pond will be constructed. The construction site will be planted with grass after the commencement of construction. Engineered plans and the perimeter tile system designed for this proposal meet the projected increase of approximately 1.9 inches of precipitation over the life of this Project.

The construction dates are contingent upon completing the environmental review process and issuing a conditional land use permit from Rock County, which will allow the proposed activity and construction. Additionally, the project requires an SDS Permit from the MPCA. The proposer anticipates completing the construction by the fall of 2025.

G. Past and future stages.

Is this Project an expansion or addition to an existing feedlot?

- Yes.

Are future expansions of this feedlot planned or likely?

- No.

2. Land uses and noteworthy resources in proximity to the site.

A. Adjacent land uses. Describe the uses of adjacent lands and give the distances and directions to nearby residences, schools, daycare facilities, senior citizen housing, places of worship, and other places accessible to the public (including roads) within one mile of the feedlot and within or adjacent to the boundaries of the manure application sites.

The Project site and all associated manure application sites are on agricultural and rural land in Rock County. Rock County feedlot setback requirements state, “all new animal feedlots of 1000 Animal Units or greater shall be located no closer than ¾ mile from a neighboring residence (other than residences owned by the operators).” Further, a notarized waiver on forms provided by Rock County, signed by all affected owners of residences located within 0.25-0.75 miles of the proposed feedlot and signed by the applicant (Lass Farms, LLC) will be accepted to allow a permitted setback no closer than 0.25 miles from a neighboring residence. Two sites did not meet the Rock County Zoning Ordinance, so the Proposer obtained a waiver for two sites, indicated below.

Feedlot site

There are seven residences located within one mile of the site (Attachment E):

- Residence located .88 miles (4,697 feet) Northeast.
- Residence located .75 miles (4,011 feet) Southeast; waiver obtained.
- Residence located .94 miles (4,997 feet) Southeast.
- Residence located at .41 miles (2,201 feet) Southwest; waiver obtained.
- Residence located .88 miles (4,669 feet) Southwest.
- Residence located .76 miles (4,036 feet) Northwest.
- Residence located .82 miles (4,347 feet) Northwest.

There are five waterways within one mile of the site:

- The Unnamed Intermittent Stream – approximately 3,416 feet Northwest.
- The Unnamed Intermittent Stream – approximately 3,082 feet Northeast.
- The Unnamed Intermittent Stream – approximately 1,113 feet South.
- The Champepadan Creek – approximately 4,203 feet South.
- The Unnamed Intermittent Stream – approximately 3,368 feet Southwest.

The nearest incorporated town (Kenneth, MN) is approximately 2.7 miles northeast of the Project site.

There are 52 feedlots within an approximate 3-square-mile area surrounding the Facility, as shown in Attachment Z. The Facility and land application sites are in the Rock River watershed, where land use is primarily agricultural.

Manure application sites

The manure application sites are within 2.5 miles of the feedlot facility and are in Vienna and Battle Plain Townships in Rock County (see Attachment D). All sites are currently managed in crop production. Where easements for additional acres for manure application are required, the landowner(s) or designated agent(s) of these parcels shall also be required to participate in the development of the manure management plan. Signatures of all producers, landowners, and/or agents will be required on a manure management plan when submitted with the feedlot application.[2] If the proposed land application sites become unsuitable at any time for land application, the Proposer will assess their current land base for alternative locations for land application. Additionally, they will seek out other landowners who may have available acres for this purpose. Appropriate measures will be taken to update the manure management plan in accordance with the State Disposal System Permit (SDS) standards.

- Site 1: 116.3-acre site in the SE1/4 of Section 5, Vienna Township. There are county or township roads directly along the site location. Rock River flows in between the two fields.
- Site 2: 108.1-acre site in the NW1/4 of Section 33, Battle Plain Township. 201st Street is to the north of the site. There is one residence within the site. Rock River flows on the west side of this site.
- Site 3: 141.60-acre site in the NW1/4 of Section 12, Vienna Township. 181st Street is located to the north, and 200th Avenue is located to the west of the site. One residence is located southwest of the site, and the other is located north of the site.
- Site 4: 141.4-acre site in SW1/4 of Section 12, Vienna Township. 200th Avenue is located to the west of the site. There is one residence northwest of the site and one west of the site.

2 Rock County Zoning Ordinance, 153.386 (B)(C).

- Site 5: 153.1-acre site in the mid-quarter of the W1/2 of Section 15, Vienna Township. 180th Avenue is to the west of the site.
- Site 6: 151.2-acre site in the SW1/4 & NW1/4 of SE1/4 of Section 4, Vienna Township. 181st Street is to the south of the site. There is one residence to the west of the land application site. Rock River flows along the northwest edge of the field.
- Site 7: 194.7-acre site in the SE1/4 & E1/2 of SW1/4 of Section 15, Battle Plain Township. 221st Street is south of the site and 190th Avenue to the east. There is one residence to the southeast of the land application site.

B. Compatibility with plans and land use regulations. Is the Project subject to any of the following adopted plans or ordinances? Check all that apply:

Plans/ordinances	
Local comprehensive plan	X
Land use plan or ordinance	X
Shoreland zoning ordinance	
Flood plain ordinance	
Wild or scenic river land use district ordinance	
Local wellhead protection plans	
Missouri River Watershed One Watershed One Plan	

Is there anything about the proposed feedlot that is not consistent with any provision of any ordinance or plan checked?

- No.

If yes, describe the potentially affected use and its location relative to the feedlot, its anticipated development schedule, and any plans to avoid or minimize potential conflicts with the feedlot.

Missouri River Watershed – One Watershed, One Plan

The Proposer has addressed priority issues outlined in the Missouri River Watershed One Watershed One Plan in the following manner:

- **Issue: Surface waters**. Elevated suspended solids (sediment) and phosphorus levels, elevated bacteria (i.e., E. coli and fecal coliform) levels, elevated phosphorus concentrations in the water, and increased risk of algal blooms. Lass Farms will reduce the impacts of surface water contamination by implementing proper manure management practices, including applying to fields at appropriate times and creating buffer zones along waterways.
- **Issue: Local knowledge base and tech capacity**. Lack of understanding, agreement, and consensus about the hydrologic impacts of tile drainage and the benefits to producers. Lass Farms will address this issue by working with the local Soil and Water Conservation District to gain knowledge and understanding of the impacts on tile drainage and how it can benefit the producer.
- **Issue: Land development and stewardship** - Manure application and disposal directly affecting water quality. Lass Farms will reduce the impacts of manure application by following setbacks and incorporating manure to minimize the contributions of fecal coliform to the watershed.

C. Nearby resources. Are any of the following resources on or near the feedlot, manure storage areas, or within or adjacent to the boundaries of the manure application sites? Answer yes, or no.

Nearby resources	Yes	No
Drinking Water Supply Management Areas designated by the Minnesota Department of Health?		X
Public water supply wells (within two miles)?	X	
Archaeological, historical or architectural resources?	X	
Designated public parks, recreation area or trails?		X
Lakes or Wildlife Management Areas?	X	
State-listed (endangered, threatened or special concern) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities?	X	
Scenic views and vistas?		X
Other unique resources?		X

If yes, describe the resource and identify any project-related impacts on the resource. Describe any measures to minimize or avoid adverse impacts.

Nearby Resources Identified:

Drinking Water Supply Management Areas (DWSMA)

The Project is not within a Drinking Water Supply Management Area.

Public water supplies

One public well is located .5 mile from a land application site in the City of Kenneth (Well #00222791). No public wells have been identified within two miles of the Project facility. The proposed site will utilize Lincoln Pipestone Rural water as a feedlot source. The water supply is approximately 6 miles south of the proposed site, and the line to hook up to the water source runs adjacent to the proposed feedlot.

Archaeological/historic resources

Three sites of Historical significance were identified in a search of the Minnesota Archaeological Inventory and Historic Structures Inventory for the search area requested. Please see below:

- One bridge in Section 28 of (T104N-R44W) was identified.
- One bridge in Section 33 of (T104N-R44W) was identified.
- Lithic debris site in Section 33 of (T104N-R44W) was identified.

Tribal resources

The Minnesota Indian Affairs Council completed a Cultural Resource Review, which is included in Attachment Q. No known or suspected burial sites may be affected by this Project. The SHPO data report indicated a pre-settlement lithic scatter site in Section 33 where manure application is to occur (see Attachments H and P). A subsequent comment letter from SHPO (Attachment H) indicated the site would not be affected by the project, therefore, additional literature research was not conducted.

Wildlife management areas

No Wildlife Management Areas were identified within two miles of the Project or manure application sites.

State-listed (endangered, threatened or special concern) species, rare plant communities or other sensitive ecological resources

The Minnesota Natural Heritage database (Attachment F) has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur near the proposed feedlot facility or manure application sites. Based on the review of the Project, the following rare features may be impacted by the proposed Project:

- Stretches of the Rock River, Champepadan Creek, and several unnamed tributaries near the Project have documented records of plains topminnow and Topeka Shiner.
- The Minnesota Biological Survey has identified Sites of Moderate Biodiversity Significance near the proposed Project and land application sites in T103 R44W Sections 13-14 and 14-15.

Mitigation Measures for Nearby Resources

Archaeological/Historic sites

Project-related management activities to minimize potential adverse impacts to identified archaeological and historical resources include following posted bridge and road weight restrictions and using alternate routes to access the site or manure application sites. All of the access points, including commercial and agricultural traffic, are currently utilized for their designed purpose.

Tribal resources

The Minnesota Indian Affairs Council completed a Cultural Resource Review and determined no known or suspected burial sites would be affected by this project. However, a site with potential lithic scatter near a land application site was identified. To minimize potential impacts on cultural resource sites, management practices would include avoiding areas where cultural resources are located, following required setbacks from sensitive areas for land application, and using alternate routes to access the site and manure application sites. Lass Farms has been provided with the general location of the lithic scatter site, which is not included in this EAW.

Rare species/natural features

Project-related management activities to minimize potential adverse impacts to identified natural resources include utilizing regular manure testing and calibrating manure application rates to crop need, timing applications to reduce conversion to nitrate, and exceeding separation distances designed to protect vulnerable water supplies.

Applying manure at agronomic rates reduces the likelihood of excess nitrates leaching into sensitive aquifers[3]. In addition, applying manure when soil temperatures are near, at, or below 50 degrees Fahrenheit reduces the potential for nitrate conversion in the soil, thus decreasing the potential for nitrate leaching during times between active crop growth. Nitrification inhibitors can also be utilized to

3 Sawyer, J. and Randall, G. (2008) Final Report: Gulf Hypoxia and Local Water Quality Concerns Workshop. Pages 59-71. ASABE. Retrieved December 2015: http://www.agronext.iastate.edu/soilfertility/info/Gulf05PP.pdf

reduce the potential for nitrate losses[4]. Over-application or improper application of liquid manure can lead to the transport of nutrients into the groundwater or surface water through leaching or overland flow. Nitrogen loading is a potential threat to the sites because it can result in a loss of plant species diversity, an increased abundance of non-native invasive species, and the disruption of ecosystem functioning. As such, manure application rates and timing will be carefully determined to ensure nutrient input does not exceed the ability for crop nutrient uptake and result in runoff to these ecologically significant areas.

3. Geologic and soil conditions

A. Groundwater and Bedrock Depth

Approximate depth (in feet) to:	Feedlot	Manure storage area	Manure application site
Groundwater (minimum)	0.5' – 2'	0.5' – 2'	0.5' – 6.7'
(average)	1'	1'	4'
Bedrock (minimum)	>400'	>400'	>400'
(average)	>400'	>400'	>400'

*Groundwater depth from NRCS Soil Survey, Wet Soil Moisture Status in wettest month (April).

The NRCS Web Soil Survey, shown in Attachment N, provides soils information. Reports used in this investigation included the "Depth to Water Table" Rating and "Depth to Bedrock" Rating. Soil boring test holes were conducted and showed no groundwater during testing. Bedrock will not be encountered during construction.

B. NRCS Soils Classifications

NRCS soil	Feedlot	Manure storage area	Manure application site
Classifications (if known):			
Hokans-Svea Complex, Svea Loam, Lake Park-Roliss-Parnell, Balaton Loam, Vallers Clay Loam, Barnes-Buse Complex	J101B, J11A, J96C2, J57A, J107A	J101B, J11A, J96C2, J57A, J107A	P13B, P16A, P32A, P38B, P30B, P36A

The soils in the Project area indicate high seasonal water tables. Measures were taken in the LMSA design to address seasonal water levels. A perimeter tile system will be implemented to control the elevation of the water table or saturated soils. The perched groundwater (groundwater that can't percolate through heavy glacial till soils underneath the site) is addressed by a footing drain tile along the perimeter of the proposed LMSA. The tile will outlet into a field tile underneath the proposed stormwater basin south of the barn shown in Attachment Y – Engineering Plans (pp 2-3). There will be an inspection port on the southwest corner of the proposed LMSA to inspect the drainage system. There are no ag drainage wells located on site.

4 Nelson, D.W. and Huber D. (1992). Nitrification Inhibitors for Corn Production. National Corn Handbook, NCH-55. Iowa State University. Retrieved December 2015. http://corn.agronomy.wisc.edu/Management/pdfs/NCH55.pdf

C. Indicate with a yes or no, whether any of the following geologic site hazards to groundwater are present at the feedlot, manure storage area or manure application sites.

	Feedlot	Manure storage area	Manure application site
Karst features (sinkhole, cave, resurgent spring, disappearing spring, Karst window, blind valley or dry valley)	No	No	No
Exposed bedrock	No	No	No
Soils developed in bedrock (as shown on soil maps)	No	No	No

For items answered yes (in 3.C.), describe the features, show them on a map, and discuss proposed design and mitigation measures to avoid or minimize potential impacts.

4. Water use, tiling and drainage, and physical alterations.

A. Will the Project involve the installation or abandonment of any water wells, appropriation of any ground or surface water (including dewatering), or connection to any public water supply?

- No.

If yes, as applicable, give location and purpose of any new wells; the source, duration, quantity and purpose of any appropriations or public supply connections; and unique well numbers and the Department of Natural Resources (DNR) appropriation permit numbers, if available. Identify any existing and new wells on the site map. If there are no wells known on-site, explain methodology used to determine that none are present.

There is no well on the Project site. Lincoln Pipestone Rural Water will be used as a water source. The line connecting to the water source is approximately 6 miles south of the proposed site.

B. Will the Project involve installation of drain tiling, tile inlets or outlets? If yes, describe.

Yes, the project will involve the installation of drain tiling, tile inlets, or outlets. Lass Farms will install 4-inch high-density polyethylene perimeter drain tile around the base of the Project LMSA subgrade concrete pit to control hydrostatic pressure on the outside of the concrete pit walls caused by fluctuations in seasonal saturation. The system is intended to reduce/eliminate groundwater pressure on the LMSA and any increase in precipitation. Inspection ports connected to the perimeter tiles will allow the Proposer to observe if the tiles are operational and may help identify seepage from the pits if a leak occurs. The drain tile will connect to the existing agricultural drain tile. A stormwater infiltration sediment basin is proposed to control impervious surface runoff.

The Proposer will use the Operation and Maintenance Plan submitted as part of the SDS Permit application. The Proposer's Operation and Maintenance Plan is integral to and enforceable through the SDS Permit and must meet the requirements of Minn. R. 7020.2100. The Proposer's Operation and Maintenance Plan, Attachment O, must include perimeter tile-specific requirements for the Proposer to follow, including:

- The Proposer must conduct weekly monitoring of the perimeter drain tile for water flow and signs of discoloration or odor.

- The Proposer will maintain records of all inspections as part of the operation and maintenance of the concrete LMSA.

C. Will the Project involve the physical or hydrologic alteration – dredging, filling, stream diversion, outfall structure, diking and impoundment – of any surface waters such as a lake, pond, wetland, stream or drainage ditch?

- No.

If yes, identify water resource affected and give the DNR Protected Waters Inventory number(s) if the water resources affected are on the PWI. Describe proposed mitigation measures to avoid or minimize impacts.

5. Manure management

A. Check the box or boxes below which best describe the manure management system proposed for this feedlot.

Proposed manure management system	
Stockpiling for land application	
Containment storage under barns for land application	X
Containment storage outside of barns for land application	
Dry litter pack on barn floors for eventual land application	
Composting system	
Treatment of manure to remove solids and/or to recover energy	
Other (please describe)	

B. Manure collection, handling and storage.

Qualities of manure generated:

Total: 1,887,114 gallons.

Frequency and duration of manure removal (number of days per cycle):

Total days per year: 4 days.

Give a brief description of how manures will be collected, handled (including methods of removal), and stored at this feedlot:

Swine manure and wastewater generated by the Project will drop through slatted floors into professionally engineered reinforced concrete pit where it will be stored. The pit will be eight feet deep with an effective storage capacity of approximately 1,935,929 gallons, which represents manure storage capacity over one year. The below-building pit will use pit fans for ventilation.

Annually in the fall, Lass Farms will agitate and pump out the manure from the pit using a portable chopper pump and hire a Commercial Animal Waste Technician (CAWT) licensed by the Minnesota Department of Agriculture to land apply the manure at the manure application sites. These sites may change over time and are monitored and enforced through the Feedlot Permit. This EAW will only address the manure application cycle for the 2025 crop year. The CAWT will incorporate the manure into the soil immediately after land application, using a knife injection system.

C. Manure utilization.

Physical state of manure to be applied:

Application	
Liquid	X
Solid	
Other (describe)	

D. Manure application.

Describe application technology, technique, frequency, time of year and locations.

Lass Farms will hire a CAWT to land apply manure at designated manure application sites outlined in Attachment D, following the manure management plan. Manure application is estimated to take no more than five days and will be executed using a towed hose system or a liquid manure tanker. The manure will be incorporated into the soil within 24 hours. The CAWT will calibrate the tank application system by using a flow meter and then adjusting the speed of the manure application equipment to achieve the planned application rate. All manure application sites are currently in row crop production, though this may change in the future. The manure is used as a fertilizer replacement in the existing nutrient management plan.

Describe the agronomic rates of application (per acre) to be used and whether the rates are based on nitrogen or phosphorus. Will there be a nutrient management plan?

Lass Farms has submitted a MMP with their Feedlot Permit application. After MPCA review and approval, the MMP becomes an integral and enforceable part of the Feedlot Permit.

Lass Farms will apply manure at agronomic rates per the MPCA-approved MMP to prevent excess nutrient buildup in the soil based on the crop grown, the soil type, and the soil chemistry. The manure application rates cannot exceed the crop's nitrogen needs. Crop phosphorus needs are carefully considered in areas of the field near water features or where soil tests indicate elevated soil phosphorus levels, as shown in Attachment J. The agronomic rates are regularly reviewed and updated in the Feedlot Permit and the MMP. Failure to follow these rules may subject the permit holder to penalties.

Lass Farms will prioritize manure application sites based on logistics and nitrogen, phosphorus, and potassium soil test levels. Fields requiring the most nitrogen, phosphorus, or potassium receive the manure first. Other factors include current field conditions, crops grown, yield goal, organic matter content, previous manure credits, and other legume credits. Nutrient rates are determined by utilizing

the University of Minnesota Extension Service bulletin[5], "Fertilizer Recommendations for Agronomic Crops in Minnesota.

Fertilizer Recommendations for Agronomic Crops in Minnesota

Previous crop	Crop to utilize manure	Expected yield	Nitrogen needed	Phosphorus Removed[6]
Corn	Corn	210 bu/ac	195 lbs N/ac	71.4 lbs P_2O_5/ac
Soybean	Born	210 bu/ac	150 lbs N/ac	

*Note: P_2O_5 removed in grain, per crop year.
ac – acres
bu – bushel
lbs – pounds
N – nitrogen
P_2O_5 – phosphorus

This procedure has been developed from continual Land Grant University research as the one that best predicts the amount of that nutrient in the soil that plants can use. A 'Maximum Return to Nitrogen value (MRTN) will be used to determine the appropriate manure application rates. The manure application acres are soil sampled at least every four years to monitor crop needs and target acres that will positively respond to manure applications.

E. Discuss the capacity of the sites to handle the volume and composition of manure. Identify any improvement necessary.

The Project will generate approximately 1,888,114 gallons of manure per year from the estimated 4,800 head of swine. The manure storage pit can hold 1,935,929 gallons of manure. Each year, 503.5 acres of fields are available for manure application. The number of fields required to utilize the Project's manure will vary from year to year based on the nutrient content of the manure and soil needs. Lass Farms will apply the manure at agronomic rates based on composite tests pulled from the manure storage areas before land application. Currently, the fields are managed in a corn/corn and corn/soybean rotation. Approximately 461 acres of corn will be necessary to utilize all manure from the Project each year.

Currently, all manure application sites are in row crop production. The land is owned or rented by Lass Farms. There is sufficient land available for manure application to utilize the nutrients generated by the Project; however, if needed, more acres could be acquired from neighboring or nearby fields under the control of other operators. If the manure is transferred, Lass Farms will complete and maintain records following the MPCA guidelines for transferring ownership of manure.

All fields designated for manure application were evaluated using the Minnesota Phosphorus Index (MN P Index). The MN P Index is a model that estimates the risk of phosphorus loss on fields. Lass Farms evaluated the manure application sites with this index and determined all fields received a risk rating of 'Very Low Risk,' which recommends 'No Management Changes,' thus, no improvements are necessary.

5 The University of Minnesota Extension "Fertilizer Recommendations for Agronomic Crops in Minnesota" bulletin. Retrieved July 2023: https://blog-crop-news.extension.umn.edu/2023/07/2023-fertilizer-guidelines-for.html

6 International Plant Nutrition Institute. (IPNI) Retrieved April 1, 2016 and Minnesota Department of Agriculture and University of Minnesota Extension bulletin. https://www.mda.state.mn.us/sites/default/files/2018-05/nutmantables.pdf

F. Describe any required setbacks for land application systems.

Based on an MPCA review and approval of the MMP for the existing and proposed feedlots, Lass Farms has an adequate land base to properly apply animal waste as fertilizer. Rock County has a specific ordinance directed at the land application activities, which meets or exceeds the MPCA feedlot regulations about setback distances from environmentally sensitive features. Rock County follows minimum setback requirements set forth in Minnesota Rule 7020.2005, Minn. Statute 103F.48, and adds two requirements for soil incorporation and well setbacks. They are as follows:

- **Soil incorporation:** Surface applied manure within 300 feet of tile intakes, open ditches, wetlands, intermittent streams and unbermed ditches shall be incorporated within 24 hours of application in the absence of a vegetative buffer strip of at least 50 feet in width. Surface-applied manure within 300 feet of lakes and streams shall be incorporated within 24 hours of application in the absence of a vegetative buffer strip of at least 100 feet in width.[7]

- **Well setback:** No manure shall be stored or spread within 100 feet of any well.[8]

Animal waste land application setback distances:

	Winter frozen or snow-covered soil	**Non-winter with immediate incorporation (<24 hours)**		**Non-winter not incorporated (within 24 hours)**	
		With phosphorus management	**No phosphorus management**	**Vegetated buffer**	**Inadequate vegetated buffer**
Lakes, streams	300	25	300	100	300
Intermittent stream*, DNR protected wetland**, drainage ditch w/o berms	300	25	300	50	300
Open tile intake	300	0	0	300	300
Well, mine or quarry	100	100	100	100	100
Sinkhole with no diversion berm	Downslope of 50’ Upslope of 300’	50	50	Downslope 50’ Upslope 300’	Downslope 50’ Upslope 300’

G. Other methods of manure utilization. If the Project will utilize manure other than by land application, please describe the methods.

None.

7 Rock County Zoning Ordinance, 153.386 (D)

8 Rock County Zoning Ordinance, 153.387 (F)

6. Air/odor emissions

A. Identify the major sources of air or odor emissions from this feedlot.

The primary source of air and odor emissions from the Project is the LMSA. The barn's ventilation, any surface that comes into direct contact with animals and manure, the animals confined at the facility, animal mortality structure, and all proposed manure application fields are all potential sources of minimal to significant air and odor emission. The site will also have increased vehicle traffic, which will generate additional dust that can act as a carrier for air and odor emissions. An Air Quality Modeling Report was prepared according to the Minnesota Pollution Control Agency publication 'MPCA Air Dispersion Modeling Practices Manual (September 2016" and the United States Environmental Protection Agency documents "Revision to the Guidelines on Air Quality Models (July 2015) and AERMOD Implementation Guide (March 2009)."

B. Describe any proposed feedlot design features, air or odor emission mitigation measures to be implemented to avoid or minimize potential adverse impacts and discuss their anticipated effectiveness.

Odor will occur at the Project site and associated manure application sites, especially during manure LMSA agitation, pumping, and land application. However, the Project will be a total confinement, which reduces the surface area of manure exposed to the air. Although odor, to some extent, is unavoidable, Lass Farms will implement the following practices to help minimize the intensity and duration of peak odor:

- Maintain clean, dry floors, eliminate manure buildup, and clean up spilled feed.
- Clean and disinfect interior surfaces at the end of each cycle.
- Regularly clean and inspect all ventilation fans and LMSA exhaust fans.
- Agitate stored manure only immediately before the manure is removed for land application.
- Consult with the MPCA/County Feedlot Officer to identify changes to reduce odors if complaints are received.
- Removal of animal carcasses within 72 hours unless other arrangements for disposal have been approved by the Minnesota Board of Animal Health.
- Reduce crude protein in the hogs' diet to reduce ammonia emissions.
- Utilize synthetic amino acids such as lysine in the hogs' feed to reduce the amount of excess nutrients, like nitrogen, that is excreted. This can lead to a reduction in ammonia and odor emissions from manure.

Manure application sites:

- All manure will be land-applied by injection as soon as field conditions permit to prevent contact with the atmosphere.
- Observe all required setback requirements from nearby residences for all manure applications.
- Consider wind speed/direction and humidity prior to application to minimize any potential impact to neighbors and the public.
- Respond to complaints by consulting with the MPCA/County Feedlot Officer to identify possible changes to reduce odors.

- Evaluate weather and field conditions prior to application to ensure that field conditions are suitable, and that manure can be applied in a manner that will minimize loss.
- Inspect and maintain all manure application equipment to minimize any potential spill or misapplication of manure.

The Project site and manure application sites are within an area zoned AG, for agricultural preservation. The Rock County Code of Ordinances declares the “ag district is intended to allow suitable areas of Rock County to be retained in agricultural use; prevent scattered, non-farmed development; and secure economy in governmental expenditures for public services, utilities, and schools.” The proposed Project meets all conditions of the Rock County Development Code.

The University of Minnesota Department of Bio-Systems and Agricultural Engineering has developed an odor modeling program, OFFSET, designed to estimate average odor impacts from various animal facilities and manure storages. The model calculates the frequency of odor occurrences at various distances from the farm site, representing different frequencies when odors will not be at levels considered "annoying." These odor annoyance-free frequencies represent the percent of time where odors are possibly detected, but at a level that is not typically regarded as annoying. An evaluation of the proposed Project indicates that the nearest residences are within the 97% odor “annoyance-free” zone (see Attachment M).

Answer this item only if no feedlot design features or mitigations were proposed in item 6. B. Provide a summary of the results of an air emissions modeling study designed to compare predicted emissions at the property boundaries with state standards, health risk values, or odor threshold concentrations. The modeling must incorporate an appropriate background concentration for hydrogen sulfide to account for potential cumulative air quality impacts.

Air Quality Criteria

Hydrogen sulfide, ammonia, and odor concentrations were calculated along the effective property lines for the proposed feedlot and at the location of all identified residences and public use areas within the modeled area of interest. The following air quality criteria were considered during the dispersion modeling of this site, as shown in Table 11.

- Third highest average hourly hydrogen sulfide concentration at the effective property lines of the proposed feedlot
- Highest average monthly hydrogen sulfide concentrations at nearby residences and public use areas
- Highest average hourly ammonia concentration at the effective property lines of the proposed feedlot
- Highest average annual ammonia concentrations at nearby residences and public use areas
- Highest average hourly odor unit intensity at the effective property lines of the proposed feedlot and nearby residences and public use areas

The air dispersion model was based on a protocol approved by the MPCA on July 18, 2024. The protocol included the calculation of hydrogen sulfide emissions, ammonia emissions, and odor unit emissions from the proposed swine feedlot; the locations of receptors at the effective property line of the proposed site; and the locations of twenty-five (25) nearby residences and one (1) public use area within the three-mile by three-mile modeled area of interest centered in the section containing the proposed site. A complete report of the air quality modeling findings is found in Attachment I.

Table 11. Summary of modeling results (see Table 1, Attachment I).

Pollutant	Averaging period	Concentration threshold	Modeled concentration	Maximum concentration	Percent of threshold	Receptor site
Hydrogen sulfide	Hourly	30 ppb	6.21 ppb	23.21 ppb	77%	Property line
Hydrogen sulfide	Monthly	10 µ/m^3	5.33 µ/m^3	6.33 µ/m^3	118%	Residence
Ammonia	Hourly	3200 µ/m^3	368.16 µ/m^3	516.6 µ/m^3	16%	Property line
Ammonia	Annual	80 µ/m^3	23.13 µ/m^3	28.85µ/m^3	36%	Residence
Odor	Hourly	72 OU/µ	49.11 OU/µ	Very faint	38%	Property line

Hydrogen sulfide: The AERMOD modeling results suggest the proposed Lass Farms feedlot will comply with the Minnesota ambient air quality standard for hydrogen sulfide. The standard regards the third exceedance of 30 parts per billion (ppb) within any 5-day period as a violation. Compliance is demonstrated when the high-third-high (H3H) concentration (with background) for any 5-day period at each property-line receptor is less than 30 ppb. AERMOD calculated a maximum H3H hydrogen sulfide concentration of 6.21 ppb at the feedlot's property lines. When a background concentration of 17 ppb is added to the AERMOD-calculated concentration, the H3H hydrogen sulfide concentration is 23.21 ppb, below the ambient standard of 30 ppb (see Table 11, Attachment I).

The AERMOD results indicate that the proposed Lass Farms feedlot and the 15 neighboring feedlots will not create exceedances of the subchronic (13-week) hydrogen sulfide iHRV at the neighboring residences. The highest average monthly hydrogen sulfide concentrations at nearby residences were 5.33 µg/m3. When a background concentration of 1µg/m3 is added to the AERMOD-calculated concentration, the H3H hydrogen sulfide concentration is 6.33 µg/m3, which is below the ambient standard of 80 µg/m3 (see Table 12, Attachment I).

Ammonia: The modeling results suggest the proposed feedlot will not create exceedances of the acute ammonia iHRV. AERMOD calculated a maximum hourly property-line ammonia concentration of 368.16 µg/m3. When a background concentration of 148 µg/m3 is added to the AERMOD-calculated concentration, the maximum property-line ammonia concentration is 516.16 µg/m3, which is below the acute ammonia iHRV of 3,200 µg/m3.

The AERMOD results indicate that the proposed Lass Farms feedlot and the 15 neighboring feedlots will not create exceedances of the chronic ammonia iHRV at the neighboring residences. The maximum highest average annual Ammonia concentrations at a nearby residence was 28.85 µg/m3, below the concentration threshold of 80 µg/m3.

Odor: Based on the air dispersion modeling analysis, AERMOD modeling results indicate that after construction, the Project will not exceed the very faint odor strength at the effective on the south, north, and east property lines of the feedlot. The modeled maximum hourly odor intensity was 49.11 OU/m3 – classified as a "Very Faint" odor on the west property line.

Twelve nearby residences exceeded the 25 OU/m3 threshold on a range of 6.93-175.12 OU/m3, which falls under the threshold of 212 OU/m3, defined as a "Moderate" odor. 10 of the 12 residences that exceeded the 25 OU/m3 thresholds are residences with existing feedlots.

AERMOD modeling results for the proposed Lass Farms feedlot suggest compliance with the hydrogen sulfide air quality standard, no exceedances of the subchronic hydrogen sulfide iHRV, no exceedances of the acute ammonia iHRV, and no exceedances of chronic ammonia iHRV. Modeling results also indicate that the Project will not contribute to a significant increase in odor concentration.

C. Describe any plans to notify neighbors of operational events (such as manure storage agitation and pump out) that may result in higher than usual levels of air or odor emissions.

Lass Farms does not plan to actively seek out and notify neighbors of activities considered necessary for the operation. This operation would include regular traffic, loading and unloading of livestock, manure pumping, agitation, or application. Lass Farms will use good neighbor practices to the best of their abilities and try to avoid manure handling during planned social events and holidays or any other known events in the neighborhood that would be disrupted by manure application.

Lass Farms will follow the 7020.2002 Ambient Air Quality Standards, where an owner of a feedlot is exempt from the state ambient air quality standards during the removal of manure from the barn or manure storage facilities pursuant to the limitations in Minnesota Statutes, section 116.0713, paragraphs (B) and (C). Nothing in this part limits the emergency powers authority of the Minnesota Pollution Control Agency in Minnesota Statutes, section 116.11.

The operator of a livestock production facility that claims exemption from the state ambient air quality standards shall notify the commissioner or county feedlot pollution control officer. Notification must include:

- The names of the owners or the legal name of the facility.
- The location of the facility by county, township, section, and quarter section.
- The facility's permit number, if applicable.
- The anticipated start date and the anticipated number of days of removal of manure from barns or manure storage facilities.

Lass Farms will evaluate weather conditions before manure application to minimize impacts on neighbors and the public.

Lass Farms will work with county and state officials to find a resolution if there are complaints and will implement the air emission plan included in the Feedlot Permit application if an odor event occurs. The air emission plan is an enforceable provision of the Feedlot Permit.

7. Climate resilience and adaptation

A. Describe the climate trends in the general location of the Project (see Guidance for Environmental Review of Animal Feedlots) and how climate change is anticipated to affect that location during the life of the Project.

Table 12. Summary of reported climate trends (*examples shown in italics*).

State of Minnesota historic climate trends (data-driven) and projected climate changes (model-driven)	County/local trends	Project impacts (climate effects on Project location)
Average annual temperature increasing	The average temperature has increased around 0.31°F/decade from 1980-2023 in Rock County. This average temperature includes all seasons. – Attachment R	*Increased demand for energy in cooling during hot summers, increased water demand, issues with infrastructure.*
Average annual precipitation increasing	Based on the trends from 1980-2023 the average annual precipitation has increased around 0.25 inches per decade in Rock County. The average annual precipitation includes all seasons. – Attachment R	*Possible issues with infrastructure, issues with hauling on local gravel roads, erosion on soils and driveways around Project area.*
Cold weather warming	Based on the trend for cold weather warming, it shows around a 4-degree increase in minimum temperature in Rock County. The average minimum temp includes all seasons. – Attachment R	*Increased freeze-thaw cycles could damage roads and cause issues to the infrastructure.*
Heavier, more damaging rains	There is an increase in heavier rain events for Rock County. – Attachment S	*Potentially could cause soil saturation around facility, possible issues to infrastructure, soil erosion on driveway and roadways.*
Increasing heat waves	There is a projected increase in days ≥ 95° from a historical trend of 3 days to an average of 17 days by 2064. - Attachment S	*Possible issues to infrastructure, increased energy demand.*
Increasing risk of drought	There is minimal to no change in drought trend based of trends reported in the US Climate Resilience Tool for Rock County.– Attachment S	*Roads could produce a lot more dust due to lack of moisture, reduced water availability.*
Optional: Additional relevant climate variables		

Minnesota's climate is getting warmer in the winter, with heavier rain events and increased heat during the summer months, and the possibility for potential longer drought spells.[18]

Minnesota has shown a 3.0-degree F increase between 1895 and 2020 and the average annual precipitation has increased by 3.4 inches. Even though the climate conditions will vary from year to year and from location to location, these increases are expected to continue.[18]

Changes in the climate can have positive and negative effects on agriculture. Moderate warming and higher carbon dioxide levels can help plants grow faster, but severe warming can reduce crop yields, floods, droughts, and heat waves can reduce yields, but practices like planting cover crops and deep-rooted perennials can help build healthier soils.

The climate trends in Rock County, where the proposed Project is located, are trending closely in line with state trends. From 1895 to 2023, the average temperature and the average minimum temperature increased around 3 degrees.[19] Rock County has also seen a small increase of 3 inches of rain in the same period.[19]

Table 13. Climate trends and projections resource tools.

	Climate trend tools	**Tools used in the EAW**	**How the tool was used**
	Options from Environmental Quality Board (EQB)		
Current trends	Minnesota Climate Trends (state.mn.us)	Minnesota Climate Trends	*Used to determine the climate trends in Rock County for temperature and precipitation.*
Projected changes	Climate Mapping for Resilience and Adaptation	Climate Mapping for Resilience and Adaptation	*Used to determine future drought, heat and rain events.*
	US Climate Resilience Toolkit	US Climate Resilience Toolkit	Used to determine climate projections.

*18 - https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html

*19 - https://arcgis.dnr.state.mn.us/ewr/climatetrends/

B. For each Resource Category in the table below: Describe how the Project's proposed activities and how the Project's design will interact with those climate trends. Describe the proposed adaptations to address the Project effects identified.

Table 14. Interaction of proposed activities with each climate trend and projection listed in 7.A (examples are shown in italics).

Resource category	Climate trends and climate projections	Project components	Potential Environmental Effects • Identify climate change risks & vulnerabilities. • Identify long-term impacts that climate conditions pose to proposed activities.	Adaptation strategies (with applicable timeframe – construction to end of expected lifespan).
Project design	**Annual average temperature increasing**	Increase of impervious surfaces.	There is no foreseen interaction between impervious surfaces and average temperature increasing due to the Project location in rural area.	Limit impervious surfaces if possible.
		Increased quantity of concrete and building materials.	There will be an increase in heat absorption with a new building structure and concrete in this location.	Use materials that will reduce heat absorption, monitor site and repair/replace materials on an as needed basis to preserve the longevity of the Project.
		Increase of traffic on County Road 8 and Township Road 180th Avenue.	Infrastructure may be more vulnerable to damage and deterioration from elevated temperatures. Increased temperatures may cause impairment overtime to blacktops. Increased degradation of blacktop may occur with increased temperature, especially with a milder winter.	Use of construction materials that are resilient to increasing temperatures for the life of the Project. Monitor roads and work with local road authorities and an any issues that may arise.
	Average annual precipitation increasing	Increase of impervious surfaces.	Can prevent water from soaking into the ground so there is more water flowing and water moving at a faster rate which could cause some erosion.	Monitor condition of areas around impervious surfaces to monitor any erosion that could take place and manage accordingly. Also, can direct the access moisture to the stormwater pond designed to manage the stormwater.

Resource category	Climate trends and climate projections	Project components	Potential Environmental Effects • **Identify climate change risks & vulnerabilities.** • **Identify long-term impacts that climate conditions pose to proposed activities.**	**Adaptation strategies (with applicable timeframe – construction to end of expected lifespan).**
		Increased quantity of concrete and building materials.	Increased runoff, soil erosion.	Direct water to the stormwater pond designed to manage the stormwater.
		Increased traffic on County Road 8 and Township Road 180th Avenue.	Increased stormwater runoff potentially carrying pollutants, damage to infrastructure.	Manage traffic to and from the site. Try to limit traffic during times of potential rainfall to prevent any damage to roads.
	Cold weather warming	Increase of impervious surfaces.	Extended exposure of impervious materials, otherwise covered in snow.	Limit impervious surfaces if possible. Monitor impervious surfaces for any maintenance needed to protect the materials for fix any issues that arise.
		Increased quantity of concrete and building materials.	The fluctuation in temperatures could cause some issues such as cracks in the concrete.	Monitor facility on a frequent basis to monitor any structural issues that may arise and fix on a timely basis.
		Increase traffic on County Road 8 and Township Road 180th Avenue.	Change in temperatures may cause impairment overtime to blacktops.	Monitor roads and work with local road authorities and an any issues that may arise.
	Heavier, more damaging rains	Increase of impervious surfaces.	Can prevent water from soaking into the ground so there is more water flowing and water moving at a faster rate which could cause some erosion.	Monitor condition of areas around impervious surfaces to monitor any erosion that could take place and manage accordingly. Also, can direct the access moisture to the stormwater pond designed to manage the stormwater.
		Increased quantity of concrete and building materials.	Increased surface runoff, soil erosion.	Direct water to the stormwater pond designed to manage the stormwater.

Resource category	Climate trends and climate projections	Project components	Potential Environmental Effects • Identify climate change risks & vulnerabilities. • Identify long-term impacts that climate conditions pose to proposed activities.	Adaptation strategies (with applicable timeframe – construction to end of expected lifespan).
		Increase of traffic on County Road 8 and Township Road 180th Avenue.	Increased stormwater runoff potentially carrying pollutants, damage to culverts, ditches.	Manage traffic to and from the site. Try to limit traffic during times of potential rainfall to prevent any damage to roads. Monitor culverts, ditches, tile perimeter around structure.
	Increasing risk of heatwaves	Increase of impervious surfaces.	There is no foreseen interaction between impervious surfaces and average temperature increasing due to the Project location in rural area.	Limit impervious surfaces if possible.
		Increase quantity of concrete and building materials.	There will be an increase in heat absorption with a new building structure and concrete in this location.	Use materials that will reduce heat absorption, monitor site and repair/replace materials on an as needed basis to preserve the longevity of the Project.
		Use materials that will reduce heat absorption, monitor site and repair/replace materials on an as needed basis to preserve the longevity of the Project.	Increased temperatures may cause impairment overtime to blacktops. Roadways may become dustier; wind may carry dust further.	Monitor roads and work with local road authorities and an any issues that may arise. Utilize a dust suppressant or water the road to control the dust.
	Increasing risk of drought	Increase of impervious surfaces.	May cause some cracks in concrete, driveways.	Monitor surfaces and provide any maintenance needed to fix any issues that arise.
		Increase quantity of concrete and building materials.	May cause some ground settlement, could potentially cause some cracks in concrete.	Monitor facility on a frequent basis to monitor any structural issues that may arise from dry weather and fix on a timely basis.

Resource category	Climate trends and climate projections	Project components	Potential Environmental Effects • Identify climate change risks & vulnerabilities. • Identify long-term impacts that climate conditions pose to proposed activities.	Adaptation strategies (with applicable timeframe – construction to end of expected lifespan).
		Increase of traffic on County Road 8 and Township Road 180th Avenue.	May cause increased road deterioration due to pavement cracking or ruts, increased risk of dust emissions.	Monitor roads and work with local road authorities if any issues arise. Utilize a dust suppressant to reduce dust emissions.
Land use	Address in Item 2.	Address in Item 2	There could be the increase or decrease in crop production, vegetation could be affected by drought occurrences or increased temperatures.	Monitor weather, precipitation to determine land application timing and use a stabilizer if needed to reduce the amount of any nitrogen lost in the soil.
Water resources	Address in Item 4	Address in Item 4	There is the potential of reduced water resources if the weather pattern causes a drought.	Monitor precipitation and work with rural water if any water issues arise.
Contamination/hazardous materials/wastes			There should be no potential for environmental effect from Hazardous Materials/Wastes.	Any waste or materials that could be potentially hazardous will be disposed of accordingly.
Fish, wildlife, plant communities and sensitive ecological resources (rare features)			There is the potential to impact rare species or other significant natural features.	Utilize regular manure testing, applying manure at agronomic rates to reduce the likelihood of excess nitrates, apply manure at or below 50 degrees.

8. Greenhouse Gas (GHG) emissions/carbon footprint

A. GHG Quantification: For all proposed Projects, provide quantification and discussion of Project GHG emissions. Include additional rows in the tables as necessary to provide Project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to come to that conclusion and any GHG emission sources not included in the total calculation.

The following tables are examples; other layouts are acceptable for providing GHG quantification results.

Construction Emissions

Scope	Type of emission	Emission sub-type	Project-related CO^2-e emissions (tons/year)	Calculation method(s)
Scope 1	Combustion	Mobile equipment	15.8	SGEC Calculator – EPA – Attachment W
Scope 1	Land use	Conversion	2.39	Land Use Changes Calculator – see Attachment U – data from EPA's U.S. GHG Emissions and Sinks 1990-2022 Report
Total			**18.19**	

Operational Emissions

Scope	Type of emission	Emission sub-type	Existing facility CO^2-e emissions (tons/year)	Project-related CO^2-e emissions (tons/year)	Total CO^2-e emissions (tons/year)	Calculation method(s)
Scope 1	Combustion	Mobile equipment	0	13.3	13.3	SGEC Calculator – EPA – Attachment X
Scope 1	Combustion	Stationary equipment	0	74.8	74.8	SGEC Calculator – EPA – Attachment X
Scope 1	Combustion	Area	0	0	0	
Scope 1	Feedlot livestock	Enteric fermentation	0	198.41	198.41	Feedlot GHG Calculation – Attachment V
Scope 1	Feedlot livestock	Barn and manure storage	0	1,443.20	1,443.20	Feedlot GHG Calculation – Attachment V
Scope 1	Feedlot livestock	Manure land application	0	219.89	219.89	Feedlot GHG Calculation – Attachment V
Scope 2	Off-site electricity	Grid-based	0	41.1	41.1	SGEC Calculator – EPA – Attachment X

Scope 2	Off-site steam production	Not applicable	0			
Scope 3	Off-site waste management	Not applicable	0			
TOTAL				**1,902.6**	**1,902.6**	

B. GHG assessment: Describe any mitigation considered to reduce the Project's GHG emissions.

Some agricultural practices can offset estimated greenhouse gas emissions. The land application of manure replaces nutrients that farmers would otherwise provide to their fields via the application of chemical fertilizers, thereby avoiding GHG emissions associated with chemical fertilizer production. Another way to reduce emissions is utilizing energy-efficient lighting in the proposed project, which would reduce the amount of energy needed from power plants which often rely on fossil fuels to produce electricity.

C. Describe and quantify reductions from selected mitigation, if proposed, to reduce the Project's GHG emissions. Explain why the selected mitigation was preferred.

None proposed.

D. Quantify the proposed Project's predicted net lifetime GHG emissions (total tons/number of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

The amount of GHG emissions that may be produced will depend on numerous variables, including, without limitation, the feed ration provided to the livestock, manure storage and application practices, design of the building, local climate and geography, and many other operational and site-specific factors.

The table above reflects the estimated emissions released from the Project during the construction phase and during the operational phase of the feedlot. The factors utilized were calculated by sources the U.S. Environmental Protection Agency (EPA) and Minnesota Pollution Control Agency 'feedlot calculator' developed to determine the potential emissions for feedlots.

The life of the Project is 30 years. Therefore, the total GHG emissions are 57,096 tons CO^2-e.

This is calculated by: Construction Emissions (18.19) + [Operational Emissions (1902.6) @ 30 years] = 57,096.19 tons CO^2-e.

To qualify this number, 57,096 tons of CO^2-e equivalent to 12,082 gasoline-powered vehicles driven for one year, or 686 tanker trucks worth of gasoline.

A. Describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts.

Noise: The largest source of noise at this Project will be from exhaust fans. The nearest neighbor is approximately 2,447-feet away and the separation distance between the residence and the Project is the most significant mitigation factor in noise and dust abatement.

Dust: The 6-month construction period of the Project will involve extensive dirt work, such as removing topsoil, hauling in clay for the proposed runoff retention pond, and hauling in gravel to build the service roads for the Project. If dust becomes a significant issue, the Proposer will use a dust abatement practice, such as applying water to the sources of dust.

During Project operations, the significant causes of dust would be truck traffic on 180th Avenue, a gravel road, west of the proposed site, and possibly 171st Street north of the proposed site and exhaust fans. If dust becomes an issue, the Proposer will use a dust abatement practice, such as water applied to the roads.

9. Dead animal disposal

A. Describe the quantities of dead animals anticipated, the method for storing and disposing of carcasses and frequency of disposal.

An Animal Mortality Plan has been developed for handling dead animals in accordance with State requirements, including Minn. Stat. § 35.82 and Minn. R. ch. 1719.0100 to 1719.4600 and 7011.1215. This plan is incorporated into the SDS Permit and is submitted to the Minnesota Pollution Control Agency (MCPA).

All animal mortalities from the site will be disposed of via rendering service. A twelve-foot by twelve-foot by 4-foot temporary animal mortality box is used to dispose of mortalities. The facility will be inspected at least once a day for animal mortality and herd health. Mortalities are removed as discovered from the pens daily. Disposal of carcasses will occur on average once a week or as needed. The producer will follow the Minnesota Board of Animal Health Requirements for the removal, storage, and disposal of dead animals. The predicted annual mortality rate from the Project is approximately 145 head of swine every year.

10. Surface water runoff

A. Compare the quantity and quality of site runoff before and after the Project. Describe the permanent controls to manage or treat runoff.

Feedlot Site

Surface water runoff will increase on the proposed expansion site due to increased impervious surfaces, particularly the construction of roofed buildings. However, because the Project is a total confinement facility, it is unlikely that this runoff will come in contact with livestock or manure. The contractor, Skattum Confinement & Superior Buildings, LLC., and engineer, ProAg Engeering, Inc., will be responsible for managing surface water runoff during construction.

As part of the feedlot application, a Construction Storm Water General Permit (CSW Permit) is required when one or more acres of soil is disturbed as part of a Project construction phase. The construction of the Project will affect approximately 2.5 acres of soil; therefore, a CSW Permit is required for the Project. The submitted Feedlot Permit will serve as the application for the CSW Permit.

After Construction, the Proposer will establish perennial vegetation and install a gravel surface driveway at the Project site. The Project site is surrounded by cultivated agricultural land. The Project is in the Rock

River Watershed (HUC-10170204). The Proposer will store manure in a concrete pit below the barn. Rainwater will not come in contact with the manure pit. As a result, the Proposer expects no contaminated runoff. Stormwater will be directed to the water detention pond.

As required, the Proposer has drafted and submitted an emergency management plan (EMP) with the Feedlot Permit application. The Proposer's EMP includes procedures to address spills should they occur. In the event of a spill, the Proposer's EMP requires the Proposer to immediately stop the source of the liquid manure leak or spill. The EMP also includes utilizing the following measures where appropriate: installation of bale checks, blockage of downstream culverts, plugging tile intakes, tilling ground ahead of the spill, and use of absorptive materials. The EMP is an enforceable condition of the Feedlot Permit.

Manure Application Sites

The Proposer does not expect significant potential impacts on surface water resources from the Project's land application of manure activities. As discussed in Item 5 of the EAW, land application of manure occurs at agronomic rates. The Proposer determines the agronomic rate based on the type of crop grown, the soil type, and the soil fertility to reduce excess nutrient buildup in the soil. Further, injection of all land-applied manure occurs at the time of application.

The Project contains land application areas located within the Rock River watershed. The watershed has been farmed for several decades. The change in stormwater runoff characteristics (physically and chemically) from the Project land application areas is expected to remain the same. The improvements would occur through developing better soil tilth from organic fertilizer and the uniform practice of incorporating manure over the acres identified in the MMP.

The potential impact on surface water resources from the Project's land application activities is not expected to create a significant impact because, as discussed in Item 5 of the EAW, manure will be applied to the soil at agronomic rates. Only the amount of manure-provided nutrients the growing crop can use will be applied. The agronomic rate is based on the type of crop grown, the soil type, and the soil fertility. In addition, land application will occur in the fall of the year after crops are removed from the field rather than in the spring when runoff potential is greater due to increased precipitation and soil moisture. The information presented in Item 5 will be incorporated into the MMP for the proposed Project. The MMP will be an enforceable provision of the NPDES/SDS Permit for the Project.

11. Traffic and public infrastructure impacts

A. Estimate the number of heavy truck trips generated per week and describe their routing over local roads. Describe any road improvements to be made.

A single-passenger vehicle will visit the site daily for regular management duties. A feed truck will visit the site twice per week for regular refilling duties. Nine pick-ups with trailers will come to the Project site two and a half times per year to refill the barns with nursery pigs, utilizing County Road 8 to 180th Avenue for access. Each re-stocking period for the barn will take approximately two weeks, averaging four to five loads per week. Approximately twenty-eight semi-tractors and trailers, two and a half times per year, will load the finished hogs from the site to market. These periods of heavy traffic will occur over approximately one month, averaging about four to six semi-trucks per week for each load out.

Vehicle routes will be at the discretion of the driver; however, it is expected that truck routes will be directed from County Road 8 to 180th Avenues the primary access point for the Facility. At this time, there will not be any need for improvements to the road system to handle this traffic. Seasonal road restrictions will be observed with more frequent trips at lower weights to reduce impacts on the roads. The township has been notified of the Project. If there is any need for road maintenance, the Proposer will work with the township to correct any issues.

Road	Average vehicle/day	Average vehicle/week	Increase/week
Rock County Road 8	276	1,932	7
County Road 3	420	2,940	7
Township Road 180th Avenue, 171st Street	Not available	Not available	Not available

*Traffic counts most recent Minnesota Department of Transportation (MNDOT) Data and Analysis: Traffic Volume Program 2022 AADT Product: https://www.dot.state.mn.us/traffic/data/tma.html

B. Will new or expanded utilities, roads, other infrastructure or public services be required to serve the Project? Answer yes, or no. If yes, please describe.

- No.

12. Permits and approvals required. Mark required permits and give status of application.

Unit of Government		Type of application	Status
MPCA	X	SDS Permit	Pending approval
MPCA		Minnesota Feedlot Permit	
MPCA		NPDES Construction Stormwater Permit	
County/township/city	X	Conditional use or other land use permit	Pending approval
Department of Natural Resources (DNR)		"General DNR Permit" mentioned above	
Other*			

*List any other approvals required along with the unit of government, type of approval needed and status or approval process.

13. Other potential environmental impacts, including cumulative impacts

A. If the Project may cause any adverse environmental impacts not addressed by items 1 to 10, identify and discuss them here, along with any proposed mitigation. This includes any cumulative impacts caused by the Project in combination with other existing, proposed, and reasonably foreseeable future Projects that may interact with the Project described in this

EAW in such a way as to cause cumulative impacts. Examples of cumulative impacts to consider include air quality, stormwater volume or quality, and surface water quality. (C*umulative impacts may be discussed here or under the appropriate item(s) elsewhere on this form.)*

The MPCA is required to inquire whether a proposed Project, which may not individually have the potential to cause significant environmental effects, could have a significant effect when considered along with other Projects. This type of impact is known as a cumulative potential effect. To assess the proposed Project's "cumulative potential effects of related or anticipated future Projects," the MPCA conducted an analysis that addressed other Projects or operations in context to the potential director indirect impacts of the proposed Project that: (1) are already in existence or planned for the future; (2) are in the surrounding area; and (3) might reasonably be expected to affect the same natural resources. The following is a review of the analysis conducted to determine if the proposed Project would contribute to an adverse cumulative potential effect.

The Proposer conducted a public records search and found 22 feedlots with 9101.2 AUs within the sub-watersheds containing the Project and its manure land application sites (Attachment K).

Surface Water Quality

The proposed Project and its associated manure application sites are within the Rock River Watershed (10170204). Land use within the Project and manure application site areas are predominantly agricultural, which can contribute to non-point source pollution of surface waters.

Impaired Waters and Total Maximum Daily Loads (TMDLs)

The Federal Clean Water Act (CWA) (33 U.S.C. § 303(d)) (1972) requires that each state develop a plan to identify and restore any waterbody that is deemed impaired by state regulations. The U.S. Environmental Protection Agency (EPA) requires a TMDL due to the federal CWA. A TMDL identifies the pollutant causing the impairment and how much of that pollutant can enter the waterbody and still meet water quality standards. The Rock River is the closest listed impaired water body to the Project and the manure application sites (Attachment K).

Rock River is adjacent to land application sites #1, 2, and 6. The Rock River is listed as impaired in the 2024 TMDL Report. The reach has multiple impairments such as Turbidity, Fish Bioassessments, Escherichia coli (E. coli), and Benthic macroinvertebrates bioassessments.

Unnamed Creek is adjacent to the land application site #7. Unnamed Creek is listed as impaired in the 2024 TMDL report[14]. The reach is listed with one impairment: E. coli.

The Project is a total confinement facility; thus, no manure-contaminated runoff is expected. In addition, the facility will have operated under the NPDES permitting system, which has more stringent MMP requirements than smaller feedlots in the region. Finally, the swine manure from the Facility is liquid and is incorporated into the soil during land application, reducing the potential for bacteria-laden manure runoff [12] Thus, the Project is not expected to significantly contribute to these impairments.

The land application management practices (as described in Item 5.D.) will help reduce or eliminate the Project's potential for surface water quality impairment within the minor watersheds of the Rock River watershed. The land application practices include the application of manure at agronomic rates. The required setback distance from surface waters, tile intakes, and other sensitive features will also be maintained. Land applying manure at agronomic rates reduces or eliminates the potential for a surplus of

nutrients to impact water resources. The land application practices will be included in the Project MMP, an enforceable provision of the facility SDS Permit. As a result, the MPCA concludes that the proposed Project will not contribute to an adverse cumulative potential effect on surface water quality.

Groundwater Appropriation

There are no water wells currently on the Project Site. The Project will utilize the Lincoln Pipestone Rural Water Supply system for water needs, located approximately 6 miles south of the proposed site. Thus, no local groundwater appropriation will be conducted.

A review of the Minnesota County Well Index by the Proposer's consultant indicates four verified & unverified wells in the vicinity of the Project. Well usage is a mixture of domestic and livestock. Well depths range from approximately 138 feet to approximately 298 feet, as shown in Attachment G. One of the verified wells located approximately 1.1 miles from the proposed site had a depth of 21 ft but well records indicate that the well is sealed and not active and will not have no impact as a result of the project.

Groundwater Quality

Groundwater resources can be adversely impacted by feedlot operation and land application activities. The MPCA has reviewed information compiled by the DNR to determine if the Project has the potential to contaminate the underlying aquifer. Based on a review of published information related to pollution sensitivity potential, the Project facility and land application sites are in an area primarily designated as having a Very Low to Moderate susceptibility to groundwater pollution – as referenced in Attachment L. This means that the area designated "Very Low" susceptibility, it could up to a year for near-surface contamination to reach a depth of 10 feet below land surface and the area "Low to Moderate" susceptibility a week to months for near-surface contamination to reach a depth of 10 feet below land surface in those areas.[9]. The risk to ground-water pollution is reduced by the land application practices discussed in Item 5 of the EAW. Given the required management factors and geologic conditions, the Project does not pose a significant potential for adverse cumulative effect to ground-water quality in the area.

Air Quality Impacts

Air quality computer modeling was performed to estimate concentrations in the air of hydrogen sulfide and ammonia and selected odorous gases from the Project. The model estimated pollutant concentrations from the Project and an ambient hydrogen sulfide and ammonia background concentration to account for any offsite air emission sources or activities. The air quality modeling evaluation predicted concentrations of the selected gases at the Project property lines and nearest neighbors. A background concentration is the amount of pollutants already in the air from other sources and is used in this evaluation to address cumulative air impacts. Hydrogen sulfide and ammonia may be present from other feedlot barns, the agitation and pump out of a neighboring feedlot, or the pumping of a municipal wastewater treatment facility. Air emissions from other emission sources may affect the compliance status of the Project or impact downwind human and environmental receptors. The background level for hydrogen sulfide used in the computer model was derived from monitoring at other feedlot facilities in Minnesota. The modeling adds the background air pollutant concentration to the

9 Adams, R. Pollution Sensitivity of Near-Surface Materials. Minnesota Department of Natural Resources. 2016. http://files.dnr.state.mn.us/waters/groundwater_section/mapping/mha/hg02_report.pdf

emission concentration predicted by the Project. The results of the modeling study indicate that no significant air quality impacts are expected from the Project and that the Project will not contribute to any adverse cumulative potential effects to air quality (Attachment I).

Land Use

The land for the Project and the land application sites are all in row crop agriculture and an area zoned "General Agriculture" in Rock County. Once the Project is constructed, the estimated 2.5 acres used for construction will be removed from row crop agriculture, and the remaining land will be unchanged and will continue to be used for agricultural production. The proposed construction site is not in shoreland or a floodplain. The overall Project, including land application sites, is reviewed in context with other existing or proposed projects within the Rock River Watershed. The proposed land use of the project and land application sites are consistent with the Rock County Comprehensive Plan. Three issues have been identified concerning land resources – wildlife habitat, row crop agriculture, and traffic.

Wildlife Habitat

There is a competing issue in rural landscapes to maintain a balance between agricultural demands and preserving natural resources. In this case, the Project is in areas currently used for agricultural production. All affected acres, including the proposed manure application fields, have been used for agricultural purposes for many years. The Natural Heritage Information System results of local threatened and endangered species review identified species documented near the project site. The species identified are negatively affected by increased turbidity, siltation, and increase in eutrophication from nutrient enrichment. To prevent negative effects on the habitat, best management practices will be used during land application, such as managing nutrient applications so they don't exceed the crop nutrient uptake levels, and tillage will be managed to control soil erosion and sediment.

Row Crop Agriculture

The land proposed for land application is currently in row crop production and will remain in row crop production after the Project is constructed. The Project construction will impact the area, which is also currently in row crop production. The area for the new Project is estimated to be around 2.5 acres and will be taken out of production and remain out of production for the lifespan of the barn. No disturbance to any currently non-cropped acres is expected. The Project will not modify land use or contribute to an adverse cumulative potential effect related to row crop agriculture.

Traffic

The cumulative potential effects analysis for traffic included an evaluation of the direct contribution of new traffic through the development and operation of the Project in context to the existing traffic load. The analysis is provided in Item 9. A, which shows a slight traffic increase from the Project on Township, County, and State Roads. This additional traffic is not likely to cause an adverse cumulative potential effect, however, if there is a need for maintenance or issues arise on the roads the Proposer will work with the local officials to correct the issues

14. Summary of issues

A. List any impacts and issues identified above that may require further investigation before the Project is begun. Discuss any alternatives or mitigative measures that have been or may be

considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

Surface Water and Groundwater Impacts – Mitigation Measures

As stated in the Department of Natural Resources – Minnesota Biological Survey (DNR-MBS) report in Attachment F, "Over-application or improper application of liquid manure can lead to the transport of nutrients into the groundwater or surface water through leaching or overland flow. Nitrogen loading is a potential threat to MBS Sites [sites of moderate biodiversity significance in the vicinity of the Project] as it can result in a loss of plant species diversity, an increased abundance of non-native invasive species, and the disruption of ecosystem functioning. As such, manure application rates and timing should be carefully determined to ensure that nutrient input does not exceed the ability for crop nutrient uptake and result in runoff to these ecologically significant areas."

To address this concern, application equipment will monitor and calibrate the rate of application flow, manure will be applied according to permit requirements, and the Proposer may utilize other best management practices such as nitrogen stabilizers or split applications. All manure application rates will be calculated and applied following the University of Minnesota agronomic recommendations for the appropriate crop to be fertilized. The Proposer will follow required county and state setbacks when land applying manure.

Additional mitigation strategies outlined in the feedlot permit include:

- Avoiding manure application on frozen or snow-covered ground.
- Inspection of LMSA drain tile according to the requirements and the engineering operating maintenance plan for flow discoloration or odor in the water.
- Perform soil testing once every 4 years.
- Comply with the state and county required manure application setbacks from sensitive features.

Air and Odor Emissions – Mitigation Measures

As stated in the Air Modeling report, Attachment X, "The air dispersion model results suggest that the proposed swine confinement barn operation will not exceed the Minnesota ambient air quality standard for hydrogen sulfide (H2S) at the site's effective property lines or the Minnesota Department of Health inhalation Health Risk Value (iHRV) thresholds for subchronic hydrogen sulfide concentrations at neighboring residences, acute ammonia (NH3) concentrations at the site's effective property lines, or chronic ammonia concentrations at neighboring residences. Modeling results also show that the proposed facility will not significantly increase odor concentration."

To maintain a low odor threshold, the following mitigation strategies are addressed in the feedlot permit:

- Maintain clean, dry floors as well as clean up feed spills promptly.
- Clean and disinfect between each cycle of animals.
- Regularly inspect and clean all ventilation and LMSA fans.
- Proper removal of dead animal carcasses in a timely manner following the Minnesota Board of Animal Health requirements. Disposal of dead animal carcasses need to be disposed of within 72 hours of removal. Removal from the site will occur on average once a week or more as needed.
- Inject manure during land application to minimize odor.

- Evaluate weather and field condition suitability prior to land application to minimize potential impact to neighbors and the public.

Climate Adaptation and GHG Emission Mitigation Measures

The climate trends in Rock County, where the proposed Project is located, are closely in line with state trends. From 1980 to 2023, the average temperature and the average minimum temperature increased around 3 degrees, whereas winter temperatures show a 4-degree increase. Rock County historical trends indicate an increase of 0.25" per decade of rain in the same period, whereas projections indicate a minimal increase in heavy rain events, a slight increase in heat waves, and a minimal change in drought risk.

Higher temperatures will likely increase the demand for energy in cooling, increase water demand, and increase stress on animals and infrastructure. To mitigate energy demand, the Proposer will operate fans on temperature and climate factors to reduce the production time to conserve energy. High-efficiency lighting will be installed.

Increased precipitation and weather events will be addressed by installing adequate manure storage that follows MPCA's regulations and allows for enough storage to manage weather patterns that may limit land application during any given year. The Proposer will install the stormwater basin according to MPCA's regulations and be able to manage the potential for larger or more frequent rain events.

The Project will directly release GHG emissions and indirectly affect GHG emissions from related activities. In general, the primary GHG emissions from the finishing operations are methane (CH_4) and nitrous oxide (N_2O). Direct GHG emissions are released from manure storage and the feedlot. Indirectly, GHG emissions are released due to land application of manure, although GHG emissions will be reduced through other Project-related activities. The Project will produce manure, a non-synthetic fertilizer. Animal-produced fertilizer will reduce the need for commercial (synthetic) fertilizer and the GHG emissions created by producing the synthetic fertilizer, transportation, and storage of the fertilizer. The manure will be produced annually and will be a local source of fertilizer for the Proposer's land near the Project site.

RGU Certification

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete Project; there are no other Projects, stages or components other than those described in this document, which are related to the Project as "phased actions," pursuant to Minn. R. 4410.0200, subp. 60, 4410.1000, subp. 4, and 4410.4300, subp. 1.
- Copies of this EAW are being sent to the entire EQB distribution list.

February 3, 2025
Date signed

Dan R. Card, P.E.

This document has been electronically signed.
Dan R. Card, P.E., Supervisor
Environmental Review Unit
Resource Management and Analysis Division
Minnesota Pollution Control Agency

The format for the alternative Environmental Assessment Worksheet form has been approved by the Chair of the Environmental Quality Board pursuant to Minn. R. 4410.1300 for use for animal feedlot Projects. For additional information contact: Environmental Quality Board, 520 Lafayette Road, St. Paul, Minnesota, 55155-4194, 651-296-6300, or at their website https://www.eqb.state.mn.us/environmental-review/about

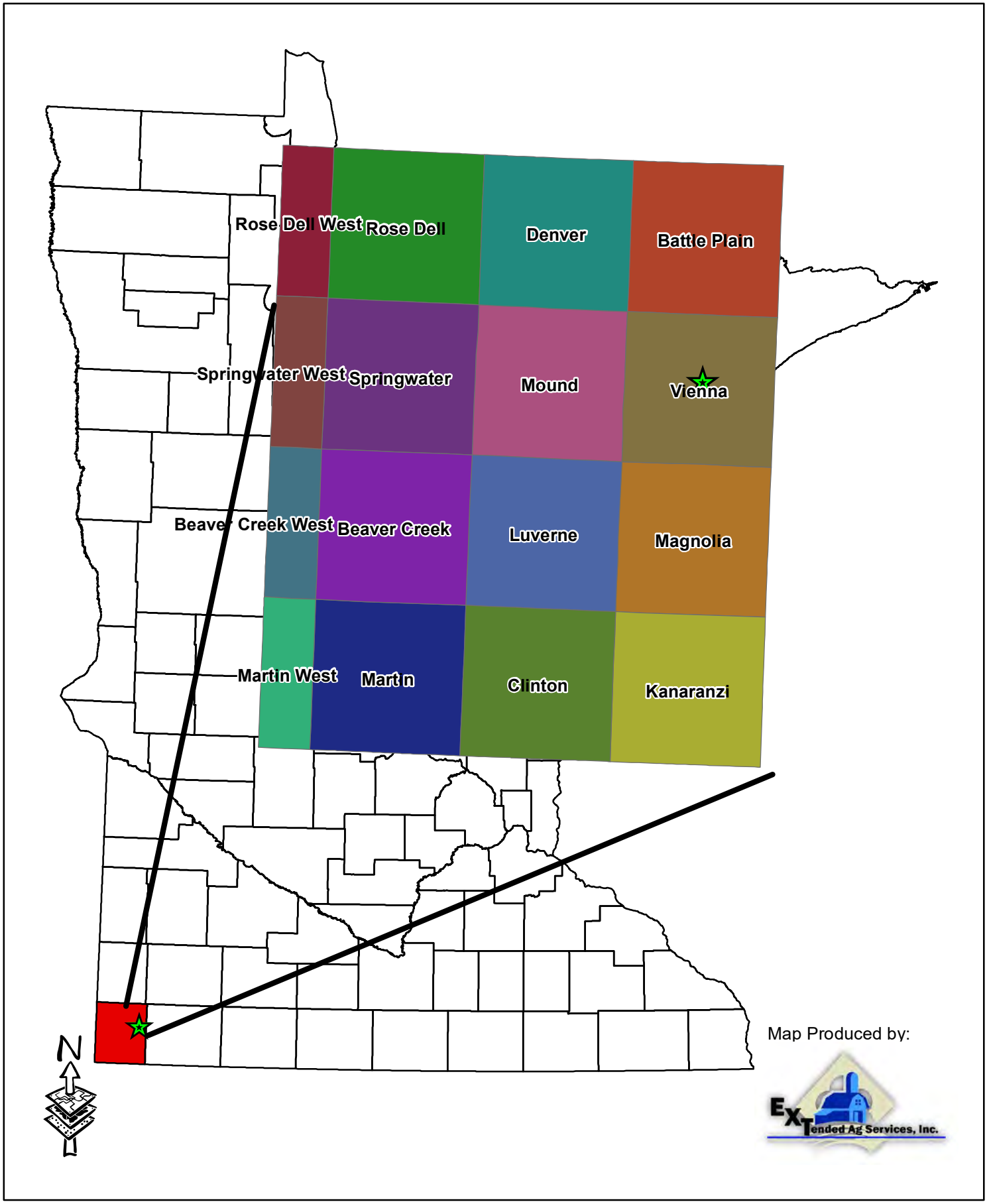
ATTACHMENT A

Rock Co., MN

Lass Farms, Inc.

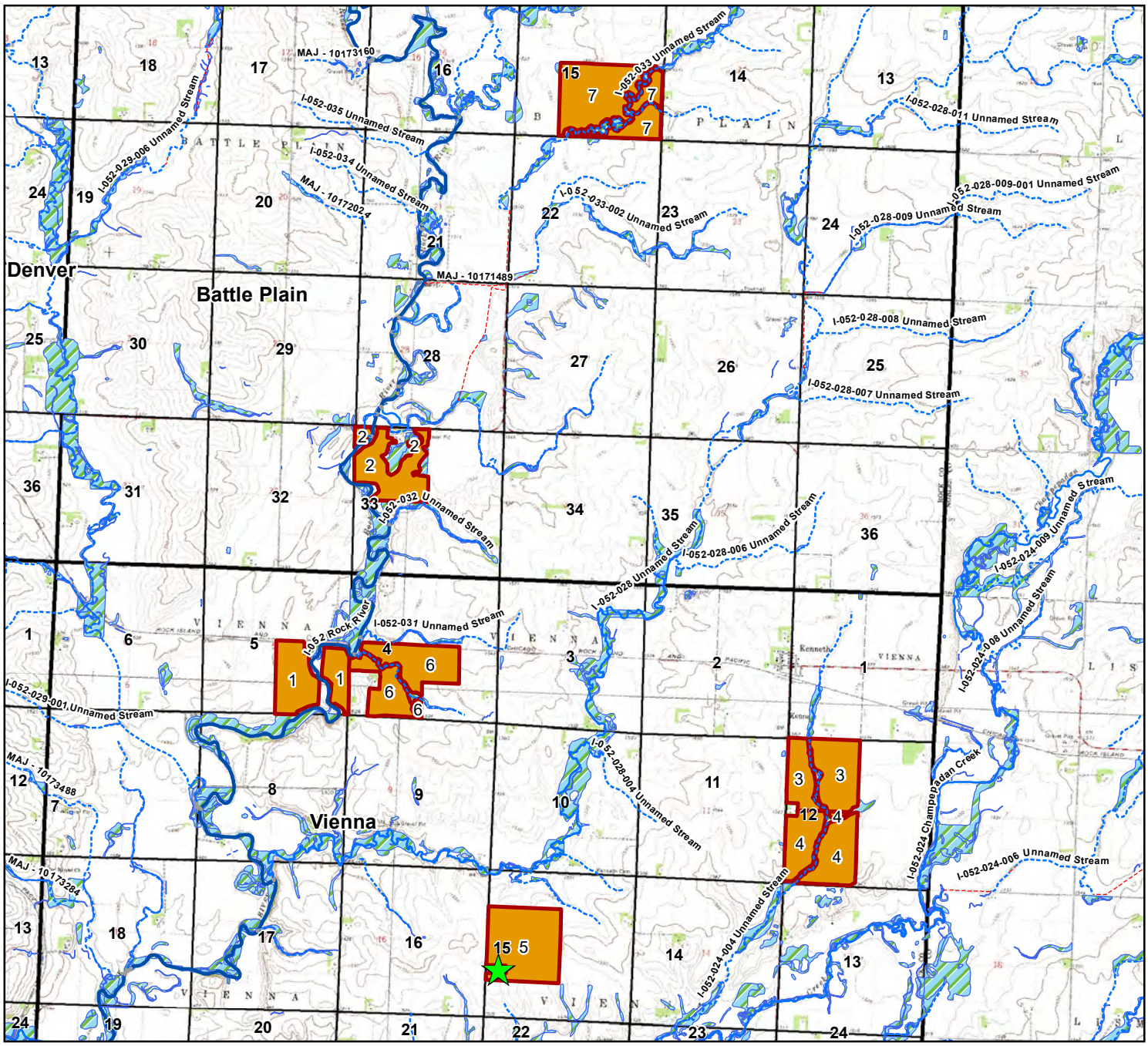
Lass Farms, Inc.

General Location Map



Lass Farms, Inc.

USGS Topographic Map



NOTES:

Legend

Site Location

River and Stream Types (MN DNR)

- Stream (Perennial)
- Stream (Intermittent)
- Stream (Unknown)
- Stream (Underground/Karst)
- Ditch (Perennial)
- Ditch (Intermittent)
- Ditch (Unknown)
- Lake Connector
- Wetland Connector
- River Centerline
- River Connector
- Manure Acres
- NWI Wetland
- Waterway
- Special Protection Area
- Section - Rock
- Township - Rock

Imagery Courtesy of BING.

N

EXTended Ag Services, Inc.

Feet

0 1,650 3,300 6,600 9,900 13,200

Attachment C

Rock Co., MN

Lass Farms, Inc.

Lass Farms, Inc.

Site Map

NOTES:
There are no Karst features within 1000-ft of the facility. The site will use rural water as a water source.

Legend

- Site Location
- Surface Tile Intakes
- Proposed Barn
- Distance
- Stream (Intermittent)
- ALL 300' Buffer
- NWI Wetlands

Imagery Courtesy of BING.

EXTended Ag Services, Inc.

Feet

0 112.5 225 450 675 900

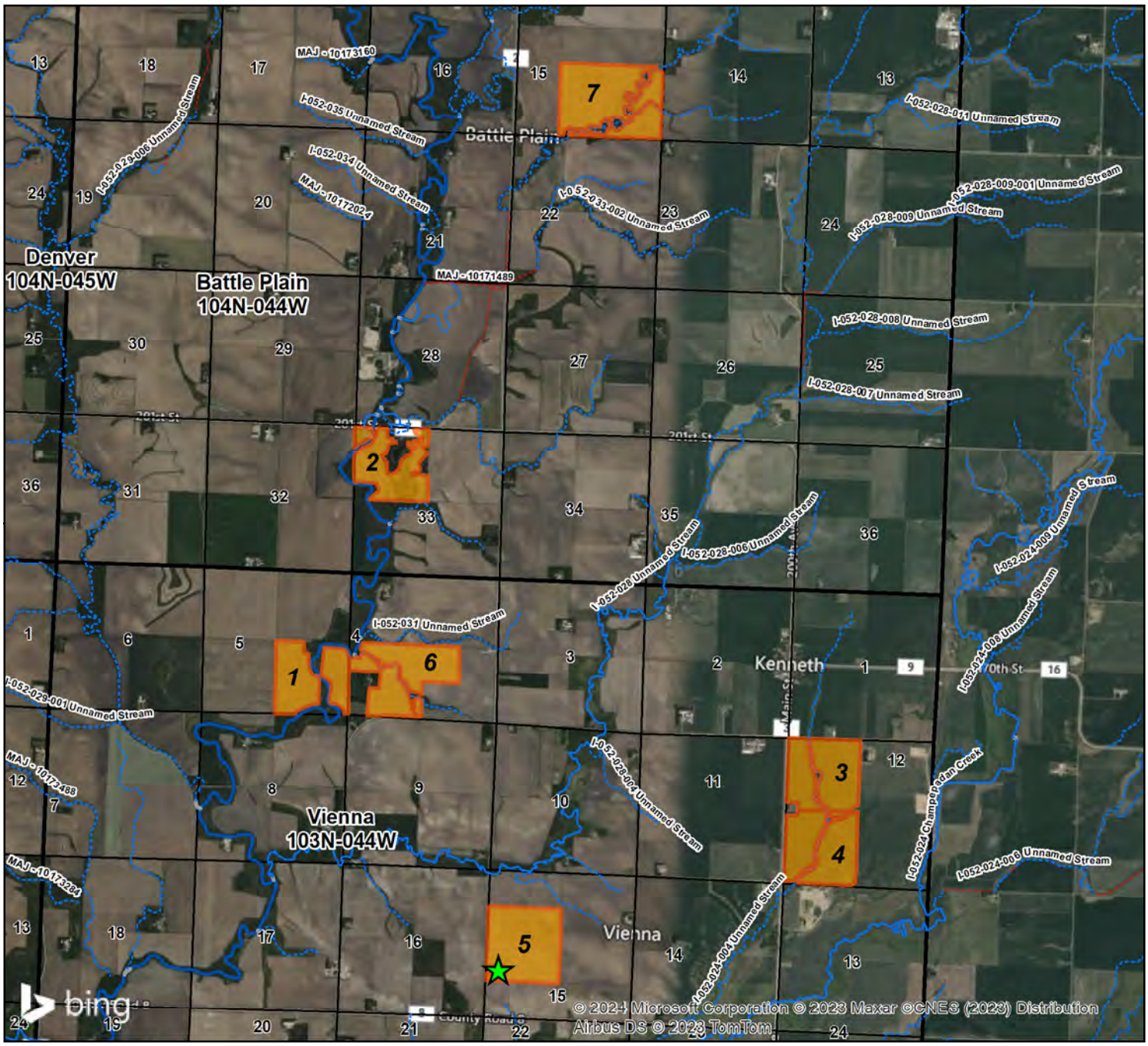
Attachment D

Rock Co., MN

Lass Farms, Inc.

Lass Farms, Inc.

Manure Application Sites Map



NOTES:
1007 Total Acres

Legend

- Site Location
- Manure Application Sites
- Wildlife Management Area

River and Stream Types (MN DNR)

- Stream (Perennial)
- Stream (Intermittent)
- Stream (Unknown)
- Stream (Underground/Karst)
- Ditch (Perennial)
- Ditch (Intermittent)
- Ditch (Unknown)
- Lake Connector
- Wetland Connector
- River Centerline
- River Connector
- Section - Rock
- Township - Rock

N

EXTended Ag Services, Inc.

0 1,700 3,400 6,800 10,200 13,600

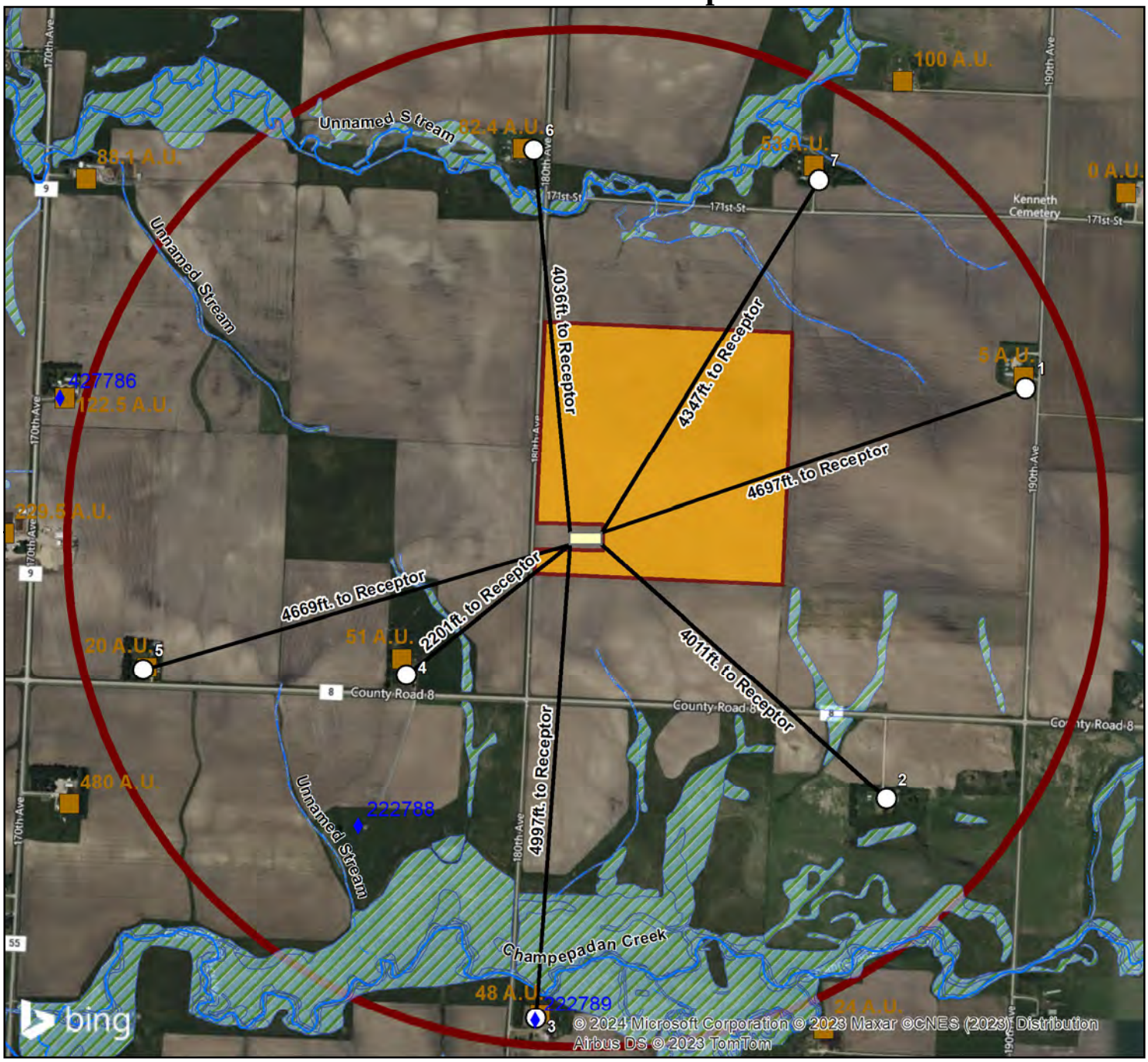
Attachment E

Rock Co., MN

Lass Farms, Inc.

Lass Farms, Inc.

One-Mile Radius Map



NOTES:

Legend

- Site Location
- Known Well
- Residence (7)
- Distance to Residence
- Feedlots
- Stream (Intermittent)
- Stream (Perennial)
- Lake or Pond
- Mine or Gravel Pit
- River
- NWI Wetlands
- MN DNR WMA
- 1Mile_Radius
- Field_Boundaries
- Barn
- Waterway

N

Imagery Courtesy of BING.

EXTended Ag Services, Inc.

Feet

0 600 1,200 2,400 3,600 4,800

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

April 9, 2024

Jessica Mulder
Extended Ag Services, Inc.

RE: Natural Heritage Review of the proposed [Project Name],
T103N R44W Sections 1, 4-5, 8, 12, 15, T104N R44W Sections 15, 32-33; Rock County

Dear Jessica Mulder,

For all correspondence regarding the Natural Heritage Review of this project please include the project ID **MCE-2024-00159** in the email subject line.

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas

- The Minnesota Biological Survey (MBS) has identified Sites of *Moderate* Biodiversity Significance in the vicinity of the proposed project in T103N R44W Sections 13-14 and T104N R44W Sections 14-15. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as *Moderate* contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery.

  Over-application or improper application of liquid manure can lead to the transport of nutrients into the groundwater or surface water through leaching or overland flow. Nitrogen loading is a potential threat to MBS Sites as it can result in a loss of plant species diversity, an increased abundance of nonnative invasive species, and the disruption of ecosystem functioning. As such, manure application rates and timing should be carefully determined to ensure that nutrient input does not exceed the ability for crop nutrient uptake and result in runoff to these ecologically significant areas. The Minnesota Pollution Control Agency has recommendations for manure application that may be helpful in determining appropriate application rates.

The Minnesota Biological Survey (MBS) considered many other areas within or near the proposed project for Sites of Biodiversity Significance. These were determined to be *Below* the minimum biodiversity threshold for statewide significance. These areas, however, may have conservation value at the local level as habitat for native plants and animals, corridors for animal movements, buffers surrounding higher quality natural areas, or as areas with high potential for restoration of native habitat. As such, indirect impacts from surface runoff of excess nutrients or sediment or the spread of invasive species should be considered during project design and implementation.

MBS Sites of Biodiversity Significance and DNR Native Plant Communities can be viewed using the Explore page in Minnesota Conservation Explorer or their GIS shapefiles can be downloaded from the MN Geospatial Commons. Please contact the NH Review Team if you need assistance accessing the data. Reference the MBS Site Biodiversity Significance and Native Plant Community websites for information on interpreting the data. To receive a list of MBS Sites of Biodiversity Significance and DNR Native Plant Communities in the vicinity of your project, create a Conservation Planning Report using the Explore Tab in Minnesota Conservation Explorer.

State-listed Species

- Stretches of the Rock River, Champepadan Creek, and several unnamed tributaries very near the proposed project have documented records of plains topminnow (*Fundulus sciadisus*), state-listed as threatened, and Topeka shiner (*Notropis topeka*), state-listed as a species of special concern. These species have specialized habitat requirements and are negatively affected by increased turbidity, siltation and increases in eutrophication from nutrient enrichment. Manure application rates should be carefully determined to ensure that nutrient input does not exceed the ability for crop nutrient uptake and result in runoff to nearby waterbodies. It is important that stringent erosion and sediment control practices be implemented and maintained near the waterways within the project boundary.

- Please visit the DNR Rare Species Guide for more information on the habitat use of these species and recommended measures to avoid or minimize impacts.

Federally Protected Species

- The Topeka shiner is also federally listed as endangered. To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- The Environmental Assessment Worksheet should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance. Sufficient information should be

provided so the DNR can determine whether a takings permit will be needed for any of the above protected species.

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit the Natural Heritage Review website for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

James Drake

James Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

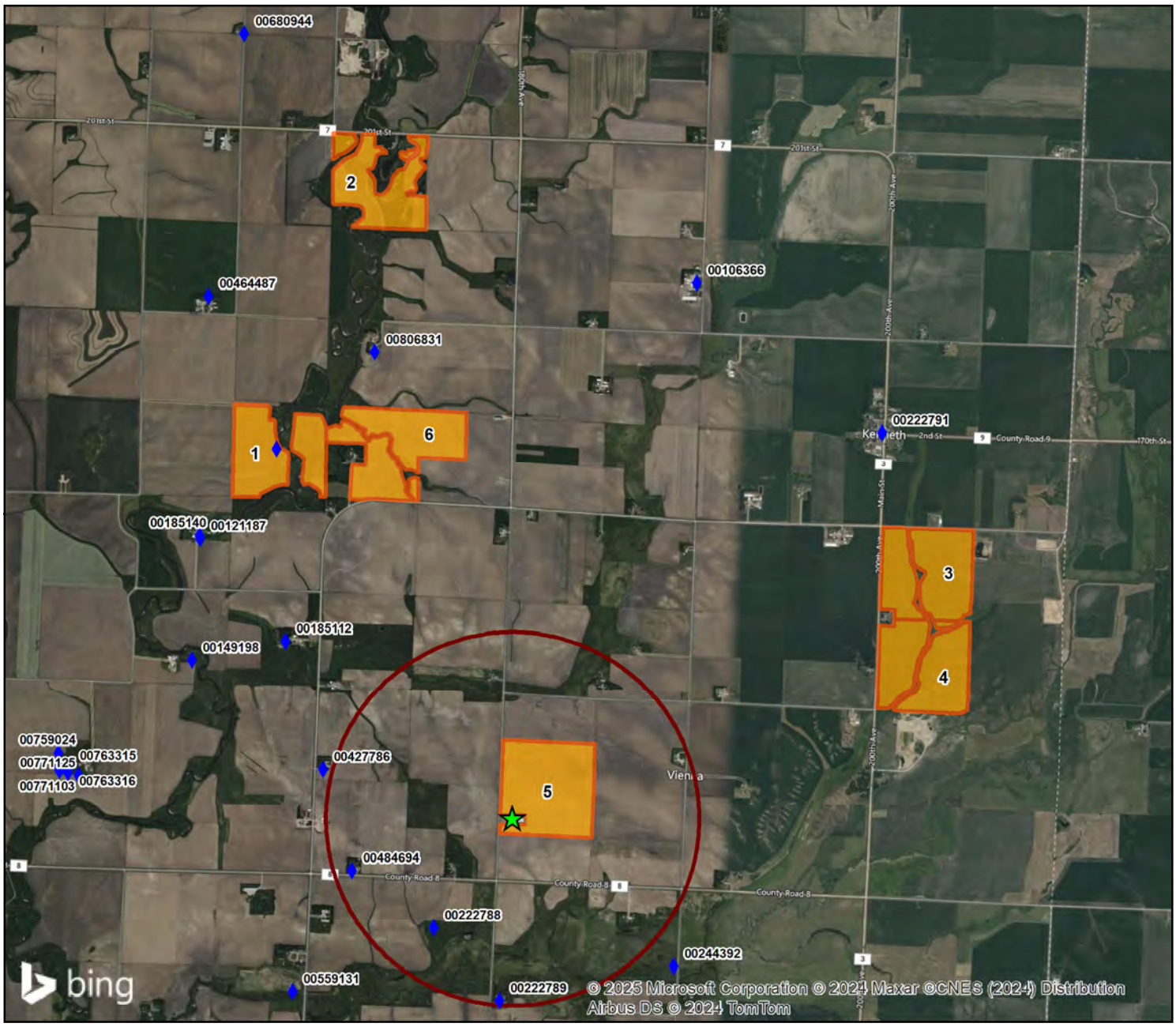
Cc: Haley Byron

Rock Co., MN

Lass Farms, Inc. Feedlot

DWSMA-SWP / Well Inventory Map

Lass Farms, Inc.



NOTES: Data courtesty of the Minnesota Department of Health. (2019)

Imagery Courtesy of BING.

Legend

- Site Location
- Known Well
- 1Mile_Radius_Wells
- 100ft_Buffer_Wells
- Barn
- Manure Application Sites
- DWSMA
- Wellhead Protection Area
- Source Water Assessment

N

Feet

0 1,200 2,400 4,800 7,200 9,600

EXTended Ag Services, Inc.

COUNTY	SITENUM	TOWNSHIP	RANGE	SECTION	ACRES	WORKTYPE	DESCRIPT	TRADITION	CONTEXT	ReportNum	Natreg	CEF	DOE
Rock													
	21RK0031	103	45	35	1.5	1	LS			MULT-2011-10			
	21RK0039	104	44	28	1.5	1	LS						
	21RK0040	104	44	28	5	1	AS						
	21RK0041	104	44	33	4	1	LS			MULT-2011-10			

COUNTY	CITYTWP	PROPNAME	ADDRESS	TOWNSHIP	RANGE	SECTION	QUARTERS	USGS	REPORTNUM	NRHP	CEF	DOE	INVENTNUM
Rock													
	Battle Plain Twp.												
		Bridge No. 2890	unpaved township road over the Rock River	104	44	28	NE-NE-NW	Kenneth					RK-BPL-002
		Bridge 67503		104	44	33	NW-NW	Edgerton South					RK-BPL-006

LASS FARMS, INC.
AIR QUALITY MODELING
PROPOSED SWINE CONFINEMENT BARN
ROCK COUNTY, MINNESOTA

ProAg Job No. 24-005 **July 2024**

ProAg Engineering, Inc.

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AIR QUALITY MODELING REPORT

LASS FARMS, INC.

PROPOSED SWINE CONFINEMENT BARN

ROCK COUNTY, MINNESOTA

ProAg Project No. 24-005

Introduction

Lass Farms, Inc. site is proposing to construct one 4,800-head swine finishing barn as a new swine confinement operation. The site is currently agricultural ground in row crop production. The proposed construction would consist of one mechanically ventilated 4,800-head finishing swine confinement barn (121'-8" x 336'-0") over eight-foot deep concrete pits below the slatted barn floor. The total proposed site would consist of 4,800-head finishing swine between 55 and 300 pounds, equal to 1,440 Animal Units. The site is located in a rural setting in southern Minnesota surrounded by agricultural lands, including cropland and other livestock operations. All manure will be stored as liquid in concrete pits below the slatted barn floors. The ventilation rate in the mechanically tunnel ventilated barn is primarily controlled by ventilation fans located on the west and east end walls of the building. The proposed confinement barn will be located approximately 400-feet east of the centerline of 180th Avenue. The proposed site is located in the SW ¼, Section 15, T-103-N, R-44-W, Rock County, Minnesota.

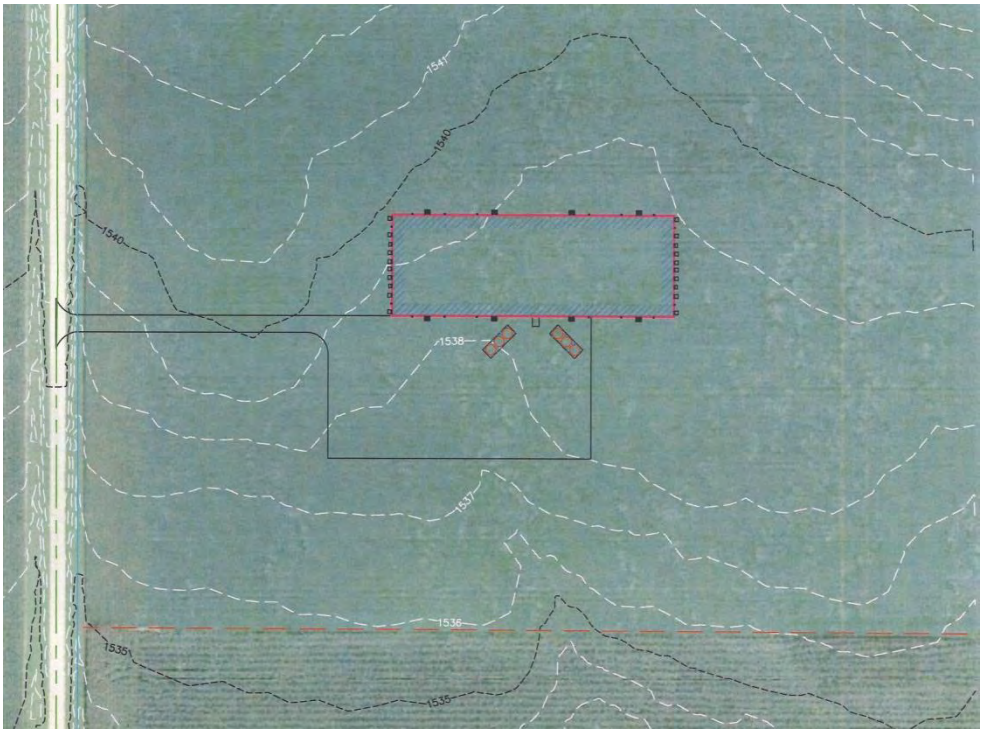

Figure 1. Proposed site plan (SW ¼, Section 15, T-103-N, R-44-W, Rock County, Minnesota).

This Air Quality Modeling Report was developed as part of the Environmental Assessment Worksheet (EAW) required by Minnesota Administrative rule 4410.4300, Subpart 29 for the construction of feedlots with an animal unit capacity equal to or greater than 1,000 animal units or the expansion of an existing feedlot by 1,000 animal units or more.[1] The dispersion model was prepared according to Minnesota Pollution Control Agency (MPCA) publication *MPCA Air Dispersion Modeling Practices Manual* (October 2018) and the United States

[1] *Mandatory EAW Categories,* Minnesota Administrative Rule 4410.4300 (September 5, 2013), Subpart 29.

Environmental Protection Agency (EPA) documents *Revision to the Guideline on Air Quality Models* (January 2017) and *AERMOD Implementation Guide* (December 2016).

The air dispersion model results suggest that the proposed swine confinement barn operation will not exceed the Minnesota ambient air quality standard for hydrogen sulfide (H_2S) at the site's effective property lines or the Minnesota Department of Health inhalation Health Risk Value (iHRV) thresholds for subchronic hydrogen sulfide concentrations at neighboring residences, acute ammonia (NH_3) concentrations at the site's effective property lines, or chronic ammonia concentrations at neighboring residences. Modeling results also show that the proposed facility will not contribute to a significant increase in odor concentration. A summary of the modeled results is as follows:

Pollutant	Averaging Period	Concentration Threshold	Modeled Concentration	Maximum Concentration	Receptor Site
Hydrogen Sulfide	Hourly	30 ppb (v/v) (42 µg/m^3)	6.21 ppb	23.21 ppb	Property line
Hydrogen Sulfide	Monthly	10 µg/m^3	5.32 µg/m^3	6.32 µg/m^3	Residence
Ammonia	Hourly	3,200 µg/m^3	368.16 µg/m^3	516.16 µg/m^3	Property line
Ammonia	Annual	80 µg/m^3	23.13 µg/m^3	28.85 µg/m^3	Residence
Odor	Hourly	72 OU/m^3	49.11 OU/m^3	Very faint	Property line

Table 1. Summary of modeling results

General Modeling Approach

The modeling approach followed for this project follows the air quality modeling criteria as outlined by the MPCA in order to quantitatively assess the air quality impact of the proposed facility and meet the requirements of the Environmental Assessment Worksheet. The air dispersion model was based on a protocol approved by the MPCA on 18 July 2024. The protocol included the calculation of hydrogen sulfide emissions, ammonia emissions, and odor unit emissions from the proposed swine feedlot; the locations of receptors at the effective property line of the proposed site; and the locations of twenty-fix (25) nearby residences and one (1) public use area located within the three-mile by three-mile modeled area of interest centered in the section containing the proposed site. The emission sources modeled for the proposed site consisted of thirty-six (36) individual ventilation fans for the proposed 121'-8" x 336'-0" confinement barn over eight-foot deep concrete manure storage pit. The air quality model also assessed the contributions to pollutant concentrations by five (15) nearby registered feedlots located within the modeled area of interest. The locations of the neighboring feedlots were supplied by the Rock County Zoning Office[2] and can be seen in Figure 2.

The AERMOD (version 19191) air quality model[3,4] was used to estimate the pollutant concentrations at the proposed site's effective property lines and the locations of the nearest residences. The estimated concentrations were based on the dispersion modeled by historical wind speeds, wind directions, atmospheric stabilities, and rural mixing heights based on five years of historical weather data (2012-2016). An elevated terrain was considered for the modeling area. All elevations of sources located on the proposed feedlot site were prescribed in the engineering drawings provided. All source elevations not located on the proposed feedlot site were obtained from AERMAP (version 18081). All receptor elevations were assumed at ground level and also obtained from AERMAP. Property line receptors were spaced at twenty-five meter intervals, and discrete receptors were located at all nearby residences identified within the modeled area of interest.

[2] Rock County Feedlot Officer, correspondence with ProAg Engineering, Inc. February 26, 2024.

[3] U.S. EPA, *User's Guide for the AMS/EPA Regulatory Model—AERMOD.* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPPA-454/B-03-001 (2004).

[4] U.S. EPA, *Addendum: User's Guide for the AMS/EPA Regulatory Model—AERMOD.* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, EPPA-454/B-03-001 (2004).

Figure 2. Location of Lass proposed feedlot (SW ¼, Section 15, T-103-N, R-44-W, Rock County, Minnesota), nearby feedlots modeled as discrete sources (orange) and nearby residences and public use areas modeled as discrete receptors (yellow).

Air Quality Criteria

The concentrations of hydrogen sulfide, ammonia, and odor were calculated along the effective property lines for the proposed feedlot and at the location of all identified residences and public use areas located within the modeled area of interest. The following air quality criteria were considered during the dispersion modeling of this site:

- Third highest average hourly hydrogen sulfide concentration at the effective property lines of the proposed feedlot
- Highest average monthly hydrogen sulfide concentrations at nearby residences and public use areas
- Highest average hourly ammonia concentration at the effective property lines of the proposed feedlot
- Highest average annual ammonia concentrations at nearby residences and public use areas
- Highest average hourly odor unit intensity at the effective property lines of the proposed feedlot and nearby residences and public use areas

Pollutant	Averaging Period	Concentration Threshold	Standard Reference	Receptor Site
Hydrogen Sulfide	Hourly	30 ppb (v/v) (42 µg/m^3)	MN Ambient Air Quality Standard [5]	Property line
Hydrogen Sulfide	Monthly	10 µg/m^3	MN Subchronic (13-week) inhalation Health Risk Value (iHRV) [6]	Residence
Ammonia	Hourly	3,200 µg/m^3	MN Acute inhalation Health Risk Value (iHRV) [7]	Property line
Ammonia	Annual	80 µg/m^3	MN Chronic inhalation Health Risk Value (iHRV) [8]	Residence
Odor	Hourly	72 OU/m^3	Faint Odor Strength	Residence

Table 2. Air quality standards and health risk thresholds

The Minnesota Ambient Air Quality Standards include two primary standards for hydrogen sulfide. A concentration of 0.05 ppm by volume (70.0 µg/m^3) one-half hour average is not to be exceeded more than 2 times per year. Also, the concentration of 0.03 ppm by volume (42.0 µg/m^3) one-half hour average is not to be exceeded more than 2 times in any five-day consecutive period. EPA guidelines do not allow the time-averaging for concentrations of less than one hour.[9] Therefore, the model may predict a concentration of 29 ppm for the one-hour time-average interval, but the half-hour average may exceed the standard. Compliance is demonstrated when the third highest average hourly (H3H) concentration in any five-day period including the background concentration does not exceed 30 ppb. This method of demonstrating compliance is consistent with recent feedlot EAWs and has been reviewed in consultation with the MPCA. The Minnesota Department of Health has developed a health risk value for subchronic (13-week) exposure to hydrogen sulfide. A concentration of 10 µg/m^3 is listed as the subchronic inhalation health risk value (iHRV). Compliance is demonstrated when the highest modeled average monthly hydrogen sulfide concentration measured at the location of nearby residences and public use areas is less than the subchronic iHRV.

The Minnesota Department of Health has developed health risk values for ammonia. A concentration of 3200 µg/m^3 is listed as the acute iHRV. Compliance is demonstrated when the highest modeled average hourly ammonia concentration measured at the proposed feedlot's effective property line is less than the acute iHRV. The concentration of 80 µg/m^3 is listed as the chronic iHRV. Compliance is demonstrated when the highest modeled average annual concentrations measured at the location of nearby residences and public use areas are less than the chronic iHRV.

The development of the EAW and permitting for feedlots includes the assessment of odor annoyance. Odor presents a number of challenges for dispersion modeling, but it is of special interest to the public. The majority of air emission complaints are for odor. Because the majority of complaints received by the MPCA are for swine operations, the detection thresholds for swine odors have been used in this modeling assessment of odor unit concentrations. Weather conditions that favor odor transport occur most often in the early morning, late evening, or in the night when there are low wind speeds and

[5] *State Ambient Air Quality Standards*, Minnesota Administrative Rule 7009.0080 (April 18, 2000), 1.

[6] *Table of Subchronic Health Risk Values,* Minnesota Administrative Rule 4717.8150 (January 4, 2016), 4.

[7] *Table of Acute Health Risk Values*, Minnesota Administrative Rule 4717.8200 (January 4, 2016), 1.

[8] *Table of Chronic Health Risk Values*, Minnesota Administrative Rule 4717.8100 (January 5, 2016), 2.

[9] U.S. EPA, *Revision to the Guideline for Air Quality Models,* 40 CFR Ch. 1, Part 51, Appendix W 9 (November 9, 2005 Edition), 68253.

conditions are stable.[10] As a result, seasonal and diurnal fluctuations should be considered.[11] It should be noted that odor is extremely variable according to the source emissions, wind direction, and wind speeds. Similar to the issues regarding the averaging time for H_2S, the one-hour averaging time for odor is limited in its ability to predict the instantaneous detection of odor. Compliance with odor emission expectations is demonstrated when the highest modeled average hourly odor unit concentration does not exceed the faint odor intensity strength description.

Odor Intensity Number	Odor Intensity Description Strength	Annoyance Level	Detection Threshold (Odor Units)
0	No odor	Not annoying	0
1	Very faint	Not annoying	25
2	Faint	A little annoying	72
3	Moderate	Annoying	212
4	Strong	Very Annoying	624
5	Very Strong	Extremely annoying	1,834

Table 3. Odor intensity classification (swine odor) [12]

Background Concentrations

AERMOD calculated the concentrations of hydrogen sulfide, ammonia, and odor present at the receptors resulting from the explicit sources entered in the model. Background concentrations were added to the modeled concentration in order to account for those sources not explicitly included in the model.[13] The background concentrations included are those for rural Minnesota. No background concentration was used for odor.

Pollutant	Hourly Background Concentration	Subchronic Background Concentration	Annual Background Concentration
Hydrogen Sulfide	17 ppb (v/v) (24.3 µg/m^3)	0.70 ppb (v/v) (1.0 µg/m^3)	---
Ammonia	148 µg/m^3	---	5.72 µg/m^3

Table 4. Background concentrations [14]

Meteorological Data

The meteorological data chosen for the proposed site was five years of historical weather data obtained from the MPCA. The data consisted of surface meteorological data for the National Weather Service (NWS) station in Sioux Falls, South Dakota, and the upper air weather data for the NWS station in Aberdeen, South Dakota. The Sioux Falls surface weather station data was chosen due to proximity of the monitoring site to the modeled area, agricultural land use in the surrounding area, and the period of

[10] Guo, et al., "Development of the OFFSET Model for Determination of Odor-Annoyance-Free Setback Distances from Animal Production Sites: Part II. Model Development and Evaluations," *Transactions of the American Society of Agricultural Engineers* 48, no. 6 (2005): 2271.

[11] Ibid, 2275.

[12] Jacobson, et al., "Development of the OFFSET Model for Determination of Odor-Annoyance-Free Setback Distances from Animal Production Sites: Part I. Review and Experiment," *Transactions of the American Society of Agricultural Engineers* 48, no. 6 (2005): 2262.

[13] U.S. EPA, Revision to the *Guideline for Air Quality Models*, 40 CFR Ch. 1, Part 51, Appendix W (July 29, 2015). Section 8.2.

[14] Minnesota Pollution Control Agency, *MPCA Internal Guidance Reviewing, Approving and Interpreting Air Quality Modeling Evaluations for Livestock Production Facilities*, Version 1.0 (April, 2005), 13.

data available, 2018-2022. The MPCA preprocessed meteorological data with the ADJ_U* default option was selected in order to better represent the effect of surface friction velocity on low-level volume and surface area sources.

Dispersion Model

The air quality model was performed using the AERMOD dispersion model (Version 21112) with 5-years of preprocessed historical meteorological data obtained from the MPCA. The Lakes Environmental AERMOD View 10.2.1 software interface was used to run the model. The air quality dispersion model calculated the hydrogen sulfide concentrations, ammonia concentrations, and odor unit concentrations at the effective property lines and at the locations of the nearby residences and public use areas identified within the area of interest, based on the approved MPCA protocol. The model was run considering the proposed site sources and fifteen (15) other existing registered feedlot sites with associated sources located within the area of interest.

Modeling Assumptions

The air dispersion model made several assumptions in preparing the inputs for AERMOD. The model assumed that the proposed Lass feedlot and the existing fifteen (15) nearby feedlots are the only significant and quantifiable emission sources within the area of interest included in the model. The air quality impacts associated with the feedlots were explicitly modeled, and any other potential air quality impacts associated with other potential sources is assumed implicitly as contributing to the background concentrations added to the model. No decay of gases due to chemical reaction was considered in the model. In order to account for the seasonal variation of flux from open lots and partial confinement or open front barns with bedding and manure pack, scalars were applied to the modeled ammonia and odor emissions from those sources.

Source Descriptions

Source emissions are considered independent of meteorology, and the emission values representing the feedlots at maximum operating capacity were used.[15] The applied terrain analysis is considered elevated. Locations of the explicitly modeled nearby feedlot sources are referenced with a UTM northing and easting coordinate of the southwest corner of the property containing the source, and all measurements on the figures portraying the modeled locations are in feet. All explicit sources were characterized as point sources, line volume sources, and area sources.[16] The information regarding the existing feedlot emissions sources was obtained from the Rock County Feedlot Officer, a windshield survey, and recent aerial images. Emissions from the animal housing and manure storage facilities were estimated from reference data collected in Minnesota and consistent with that used in the Minnesota OFFSET model whenever possible. The emissions can vary by geographic region, not only because of meteorological data affecting the flux of chemicals but also because of common management practices that are specific to the region.

The mechanically ventilated confinement barn is modeled as a series of horizontal point sources. Each point source was defined by its location, base elevation, release height, release orientation, emission rate, gas exit temperature, stack diameter, and stack velocity. The emission rate of each stack is equal to the total emission rate for the modeled area divided proportionally, according to each fan's cross-sectional area, between the horizontal point sources used to characterize the barn ventilation fans. The hourly emission rates calculated according to the staged fan settings provided by the ventilation design group.[17] The resulting airflow rates were consistent with rates recommended by MidWest Plan Service[18] and fan performance data from Automated

[15] MPCA, *Air Quality Modeling Evaluations,* 9.

[16] U.S. EPA, *User's Guide for—AERMOD*, 74.

[17] Skattum Confinement & Superior Buildings, L.L.C. correspondence April 3, 2019.

[18] Midwest Plan Service, *MWPS-8 Swine Housing and Equipment Handbook,* 4 ed., (Ames: Iowa State University), 34.

Production Systems.[19] The following emission rates were used for the mechanically ventilated swine confinement barn characterized as horizontal point sources:

Pollutant	Emission Rate
Hydrogen Sulfide	3.35 µg/m^2-s
Ammonia	53.3 µg/m^2-s
Odor	6.86 OU/m^2-s

Table 5. Mechanically ventilated swine confinement barn emission rates[20]

Naturally ventilated swine confinement barns, and those barns where access to the site-specific information was not available, are modeled as line volume sources according to historic aerial images. Barns with an aspect ratio greater than 2 are represented as a line of separated square volume subsources. Each subsource is defined by its location, base elevation, release height, emission rate, initial lateral dimension, and initial vertical dimension. The emission rate for each subsource is equal to the total emission rate for the modeled barn divided by the number of subsources.

The following emission rates were used for the naturally ventilated swine confinement barns characterized as line volume sources:

Pollutant	Emission Rate
Hydrogen Sulfide	3.35 µg/m^2-s
Ammonia	53.3 µg/m^2-s
Odor	6.86 OU/m^2-s

Table 6. Naturally ventilated swine confinement barn emission rates[21]

For the confinement barns characterized as line volume sources, the initial lateral dimension was determined by:

$$SYINIT = \frac{Center\ to\ Center\ Distance}{2.15} \quad \text{(Equation 1)}$$

The initial vertical dimension was determined by:

$$SZINIT = \frac{Building\ Height}{2.15} \quad \text{(Equation 2)}$$

Open lots and open front barns are modeled as surface level area sources. Each source is defined by its location, base elevation, release height, and emission rate. The length of sides was defined for square lots, or vertices were plotted for irregularly shaped lots. The following emission rates were used for the cattle in open lots and open front barns characterized as area sources:

Pollutant	Emission Rate
Hydrogen Sulfide	1.72 µg/m^2-s
Ammonia	25.1 µg/m^2-s
Odor	4.42 OU/m^2-s

Table 7. Open lot and open barn emission rates[22]

[19] Automated Production Systems, *High Efficiency, Performance Driven Ventilation Fans*, (May 2017), 5.

[20] Gay, et al., "Air Emissions from Animal Housing," 335 and 352.

[21] Ibid, 335 & 352.

[22] Gay, et al., "Air Emissions from Animal Housing," 352 and 353.

The flux rate for ammonia from the open lot surfaces and manure pack is known to vary seasonally. These changes in flux rate were accounted for by applying a monthly scalar to the emission rate.

Month	Scalar
January	0.61
February	0.12
March	0.12
April	0.63
May	0.63
June	0.97
July	0.97
August	1.00
September	0.61
October	0.61
November	0.61
December	0.61

Table 8. Open lot ammonia scalars[23]

The flux rate for odor from the open lot surfaces and manure pack is also known to vary seasonally. These changes in flux rate were accounted for by applying a monthly scalar to the emission rate.

Month	Scalar
January	0.38
February	0.38
March	0.39
April	1.00
May	1.00
June	0.67
July	0.67
August	0.64
September	0.38
October	0.38
November	0.38
December	0.38

Table 9. Open lot odor scalars[24]

Proposed Site

The proposed Lass site will consist of one 4,800 head finishing swine mechanically ventilated confinement barn (121'-8" x 336'-0"), split into four rooms housing up to 1,200-head of finishing swine in each room. Room dimensions are shown in the table below, and the modeled location is depicted in the figure.

Source ID	Source Description	Length (ft)	Width (ft)	Animal Capacity
	Room 1 (SW)	**168.00**	**60.83**	**1,200 head swine**
S15PS004	24" Fan			
S15PS005	24" Fan			
S15PS006	24" Fan			
S15PS007	54" Fan			
S15PS008	24" Fan			
S15PS009	54" Fan			
S15PS010	36" Fan			

[23] R. D. Duysen, et al., "Ammonia, hydrogen sulfide and odor emissions from a beef cattle feedlot," *American Society of Agricultural Engineers Meeting Paper No. 034109* (July 2003), 9.

[24] Ibid, 9.

S15PS011	54” Fan			
S15PS012	54” Fan			
	Room 2 (NW)	**168.00**	**60.83**	**1,200 head swine**
S15PS013	54” Fan			
S15PS014	54” Fan			
S15PS015	36” Fan			
S15PS016	54” Fan			
S15PS017	24” Fan			
S15PS018	54” Fan			
S15PS019	24” Fan			
S15PS020	24” Fan			
S15PS021	24” Fan			
	Room 3 (NE)	**168.00**	**60.83**	**1,200 head swine**
S15PS022	24” Fan			
S15PS023	24” Fan			
S15PS024	24” Fan			
S15PS025	54” Fan			
S15PS026	24” Fan			
S15PS027	54” Fan			
S15PS028	36” Fan			
S15PS029	54” Fan			
S15PS030	54” Fan			
	Room 4 (SE)	**168.00**	**60.83**	**1,200 head swine**
S15PS031	54” Fan			
S15PS032	54” Fan			
S15PS033	36” Fan			
S15PS034	54” Fan			
S15PS035	24” Fan			
S15PS036	54” Fan			
S15PS001	24” Fan			
S15PS002	24” Fan			
S15PS003	24” Fan			

Table 10. Proposed Feedlot source descriptions

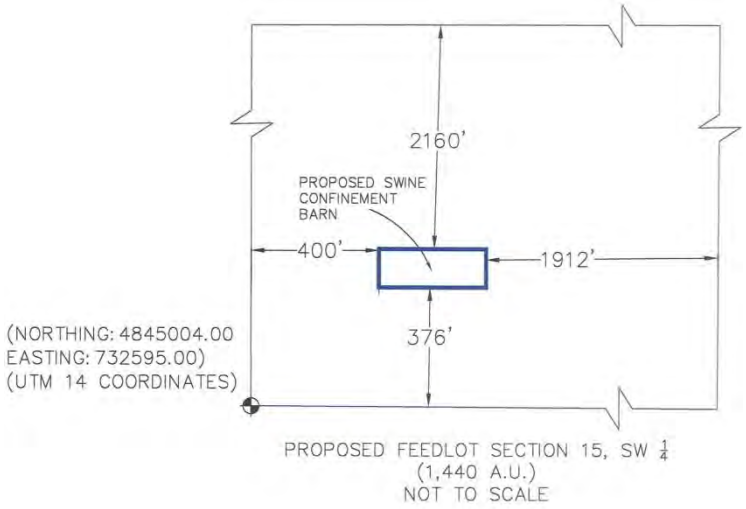

Figure 3. Modeled location of proposed feedlot.

Nearby Sources[25]

Feedlot 1

The existing nearby Feedlot 1 located in the SW ¼ of Section 9, Vienna Township, consists of open lots housing up to 42 Animal Units of beef cattle. The open lots are modeled as an area source. The modeled source location is shown in the figure below.

[25] Rock County Feedlot Officer, February 26, 2024.

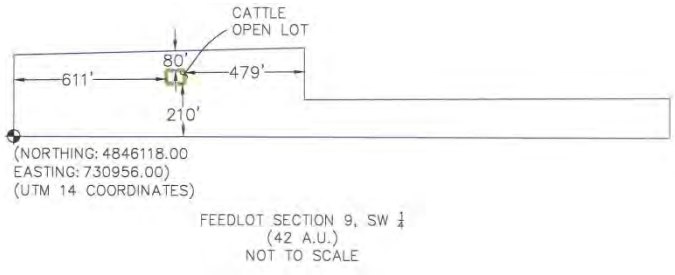

Figure 4. Modeled location of nearby Feedlot 1 sources.

Feedlot 2

The existing nearby Feedlot 2 located in the SE ¼ of Section 9, Vienna Township, consists of open lots housing up to 50 Animal Units of beef cattle. The open lots are modeled as area sources. The modeled source locations are shown in the figure below.

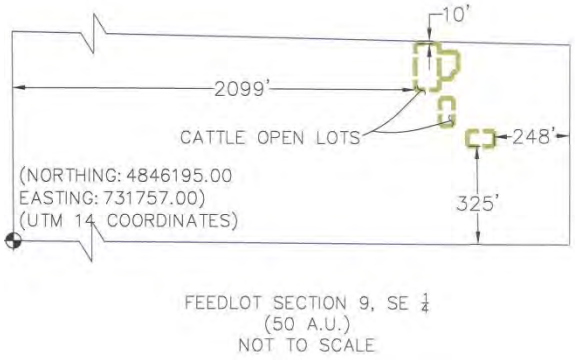

Figure 5. Modeled location of nearby Feedlot 2 sources.

Feedlot 3

The existing nearby Feedlot 3 located in the SW ¼ of Section 10, Vienna Township, consists of open lots housing up to 53 animal units of beef cattle. The open lots are modeled as an area source. The modeled source location is shown in the figure below.

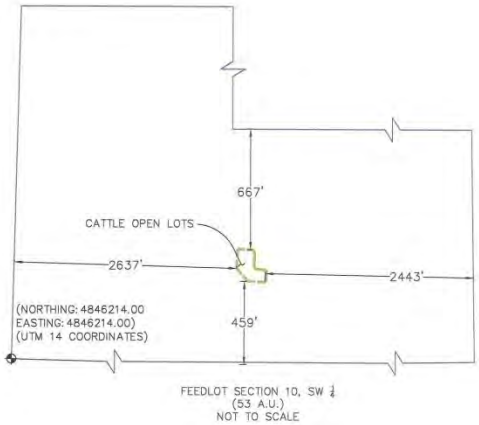

Figure 6. Modeled location of nearby Feedlot 3 sources.

Feedlot 4

The existing nearby Feedlot 4 located in the SE ¼ of Section 10, Vienna Township, consists of open lots housing up to 100 Animal Units of beef cattle. The open lots are modeled as a single area source. The modeled source location is shown in the figure below.

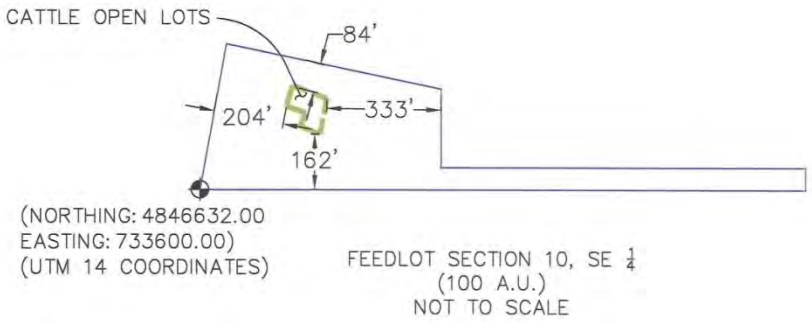

Figure 7. Modeled location of nearby Feedlot 4 sources.

Feedlot 5

The existing nearby Feedlot 5 located in the NE ¼ of Section 10, Vienna Township, consists of open lots housing up to 24 Animal Units of beef cattle. The open lots are modeled as a single area source. The modeled source location is shown in the figure below.

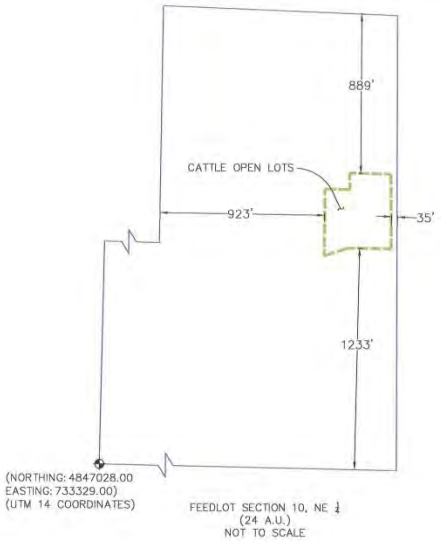

Figure 8. Modeled location of nearby Feedlot 5 sources.

Feedlot 6

The existing nearby Feedlot 6 located in the NE ¼ of Section 11, Vienna Township, consists of open lots housing up to 621 Animal Units of beef cattle. The open lots are modeled as area sources. The modeled source locations are shown in the figure below.

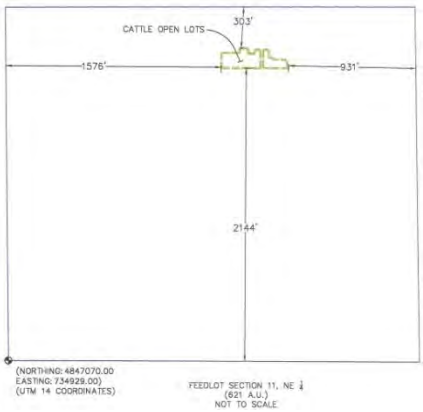

Figure 9. Modeled location of nearby Feedlot 6 sources.

Feedlot 7

The existing nearby Feedlot 7 located in the NE ¼ of Section 14, Vienna Township, consists of open lots housing up to 124 Animal Units of beef cattle. The open lots are modeled as area sources. The modeled source locations are shown in the figure below.

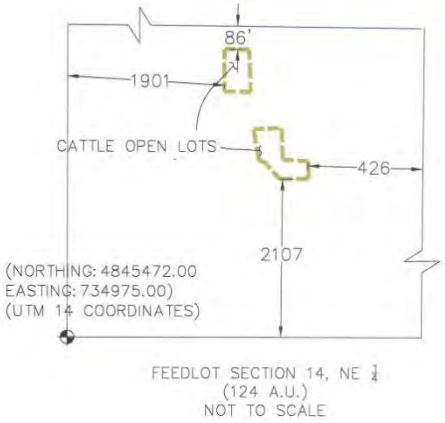

Figure 10. Modeled location of nearby Feedlot 7 sources.

Feedlot 8

The existing nearby Feedlot 8 located in the NE ¼ of Section 15, Vienna Township, consists of open lots housing up to 230 Animal Units of beef cattle. The open lots are modeled as a single area source. The modeled source location is shown in the figure below.

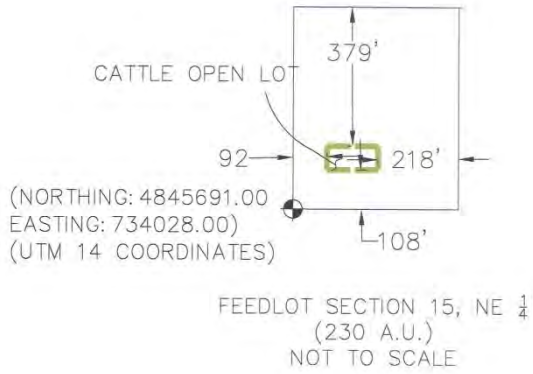

Figure 11. Modeled location of nearby Feedlot 8 sources.

Feedlot 9

The existing nearby Feedlot 9 located in the NW ¼ of Section 16, Vienna Township, consists of open lots housing up to 16 Animal Units of beef cattle. The open lots are modeled as a single area source. The modeled source location is shown in the figure below.

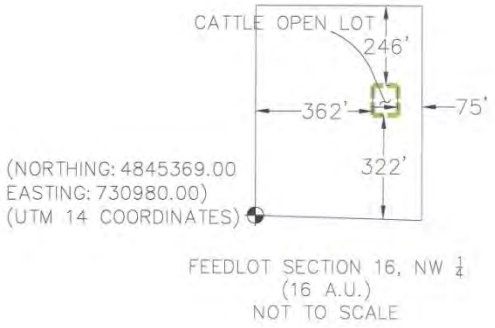

Figure 12. Modeled location of nearby Feedlot 9 sources.

Feedlot 10

The existing nearby Feedlot 10 located in the SE ¼ of Section 16, Vienna Township, consists of open lots housing up to 51 Animal Units of beef cattle. The open lots are modeled as a single area source. The modeled source location is shown in the figure below.

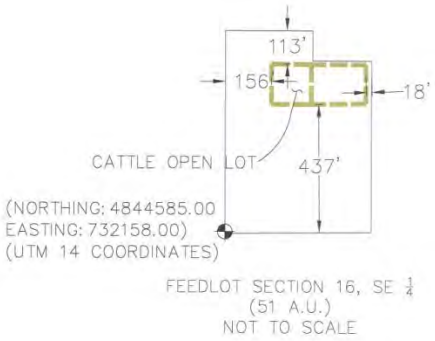

Figure 13. Modeled location of nearby Feedlot 10 sources.

Feedlot 11

The existing nearby Feedlot 11 located in the NW ¼ of Section 21, Vienna Township, consists of open lots for beef cattle & swine confinement barn housing up to a total of 480 total Animal Units. The open lot is modeled as a single area source. The confinement barn is modeled as a series of separated square volume sources. The modeled source locations are shown in the figure below.

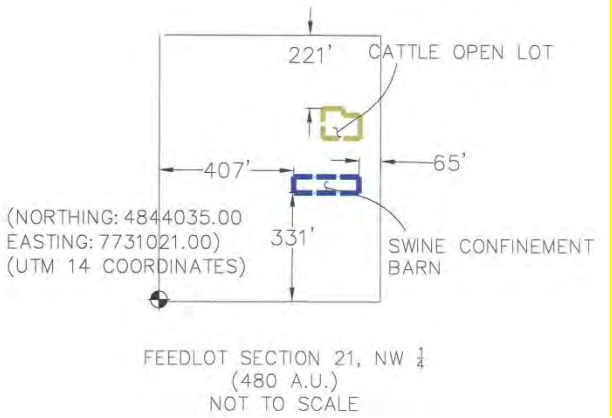

Figure 14. Modeled location of nearby Feedlot 11 sources.

Feedlot 12

The existing nearby Feedlot 12 located in the SW ¼ of Section 22, Vienna Township, consists of open lots housing up to 50 Animal Units of beef cattle. The open lot is modeled as a single area source. The modeled source location is shown in the figure below.

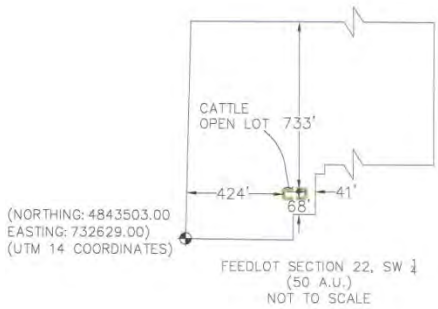

Figure 15. Modeled location of nearby Feedlot 12 sources.

Feedlot 13

The existing nearby Feedlot 13 located in the SE ¼ of Section 22, Vienna Township, consists of one swine confinement barn housing up to 600 animal units of swine. The confinement barn is modeled as a series of separated square volume sources. The modeled source location is shown in the figure below.

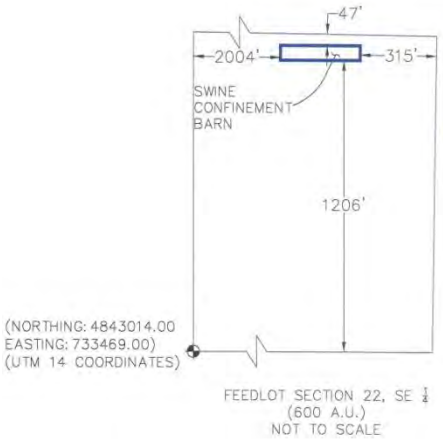

Figure 16. Modeled location of nearby Feedlot 13 sources.

Feedlot 14

The existing nearby Feedlot 14 located in the SE ¼ of Section 22, Vienna Township, consists of open lots housing up to 52 Animal Units of beef cattle. The open lots are modeled as a single area source. The modeled source location is shown in the figure below.

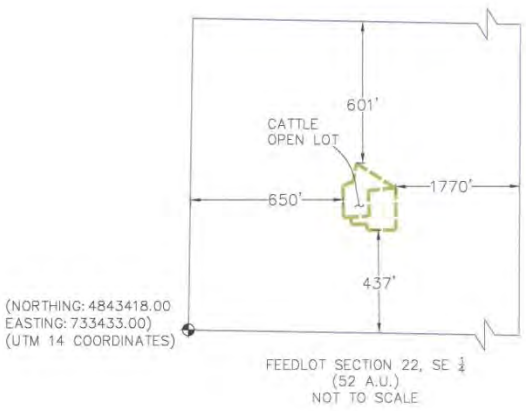

Figure 17. Modeled location of nearby Feedlot 14 sources.

Feedlot 15

The existing nearby Feedlot 15 located in the SW ¼ of Section 23, Vienna Township, consists of one swine confinement barn housing up to 990 animal units of swine. The confinement barn is modeled as a

series of separated square volume sources. The modeled source location is shown in the figure below.

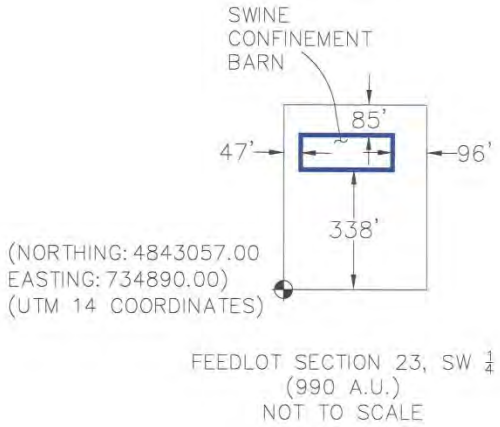

Figure 18. Modeled location of nearby Feedlot 15 sources.

Modeling Results

Hydrogen Sulfide at Property Lines and Residences

The AERMOD results demonstrate that the proposed feedlot will meet the Minnesota Ambient Air Quality Standards for hydrogen sulfide. The results for the third highest average hourly concentrations at the feedlot's effective property line are shown in Table 11 below. The results for the highest average monthly concentration at nearby residences located within the modeled area of interest are shown in Table 12 below. After the background concentration is added to the modeled concentration, the model does not result in any exceedance of the Minnesota Ambient Air Quality Standards for hydrogen sulfide at the site's effective property lines or at the location of nearby residences.

Location	H_2S Concentration ($\mu g/m^3$)	H_2S Concentration (ppb)	Background Concentration (ppb)	Total Concentration (ppb)
North	8.66	6.21	17.00	23.21
East	7.57	5.43	17.00	22.43
South	6.23	4.47	17.00	21.47
West	6.23	4.47	17.00	21.47

Table 11. H3H average hourly H_2S concentrations at effective property lines

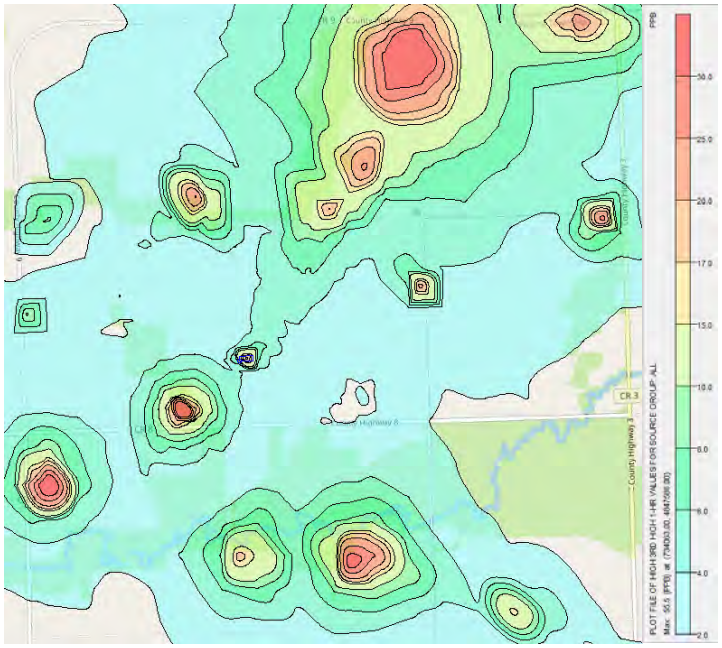

Figure 10. H3H Hourly H_2S isopleth

Location	H_2S Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)
S09R001	0.03	1.00	1.03
S09R002	0.06	1.00	1.06
S09R003*	1.36	1.00	2.36
S09R004*	0.13	1.00	1.13
S10R001	0.06	1.00	1.06
S10R002	0.13	1.00	1.13
S10R003*	5.33	1.00	6.33
S10R004*	3.63	1.00	4.63
S10R005	0.95	1.00	1.95
S10P001	0.16	1.00	1.16
S11R001*	2.53	1.00	3.53
S11R002	0.15	1.00	1.15
S11R003	0.13	1.00	1.13

S14R001	0.10	1.00	1.10
S14R002*	3.81	1.00	4.81
S14R003	0.06	1.00	1.06
S14R004	0.08	1.00	1.08
S15R001*	1.07	1.00	2.07
S16R001*	0.31	1.00	1.31
S16R002*	1.00	1.00	2.00
S16R003	0.22	1.00	1.22
S21R001*	0.90	1.00	1.90
S21R002	0.05	1.00	1.05
S22R001	0.09	1.00	1.09
S22R002*	1.55	1.00	2.55
S22R003*	0.95	1.00	1.95

Table 12. Highest average monthly H_2S concentrations at nearby residences
*Residence located on the site of an existing nearby feedlot

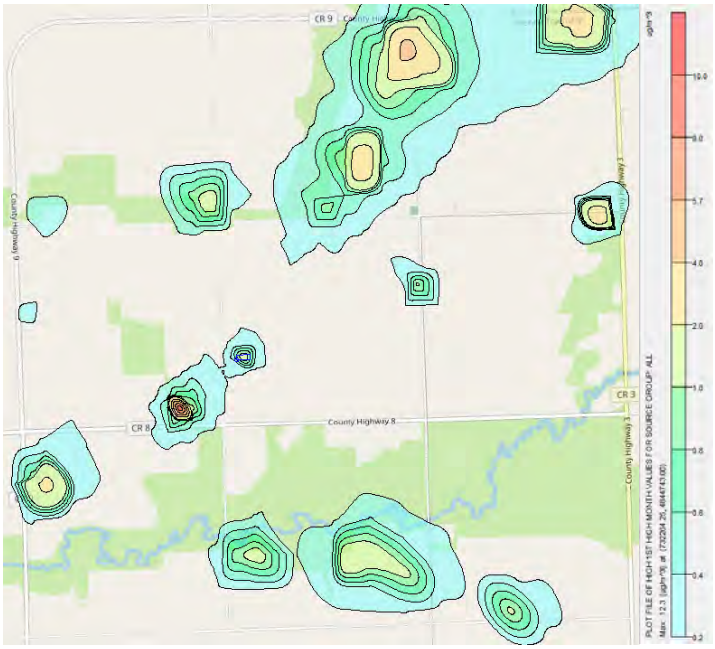

Figure 11. Monthly H_2S isopleth

Ammonia at Property Lines and Residences

The AERMOD results demonstrate that the proposed feedlot will meet the Minnesota Department of Health Inhalation Risk Value thresholds for ammonia. The results for the highest average hourly concentrations at the feedlot's effective property line are shown in Table 13 below. The results for the highest average annual concentration at nearby residences located within the modeled area of interest are shown in Table 14 below. After the background concentration is added to the modeled concentration, the model does not result in any exceedance of the Minnesota Department of Health Inhalation Risk Value thresholds for ammonia at the site's effective property lines or at the location of nearby residences.

Location	NH_3 Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)
North	113.16	148.00	261.16
East	103.61	148.00	251.61
South	126.37	148.00	274.37
West	368.16	148.00	516.16

Table 13. Highest average hourly NH_3 concentrations at effective property lines

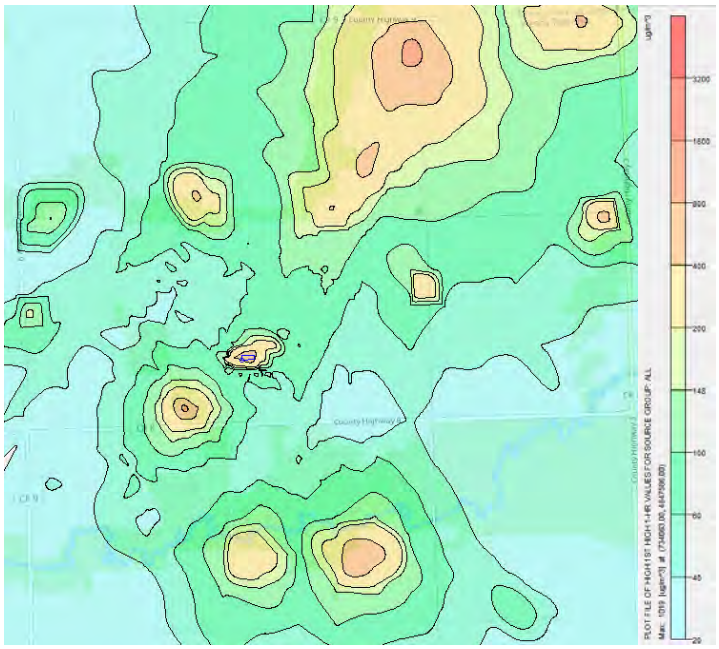

Figure 12. Hourly NH_3 isopleth

Location	NH_3 Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)
S09R001	0.11	5.72	5.83
S09R002	0.27	5.72	5.99
S09R003*	6.26	5.72	11.98
S09R004*	0.60	5.72	6.32
S10R001	0.30	5.72	6.02
S10R002	0.62	5.72	6.34
S10R003*	23.13	5.72	28.85
S10R004*	19.92	5.72	25.64
S10R005	5.33	5.72	11.05
S10P001	0.81	5.72	6.53
S11R001*	12.64	5.72	18.36
S11R002	0.56	5.72	6.28
S11R003	0.61	5.72	6.33
S14R001	0.40	5.72	6.12
S14R002*	16.47	5.72	22.19
S14R003	0.28	5.72	5.99
S14R004	0.32	5.72	6.04
S15R001*	4.70	5.72	10.42
S16R001*	1.48	5.72	7.20
S16R002*	4.96	5.72	10.68
S16R003	0.30	5.72	6.02
S21R001*	0.89	5.72	6.61
S21R002	0.18	5.72	5.90
S22R001	0.47	5.72	6.19
S22R002*	7.75	5.72	13.47
S22R003*	4.80	5.72	10.52

Table 14. Highest average annual NH_3 concentrations at nearby residences
*Residence located on the site of an existing nearby feedlot

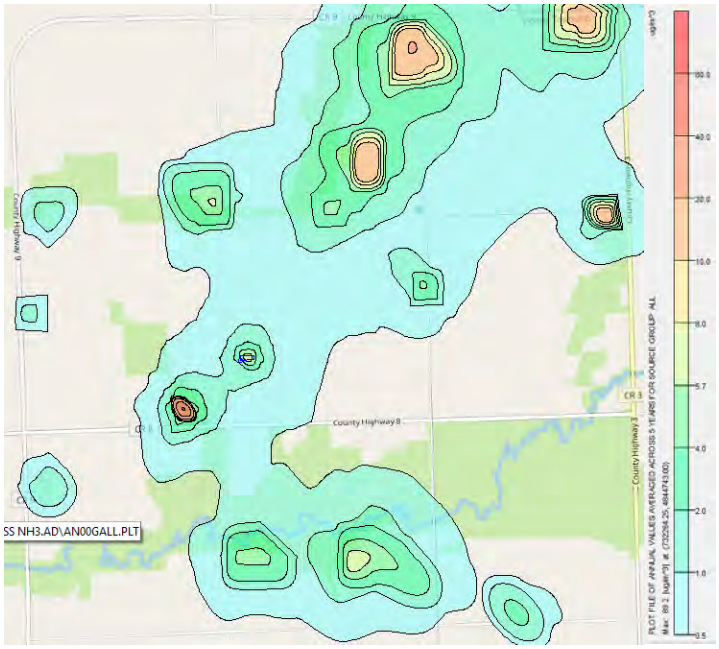

Figure 13. Annual NH_3 isopleth

Odor Intensities at Property Lines and Residences

The AERMOD results demonstrate that the proposed feedlot will not exceed the very faint odor strength at the feedlot's effective property line. Table 15 below shows very faint odor strength, a not annoying odor level, at the site's effective property lines. Table 16 below shows no average hourly odor unit concentration above the very faint odor strength at the location of nearby residences.

Location	Odor Conc. (OU/m^3)	Odor Strength	Annoyance Level
North	24.05	No odor	Not annoying
East	20.38	No odor	Not annoying
South	16.02	No odor	Not annoying
West	49.11	Very faint	Not annoying

Table 15. Highest average hourly odor unit concentrations at effective property lines

Location	Odor Concentration (OU/m^3)	Odor Strength
S09R001	5.91	No odor
S09R002	14.20	No odor
S09R003*	49.57	Very faint
S09R004*	31.93	Very faint
S10R001	19.49	No odor
S10R002	42.07	Very faint
S10R003*	200.12	Faint
S10R004*	95.17	Faint
S10R005*	76.78	Faint
S10P001	23.48	No odor
S11R001*	78.86	Faint
S11R002	11.58	No odor
S11R003	19.16	No odor
S14R001	11.83	Very faint
S14R002*	101.31	Faint
S14R003	8.29	No odor
S14R004	7.61	No odor
S15R001*	80.72	Faint
S16R001*	47.80	Very faint
S16R002*	72.91	Faint
S16R003	7.18	No odor
S21R001*	5.26	No odor
S21R002	7.24	No odor
S22R001	6.40	No odor
S22R002*	7.36	No odor
S22R003*	66.54	Very faint

Table 16. Highest average hourly odor unit concentrations at nearby residences
*Residence located on the site of an existing nearby feedlot

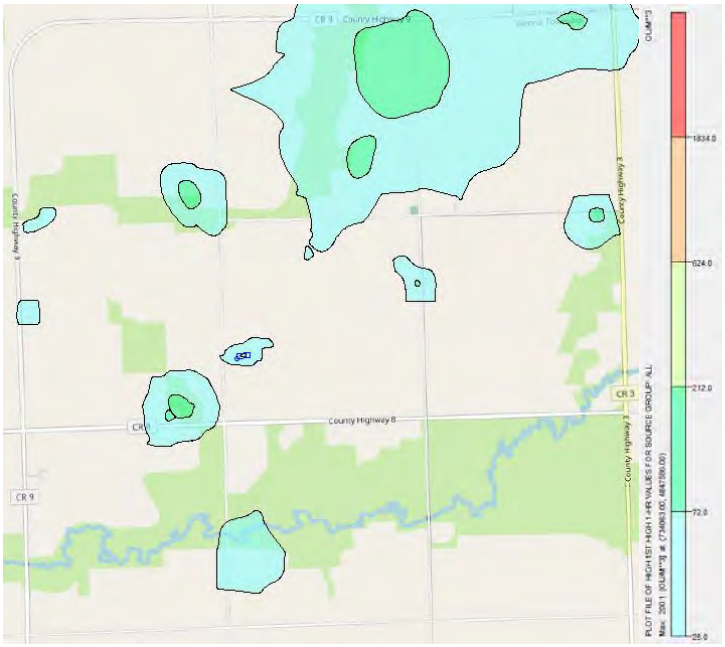

Figure 14. Hourly Odor isopleth

Summary and Conclusion

This report was created in support of the Environmental Assessment Worksheet to present the findings of the air quality dispersion model representing the impact on air quality of the proposed Lass Farms Inc. swine confinement operation. The proposed 4,800-head swine finishing confinement operation located in the SW ¼, Section 15, T-103-N, R-44-W, Rock County was assessed along with the existing feedlots in a three-mile by three-mile area of interest centered at the site of the proposed feedlot operation.

The air dispersion model results suggest that the proposed swine confinement barn will not exceed the Minnesota ambient air quality standard for hydrogen sulfide (H_2S) at the site's effective property lines or the Minnesota Department of Health inhalation Health Risk Value (iHRV) thresholds for subchronic hydrogen sulfide concentrations at neighboring residences, acute ammonia (NH_3) concentrations at the site's effective property lines, or chronic ammonia concentrations at neighboring residences. Modeling results also show that the proposed facility will not contribute to a significant increase in discernable odor intensity.

This report is submitted with the best information available during the time of its preparation. Any significant changes in land use, location of residences, size of neighboring feedlot operations, other emission sources, abnormal meteorological conditions, or other extenuating circumstances could affect the actual concentrations in the modeled area of interest.

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Minnesota P Index Report

Farm : Battle Plain 15
Field : Battle Plain 15, SE1/4 & E1/2 of SW1/4
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	14 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P30B Sac silty clay loam
Slope:	146 feet @ 3 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	11 ppm Olsen P
Sediment delivery:	0.4 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Battle Plain 33
Field : Battle Plain 33, NW1/4
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	30 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P38B Thurman sandy loam
Slope:	146 feet @ 4 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	23 ppm Olsen P
Sediment delivery:	0.4 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Vienna 12
Field : Vienna 12, NW1/4 (E)
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.1
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	13 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P36A Talcot silty clay loam occasionally flooded
Slope:	146 feet @ 1 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	10 ppm Olsen P
Sediment delivery:	0.3 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.1
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Vienna 12
Field : Vienna 12, NW1/4 (W)
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	13 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P30B Sac silty clay loam
Slope:	146 feet @ 3 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	10 ppm Olsen P
Sediment delivery:	0.4 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Vienna 12 SW
Field : Vienna 12, SW1/4 (3)
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	10 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P48B Allendorf silty clay loam
Slope:	146 feet @ 4 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	8 ppm Olsen P
Sediment delivery:	0.5 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Vienna 15
Field : Vienna 15, Mid Qtr of W1/2
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	9 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P30B Sac silty clay loam
Slope:	146 feet @ 3 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	8 ppm Olsen P
Sediment delivery:	0.4 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Vienna 4
Field : Vienna 4, SW1/4 & NW1/4 of SE1/4
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	11 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P12B Everly silty clay loam
Slope:	146 feet @ 4 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	9 ppm Olsen P
Sediment delivery:	0.4 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.0
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Vienna 5
Field : Vienna 5, SE1/4 (E)
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.1
Snowmelt P:	0.2

Site characteristics:

Initial soil test P:	21 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	**Slope Segment 1**
Soil series	P16A Graceville silty clay loam
Slope:	169 feet @ 1 %

Management	**2025**
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	16 ppm Olsen P
Sediment delivery:	0.2 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.1
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.

Minnesota P Index Report

Farm : Vienna 5
Field : Vienna 5, SE1/4 (W)
County : Rock

Average P Index:

Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.1
Snowmelt P:	0.2

Site characteristics:

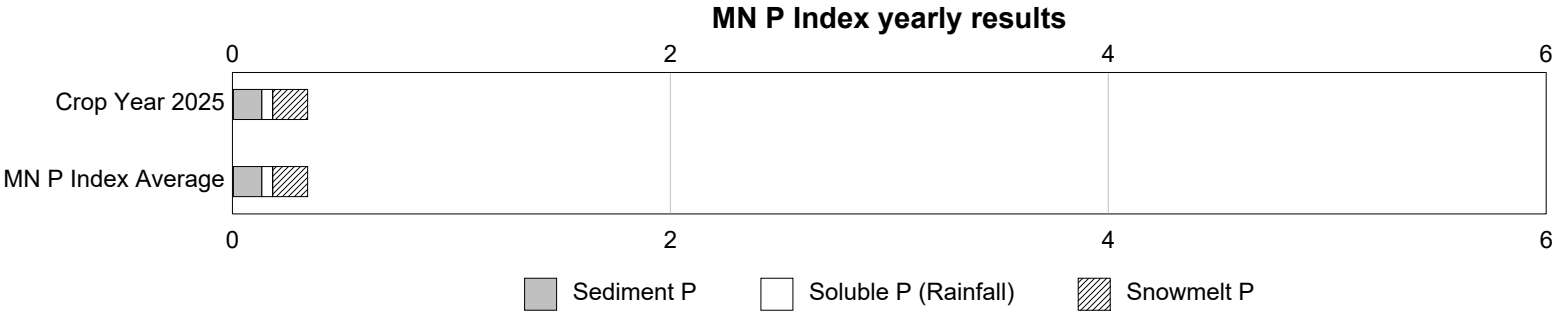
Initial soil test P:	21 ppm Bray P-1
Sediment traps:	None
Depressions and inlets:	None
Tillage orientation:	Cross slope
Distance to water:	300 feet

Soil and slope	Slope Segment 1
Soil series	P13B Fairhaven silt loam
Slope:	146 feet @ 4 %

Management	2025
Crop:	Corn, grain
Yield:	210 bu/ac
Annual manure app:	120 lbs P2O5 / acre
Manure app method:	Injected or Planter Applied
Annual fert app:	None
Previous fall tillage:	Chisel or Heavy Disk
Previous fall N:	No Anhydrous
Results	
Adjusted soil test P:	16 ppm Olsen P
Sediment delivery:	0.6 t/ac/yr
Total P Index:	0.3
Sediment-bound P:	0.1
Soluble P (Rainfall):	0.1
Snowmelt P:	0.2

Recommendations

0.3 is a very low risk rating. No management changes are recommended.



From File Name :

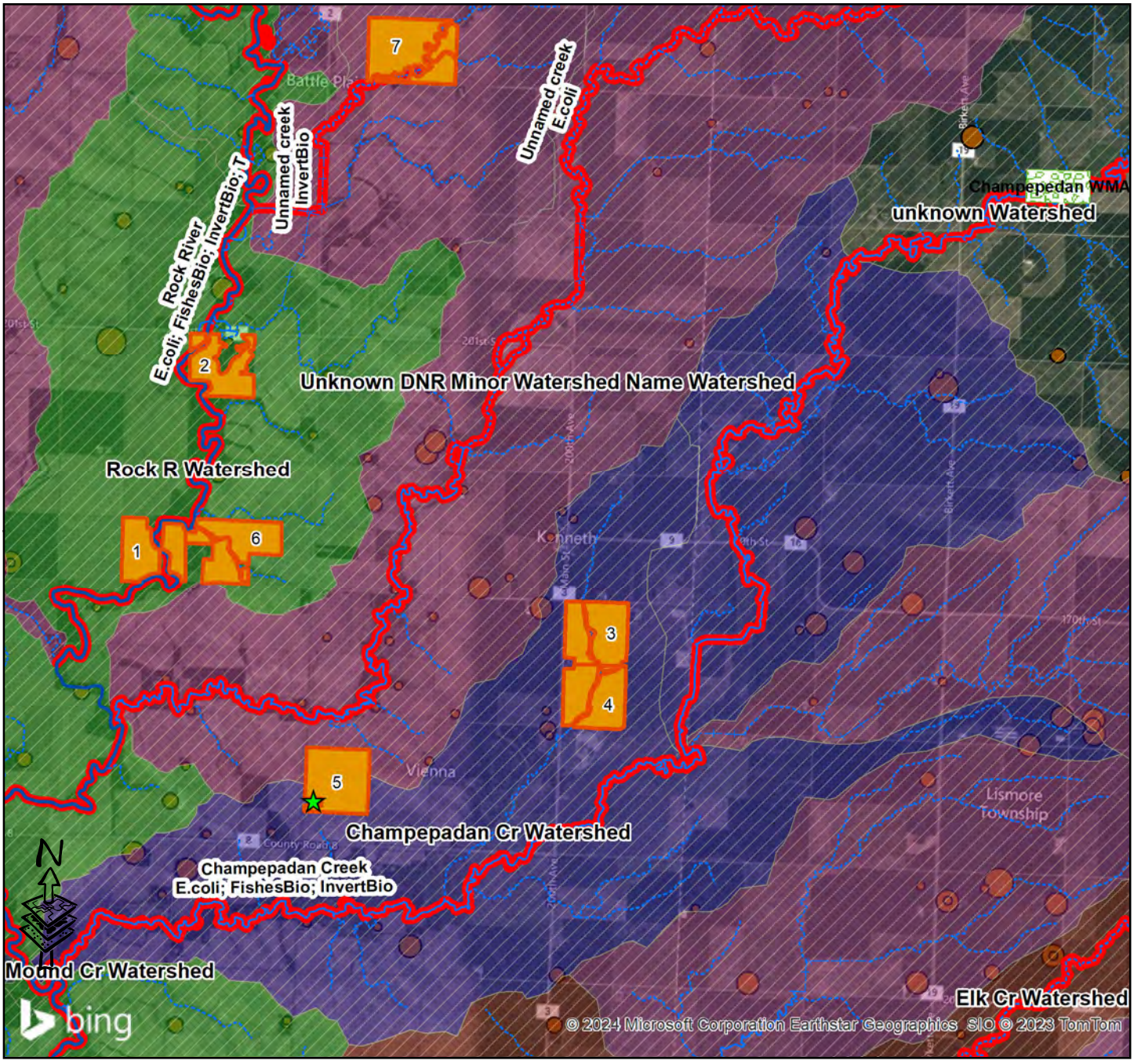
Attachment K

Rock Co., MN

Lass Farms, Inc.

Lass Farms, Inc.

Cumulative Impacts Map



Map Notes: Data courtesy of the Minnesota Pollution Control Agency & Minnesota Department of Natural Resources. 22 Feedlots for a total of 9101.2 AU identified.

Legend

- Site Location
- Manure Application Sites
- Stream (Perennial)
- Stream (Intermittent/Unknown)
- Drainage Ditch
- River Centerline
- 2018 Impaired Streams (proposed)
- 2018 Impaired Wetlands (proposed)
- 2018 Impaired Lakes (proposed)

- Rock River
- Beaver Cr
- Champepadan Cr
- Elk Cr
- Little Beaver Cr
- Mound Cr
- Rock R
- Unknown DNR Minor Watershed Name

Feedlot (Size)

- 0.0 - 100 AU
- 100.1 - 300 AU
- 300.1 - 999 AU
- 999.1 - 2000 AU
- +2000 AU

Imagery Courtesy of Bing

EXTended Ag Services, Inc.

Feet

0 1,250 2,500 5,000 7,500

Attachment L

Rock Co., MN

Lass Farms, Inc.

Lass Farms, Inc.

Groundwater Pollution Sensitivity Map

Feet

0 2,375 4,750 9,500 14,250 19,000

Imagery Courtesy of BING.

N

EXTended Ag Services, Inc.

Legend

- Site Location
- Manure Application Sites
- DWSMA
- Wellhead Protection Area
- Source Water Assessment

Pollution Sensitivity of Near-Surface Materials

RATING

- Very low
- Ultra low
- Moderate
- Low
- High

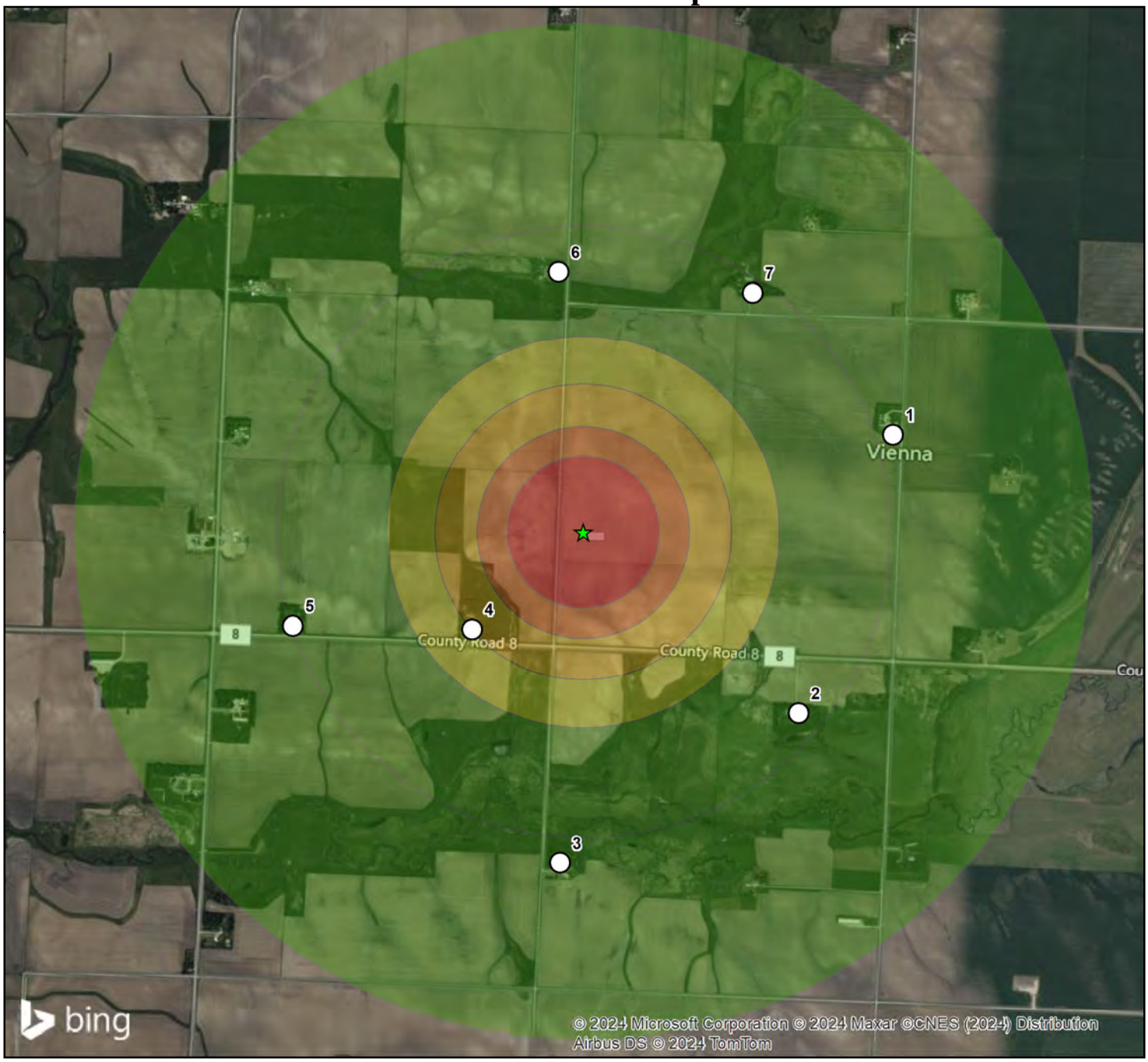
Source:

Groundwater pollution sensitivity assessment was developed by the MN DNR (County Geologic Atlas Series, 2016). Assessments are based on the geologic and hydrogeologic factors affect the ability of geologic materials to restrict the downward migration of contaminants to a depth of 10 feet. Geologic sensitivity assessments are typicall done on a 1:100,000 scale.

Rock Co., MN

Lass Farms, Inc.

Lass Farms, Inc.
Odor OFFSET Map



NOTES: - OFFSET Odor Annoyance Zones
Only residences shown that are within 1 mile vicinity of proposed Barn.

Legend

- ★ Site Location
- ○ Residence
- 7849 ft- 99%
- 4729 ft - 98%
- 3022 ft. - 97%
- 2286 ft - 96%
- 1639 ft - 94%
- 1174 ft - 91%
- Proposed Barn

N

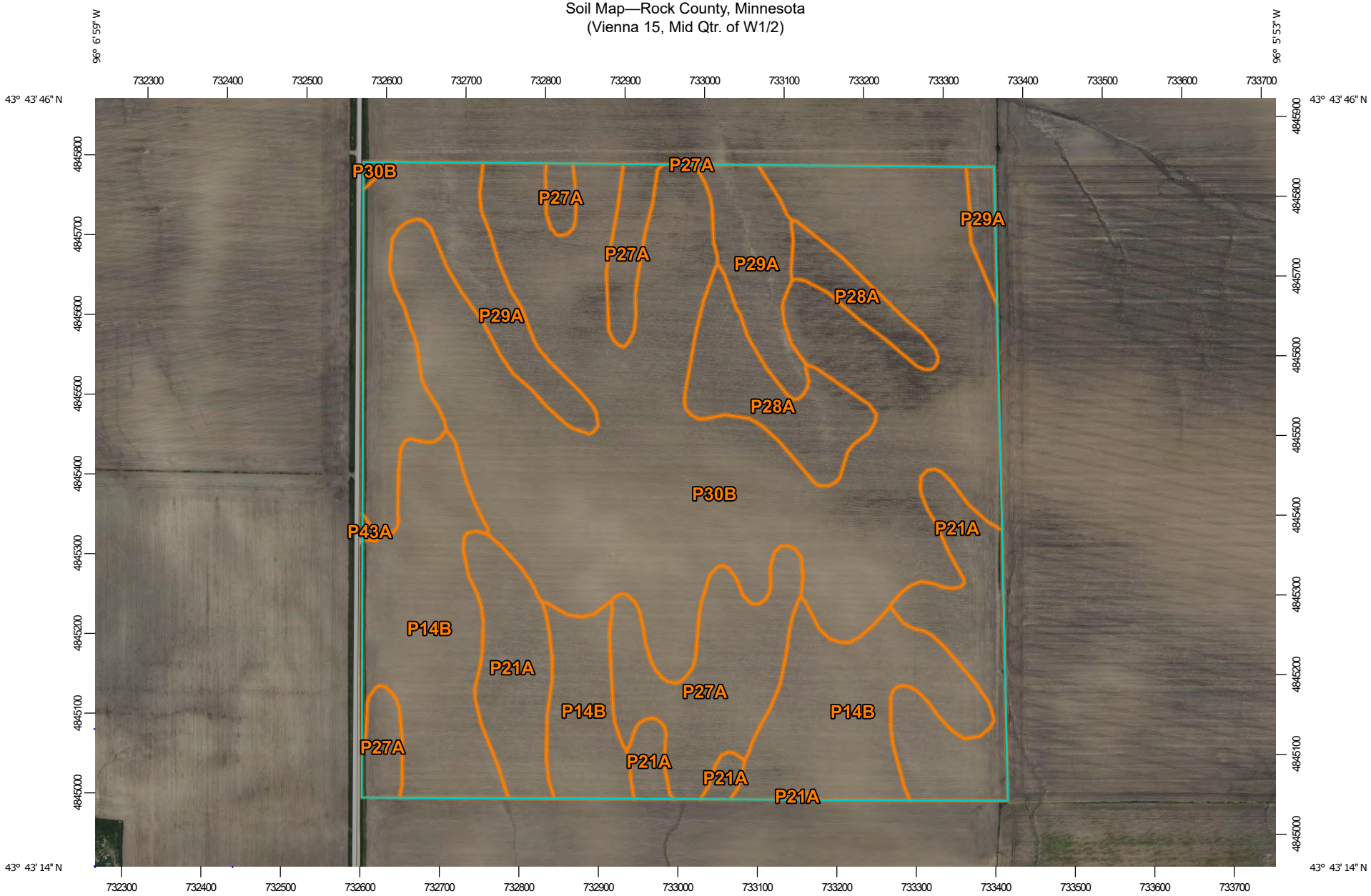
Imagery Courtesy of BING.

EXTended Ag Services, Inc.

Feet

0 900 1,800 3,600 5,400 7,200

Soil Map—Rock County, Minnesota
(Vienna 15, Mid Qtr. of W1/2)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rock County, Minnesota
Survey Area Data: Version 21, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

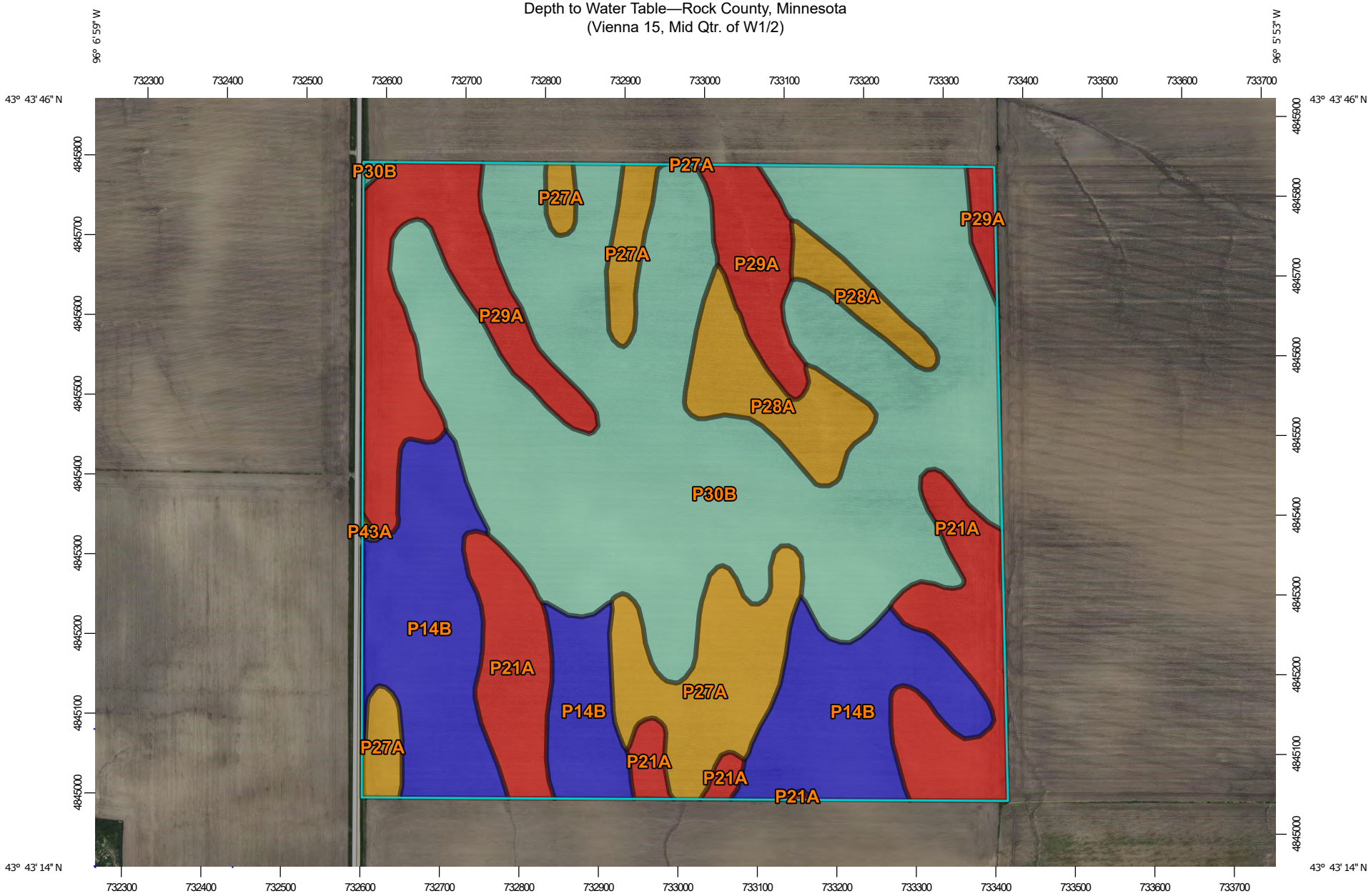
Date(s) aerial images were photographed: Jun 12, 2022—Jun 29, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
P14B	Flandreau silt loam, 2 to 6 percent slopes	29.7	18.7%
P21A	Marcus silty clay loam, 0 to 2 percent slopes	16.7	10.5%
P27A	Primghar silty clay loam, 1 to 3 percent slopes	14.2	8.9%
P28A	Ransom silty clay loam, 1 to 3 percent slopes	8.7	5.5%
P29A	Rushmore silty clay loam, 0 to 2 percent slopes	18.2	11.5%
P30B	Sac silty clay loam, loam substratum, 2 to 5 percent slopes	71.0	44.8%
P43A	Wilmonton silty clay loam, 1 to 3 percent slopes	0.1	0.1%
Totals for Area of Interest		**158.6**	**100.0%**

Depth to Water Table—Rock County, Minnesota
(Vienna 15, Mid Qtr. of W1/2)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rock County, Minnesota
Survey Area Data: Version 21, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 12, 2022—Jun 29, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
P14B	Flandreau silt loam, 2 to 6 percent slopes	>200	29.7	18.7%
P21A	Marcus silty clay loam, 0 to 2 percent slopes	0	16.7	10.5%
P27A	Primghar silty clay loam, 1 to 3 percent slopes	45	14.2	8.9%
P28A	Ransom silty clay loam, 1 to 3 percent slopes	45	8.7	5.5%
P29A	Rushmore silty clay loam, 0 to 2 percent slopes	15	18.2	11.5%
P30B	Sac silty clay loam, loam substratum, 2 to 5 percent slopes	122	71.0	44.8%
P43A	Wilmonton silty clay loam, 1 to 3 percent slopes	45	0.1	0.1%
Totals for Area of Interest			**158.6**	**100.0%**

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Operation and Maintenance Plan

NPDES/SDS Permit Program
Feedlot Program

Doc Type: Permit Application

Purpose: This *Operation and Maintenance Plan* is incorporated into the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Permit and made an enforceable part of the permit and submitted to the Minnesota Pollution Control Agency (MCPA).

Facility name: Lass Farms, Inc. Feedlot registration no.: TBD

Owner/Operator name: George Lass Feedlot permit no.: TBD

Liquid Manure Storage Area(s) and Manure Contaminated Runoff Containment Structure(s)

In addition to the Operation and Maintenance (O&M) procedures outlined in the plans and specifications developed for the Liquid Manure Storage Area(s) (LMSA) and/or Manure Contaminated Runoff Containment Structure(s) (MCRCS), the practices identified in the following chart will be employed.

LMSA(s) and/or MCRCS(s) at the facility (list site sketch ID number(s) below) (Group structures with similar O&M practices)	**Storage capacity**	**Design freeboard***	**Required O&M** (from list below)	**Additional O&M practices** (choose from list below) (numbers 17 - 24)
☒ Underfloor LMSA (Deep Pit)	(months/days)	(feet)	(required by permit)	(no specific requirements)
List Sketch ID #(s): 1	375 days	1	1 – 16	
List Sketch ID #(s):			1 – 16	
☐ Outdoor LMSA (basin, tank, etc.)	(months/days)	(feet)	(required by permit)	(no specific requirements)
List Sketch ID #(s):			1 – 16	
List Sketch ID #(s):			1 – 16	
List Sketch ID #(s):			1 – 16	
☐ Runoff Containment Structure	(months/storm event)	(feet)	(required by permit)	(no specific requirements)
List Sketch ID #(s):			1 – 16	
List Sketch ID #(s):			1 – 16	

* Freeboard is the volume of a basin only available for use in emergency situations (typically the top one foot of depth). If the depth listed here does not coincide with the design plans and specifications, the correct freeboard will be that which is listed in the design plans and specifications.

Activities required by permit conditions (for those items/structures present at or applicable to the facility)

1. Perform weekly visual inspection of stormwater diversion devices.
2. Perform weekly visual inspections of runoff control structures.
3. Perform weekly visual inspections of devices channeling manure-contaminated runoff to the storage area.
4. Perform weekly visual inspections of all LMSAs/MCRCSs.
5. Perform weekly reading of depth marker level for all LMSAs/MCRCSs collecting precipitation.
6. Maintain design freeboard and operating levels in LMSAs/MCRCSs.
7. Perform monthly examination of the monitoring port or drain tile outlet for water flow and signs of discoloration or odor.
8. Maintain volume in LMSAs/MCRCSs to avoid the need for winter application of manure and be consistent with the manure management plan (MMP).
9. Repair sloughing or settling of earthen embankments (most repairs to liner material need plans and specs from a P.E.).
10. Repair of damage to concrete, lumber, steel, or other construction material used.
11. Divert surface water flow away from and prevent pooling near liquid manure storage areas.
12. Inspect manure handling equipment including hoses and couplings for pump-out periodically for leaks.
13. Routine maintenance of equipment such as valves and pumps
14. Use automatic shut-off devices on continuous pumping equipment.
15. Do not allow the LMSAs/MCRCSs to discharge (unless allowed/exempt by permit conditions).
16. Maintain a fence around at grade or near-grade LMSAs.

Additional facility design, maintenance, and operational practices

(No specific items are required in this section, unless incorporated into the design plans and specifications for the structure.)

17. Use access pads for pump-out equipment to prevent erosion.
18. Use anti-scour practices at pipe outlets to prevent liner damage.
19. Removal of built-up solids from separation screens.
20. Control vegetation around LMSAs by frequent mowing or other practices.
21. Maintain appropriate design volume in LMSAs by controlling sludge build-up.
22. Cleaning out of transfer pipes to prevent sludge build up.
23. Other: _____
24. Other: _____

Solid Manure Storage Areas

In addition to the Operation and Maintenance (O&M) procedures outlined in the plans and specifications developed for the Solid Manure Storage Area(s) the practices identified in the following chart will be employed.

Solid manure storage areas at the facility (list site sketch ID number(s) below) (Group structures with similar O&M practices)	**Storage capacity**	**Quantity stored**	**Required O&M** (from list below)	**Additional O&M practices** (choose from list below) (numbers 10 - 13)
☐ Stockpile (on-site)	(months/days)	(tons)	(required by permit)	(no specific requirements)
List Sketch ID #(s):			1 – 8	
List Sketch ID #(s):			1 – 8	
☐ Manure pack or litter	(months/days)	(tons)	(required by permit)	(no specific requirements)
List Sketch ID #(s):	3 months		1 – 8	
List Sketch ID #(s):			1 – 8	
☐ Underfloor Storage	(months/days)	(tons)	(required by permit)	(no specific requirements)
List Sketch ID #(s):			1 – 8	
List Sketch ID #(s):			1 – 8	
☐ Manure Compost	(months/days)	(tons)	(required by permit)	(no specific requirements)
List Sketch ID #(s):			1 – 9	

Activities required by permit conditions (for those items/structures present at or applicable to the facility)

1. Perform weekly visual inspection of stormwater diversion devices
2. Perform weekly visual inspections of runoff control structures
3. Perform weekly visual inspections of devices channeling manure-contaminated runoff to the manure storage or containment structure
4. Inspect manure hauling equipment periodically for leaks
5. Divert surface water flow away from and prevent pooling near solid manure storage areas
6. Repair of damage to permanent stockpile/storage pad (if a permanent stockpile/storage pad is required)
7. Repair of damage to concrete, lumber, steel, or other construction material used
8. Removal of all manure temporarily placed outside of barn/lot during cleanout process within ten days (no more than six times per year)
9. Operate the compost site in accordance with Minn. R. 7020.2150 (manure compost sites **only**)

Additional facility design, maintenance, and operational practices

(No specific items are required in this section, unless incorporated into the design plans and specifications for the structure.)

10. Routine maintenance of manure handling equipment
11. Removal of built-up solids from separation screens
12. Other: _____
13. Other: _____

General Facility Operations

Initial here: GL,

by initialing here I indicate that I have read, understand, and agree to the requirements/procedures outlined below. (Initial is required for all facilities using this form.)

- A daily inspection of all water lines, including drinking water or cooling water lines (an equivalent method that incorporates the use of water meters, pressure gages or other monitoring devices is also acceptable)
- Disposal of solid and hazardous waste will be done in accordance with applicable Minnesota Rules
- Animals shall not be allowed to come into contact with waters of the state (except animals on pasture)
- Records of operation and maintenance activities will be kept in accordance with the facility's NPDES/SDS Permit
- Manure storage areas shall be managed and subsequent land application of manure shall be performed in accordance with the approved MMP for the facility.
- For those sites that are required by the MPCA to perform groundwater monitoring, the facility agrees to incorporate the MPCA approved groundwater monitoring plan and/or requirements from the facility's NPDES/SDS Permit into this Operations and Maintenance Plan.

Ancillary Area Stormwater Management

In addition to the Operation and Maintenance (O&M) procedures outlined in the Stormwater Pollution Prevention Plan (SWPPP) developed for the facility (if required) the practices identified in the following chart will be employed to manage stormwater discharges from ancillary areas not included in the definition of the feedlot facility.

Potential Pollutant Transport Areas (not included in the definition of the feedlot facility)	**O&M Practices** (choose at least one practice from the list below)
☒ Access Roads or Parking Areas used for Transporting Materials To/From Facility	8
☒ Non-Manure Materials Handling Areas (Fertilizer/Pesticide Storage, Bulk Oil/Gasoline Storage, Dry Bale/Bedding Storage, Milk/Egg Storage, Etc.)	8
☒ Garbage/Trash Disposal Sites	8
☒ Equipment Storage and Maintenance Sites	8
☒ Shipping and Receiving Areas	8
☐ Truck/Equipment Wash Areas	
☐ Other:	
☐ Other:	
☐ Other:	

Potential Erosion or Sediment Transport Areas (not included in the definition of the feedlot facility)	**O&M Practices** (choose at least one practice from the list below)
☒ Access Roads or Parking Areas	20,21
☒ Roof Water Runoff	20,21
☒ Yard Water Runoff	20,21
☐ "Clean-Water" Tile Intakes	
☐ Permanent Stormwater Management Structure Discharge (outlet of stormwater basin, etc)	
☐ Other:	
☐ Other:	
☐ Other:	

Activities for pollutant transport areas

1. Ancillary area has roof/cover to prevent stormwater mingling with pollutants.
2. Divert surface water flow away from and prevent pooling near ancillary areas.
3. Maintain stormwater diversion devices.
4. Perform visual inspections of runoff diversion devices.
5. Repair of damage to concrete, lumber, steel, or other construction material used.
6. Maintain grass buffers/grass waterways at discharge point
7. Handled/Moved off-site.
8. Maintain site cleanliness.
9. Other: _____
10. Other: _____
11. Other: _____

Activities for erosion or sediment transport areas

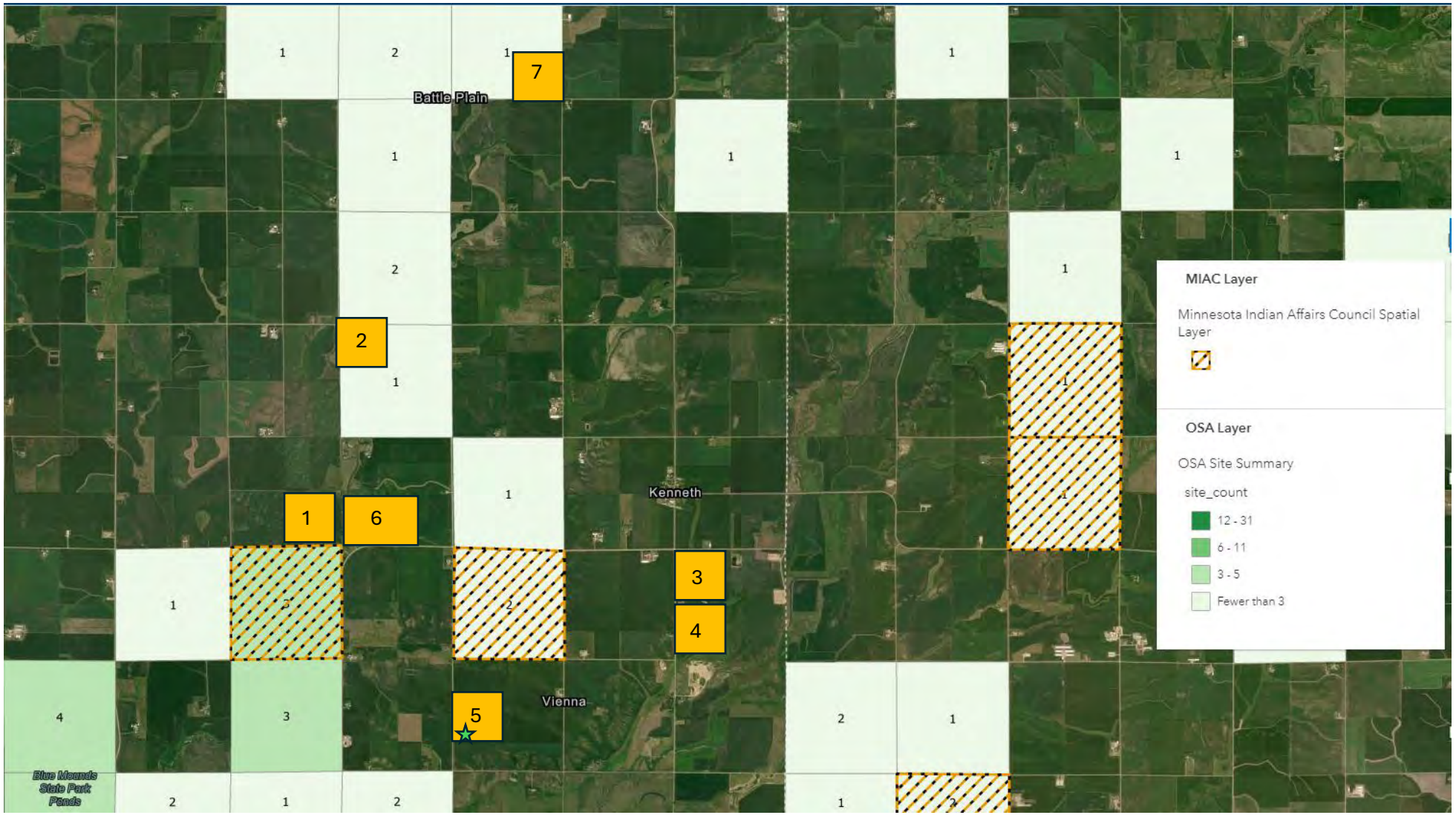
12. Provide energy dissipation at the end of channelized flow or pipe/gutter, such as rip-rap.
13. Maintain gravel/rock where roof water falls onto soil.
14. Maintain grass buffers/grass waterways at discharge point.
15. Maintain grass buffer around tile intakes.
16. Maintain grass buffers at the edge of roads/parking areas.
17. Keep vegetative cover where possible.
18. Repair rills that develop to minimize scour of sediment.
19. Maintain stormwater diversion devices.
20. Perform visual inspections of erosion prevention measures.
21. Maintain site cleanliness.
22. Other: _____
23. Other: _____
24. Other: _____

Attachment P

Lass Farms, Inc.

Archaeological Site Inventory and Minnesota Indian Affairs Council's Archaeological & Cultural Sites

- Site Location
- Manure Application Sites (1-7)



MINNESOTA INDIAN AFFAIRS COUNCIL

161 Rondo Ave, Suite 919 Saint Paul, MN 55103
MIAC.Culturalresources@state.mn.us

Date: 11/04/2024

Jessica Mulder
Lass Farms, Inc.
507-662-5005
jessica@extendedag.com

Project Name: Lass Farms, Inc.

Submitter's Project ID: 2024-00913LASS

Known or Suspected Cemeteries
☐ Platted Cemeteries ☐ Unplatted Cemeteries ☐ Burial File ☐ Authenticated Burial
Notes/Comments
Thank you for the opportunity to comment on the above listed project. I have reviewed this project pursuant to the responsibilities given to the Minnesota Indian Affairs Council by the Private Cemeteries Act (MS 307.08), and the Minnesota Field Archaeology Act (MS 138.31-.41). There are no known or suspected burial sites that may be affected by this project. However, I recommend that a Phase 1a Literature Review be conducted by a professional archaeologist for the proposed project areas. There is an archaeological site that may be impacted by this project (21RK0041), which requires the input of the Office of the State Archaeologist. If human remains are found during construction, please immediately contact local law enforcement.
Recommendations

☐ Not Applicable

☐ No Concerns

☐ Monitoring

☐ Avoidance

☒ Phase Ia – Literature Review

☐ Phase I – Reconnaissance survey

☐ Phase II – Evaluation

☐ Phase III – Data Recovery

☐ Other

If you require additional information or have questions, comments, or concerns please contact our office.

Sincerely,

Lilly Geraghty
Cultural Resource Manager
MIAC
161 Rondo Avenue, Ste. 919
Saint Paul MN 55103
651-539-2202
lilly.geraghty@state.mn.us

Year	Avg Temp (°F)	1980-2024 Trend: 0.31°F/Decade	Year	Precip (in)	1980-2024 Trend: 0.25"/Decade	Year	Min Temp (°F)	1980-2024 Trend: 0.54°F/Decade
1980	45.48	44.61	1980	19.18	26.86	1980	33.68	33.42
1981	46.68	44.64	1981	24.96	26.89	1981	34.66	33.48
1982	43.04	44.67	1982	34.85	26.91	1982	32.69	33.53
1983	44.13	44.7	1983	28.62	26.94	1983	34.3	33.58
1984	44.15	44.73	1984	33.59	26.96	1984	33.66	33.64
1985	42.45	44.77	1985	30.33	26.99	1985	31.19	33.69
1986	45.1	44.8	1986	33.26	27.01	1986	34.53	33.75
1987	48.59	44.83	1987	22.72	27.04	1987	36.72	33.8
1988	45.36	44.86	1988	18.81	27.06	1988	32.98	33.85
1989	43.68	44.89	1989	18.92	27.09	1989	31.65	33.91
1990	46.21	44.92	1990	22.62	27.11	1990	34.27	33.96
1991	45.85	44.95	1991	22.34	27.14	1991	35.06	34.01
1992	44.7	44.99	1992	33.27	27.16	1992	34.67	34.07
1993	41.78	45.02	1993	39.11	27.19	1993	32.12	34.12
1994	44.12	45.05	1994	25.47	27.21	1994	33.56	34.17
1995	44.22	45.08	1995	30.03	27.24	1995	34.58	34.23
1996	41.66	45.11	1996	26.82	27.26	1996	31.23	34.28
1997	44.05	45.14	1997	19.82	27.29	1997	33.45	34.34
1998	47.85	45.17	1998	29.04	27.32	1998	37.71	34.39
1999	47.26	45.21	1999	22.09	27.34	1999	35.86	34.44
2000	45.41	45.24	2000	25.23	27.37	2000	34.15	34.5
2001	46.02	45.27	2001	31.98	27.39	2001	35.36	34.55
2002	45.99	45.3	2002	22.53	27.42	2002	34.69	34.6
2003	45.12	45.33	2003	21.94	27.44	2003	33.71	34.66
2004	45.72	45.36	2004	30.37	27.47	2004	34.75	34.71
2005	47.01	45.39	2005	35.19	27.49	2005	36.29	34.77
2006	47.64	45.43	2006	27	27.52	2006	37.15	34.82
2007	46.14	45.46	2007	27.97	27.54	2007	35.73	34.87
2008	42.85	45.49	2008	27.69	27.57	2008	32.27	34.93
2009	43.77	45.52	2009	24.52	27.59	2009	33.21	34.98
2010	45.16	45.55	2010	39.17	27.62	2010	34.85	35.03
2011	44.77	45.58	2011	26.64	27.64	2011	34.16	35.09
2012	49.15	45.61	2012	22.31	27.67	2012	37.29	35.14
2013	43.35	45.65	2013	25.38	27.69	2013	33.23	35.2
2014	43.03	45.68	2014	25.5	27.72	2014	32.62	35.25
2015	47.12	45.71	2015	29.95	27.74	2015	36.78	35.3
2016	47.99	45.74	2016	31.59	27.77	2016	38.08	35.36
2017	46.81	45.77	2017	27.46	27.79	2017	36.65	35.41
2018	44.07	45.8	2018	40.01	27.82	2018	34.47	35.46
2019	43.17	45.83	2019	38.83	27.85	2019	34.02	35.52
2020	46.38	45.87	2020	19.82	27.87	2020	35.78	35.57
2021	47.74	45.9	2021	27.99	27.9	2021	37.39	35.63
2022	44.92	45.93	2022	19.4	27.92	2022	33.8	35.68
2023	46.86	45.96	2023	21.46	27.95	2023	36.4	35.73

Attachment S

Climate Mapping for Resilience and Adaptation (CMRA) Assessment tool

https://livingatlas.arcgis.com/assessment-tool/search

27133

Rock County

Prepared by Esri

Rock County, Minnesota

Total Population
9,402

% Population with Income Below Poverty
9%

Building Codes Hazard Resistance
Lower Resistance

% Population Disadvantaged
0.00%

National Risk Index Rating
Relatively Low
Source: FEMA National Risk Index

Billion-Dollar Weather and Climate Disasters

U.S. Climate Resilience Toolkit

Source: Census Bureau, CEQ, Esri, FEMA, MRLC, NOAA, UCSD

Future Climate Indicators

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Temperature thresholds:							
Annual days with maximum temperature > 90°F	13 days 13 - 19	33 days 16 - 48	36 days 22 - 51	44 days 19 - 66	51 days 25 - 79	53 days 23 - 83	80 days 46 - 109
Annual days with maximum temperature > 95°F	3 days 2 - 4	11 days 4 - 19	12 days 5 - 21	17 days 6 - 32	23 days 7 - 46	25 days 7 - 50	51 days 17 - 83
Annual days with maximum temperature > 100°F	0 days 0 - 1	2 days 1 - 5	3 days 0 - 8	4 days 1 - 10	7 days 1 - 18	8 days 1 - 10	25 days 4 - 55
Annual days with maximum temperature > 105°F	0 days 0 - 0	0 days 0 - 1	0 days 0 - 2	1 days 0 - 2	1 days 0 - 5	1 days 0 - 6	8 days 0 - 22
Annual temperature:							
Annual single highest maximum temperature °F	97 °F 95 - 98	100 °F 96 - 103	101 °F 98 - 104	102 °F 98 - 105	103 °F 98 - 109	104 °F 99 - 108	108 °F 102 - 114
Annual highest maximum temperature averaged over a 5-day period °F	92 °F 90 - 93	95 °F 91 - 98	96 °F 93 - 99	97 °F 94 - 100	98 °F 93 - 103	99 °F 94 - 103	103 °F 98 - 110
Cooling degree days (CDD)	696 degree-days 628 - 771	1,000 degree-days 719 - 1,252	1,045 degree-days 829 - 1,277	1,175 degree-days 760 - 1,516	1,322 degree-days 964 - 1,683	1,356 degree-days 840 - 1,852	1,931 degree-days 1,292 - 2,487

N/A = Data Not Available for the selected area

Rock County, Minnesota

Total Population
ⓘ 9,402

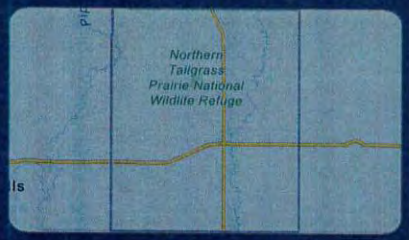
% Population with Income Below Poverty
ⓘ 9%

Building Codes Hazard Resistance
ⓘ Lower Resistance

% Population Disadvantaged
ⓘ 0.00%

National Risk Index Rating
Relatively Low
Source: FEMA National Risk Index

Billion-Dollar Weather and Climate Disasters



U.S. Climate Resilience Toolkit

Source: Census Bureau, CEQ, Esri, FEMA, MRLC, NOAA, UCSD

Flooding

Future Climate Indicators

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Annual average total precipitation	**27"** 26 - 28	**28"** 25 - 31	**28"** 25 - 30	**28"** 25 - 31	**28"** 24 - 31	**28"** 25 - 31	**29"** 24 - 33
Days per year with precipitation (wet days)	**145 days** 137 - 149	**144 days** 127 - 152	**144 days** 129 - 155	**143 days** 132 - 153	**143 days** 128 - 160	**143 days** 127 - 158	**141 days** 117 - 166
Maximum period of consecutive wet days	**10 days** 9 - 11	**9 days** 9 - 13	**9 days** 8 - 11	**10 days** 8 - 11	**9 days** 8 - 11	**10 days** 8 - 12	**9 days** 8 - 12
Annual days with:							
Annual days with total precipitation > 1inch	**2 days** 2 - 3	**3 days** 2 - 4	**3 days** 2 - 4	**3 days** 2 - 4	**3 days** 2 - 4	**3 days** 2 - 4	**3 days** 2 - 6
Annual days with total precipitation > 2 inches	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 1
Annual days with total precipitation > 3 inches	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0	**0 days** 0 - 0
Annual days that exceed 99th percentile precipitation	**4 days** 4 - 5	**5 days** 5 - 6	**5 days** 4 - 5	**5 days** 5 - 6	**5 days** 5 - 6	**5 days** 5 - 6	**6 days** 5 - 7
Days with maximum temperature below 32 °F	**68 days** 63 - 73	**58 days** 42 - 67	**56 days** 44 - 64	**53 days** 37 - 63	**50 days** 32 - 62	**48 days** 26 - 61	**35 days** 17 - 55

N/A = Data Not Available for the selected area

Rock County, Minnesota

Total Population
ⓘ 9,402

% Population with Income Below Poverty
ⓘ 9%

Building Codes Hazard Resistance
ⓘ Lower Resistance

% Population Disadvantaged
ⓘ 0.00%

National Risk Index Rating
Relatively Low
Source: FEMA National Risk Index

Billion-Dollar Weather and Climate Disasters

U.S. Climate Resilience Toolkit
Source: Census Bureau, CEQ, Esri, FEMA, MRLC, NOAA, UCSD

Drought

Future Climate Indicators

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Average annual total precipitation	**27"** 26 - 28	**28"** 25 - 31	**28"** 25 - 30	**28"** 25 - 31	**28"** 24 - 31	**28"** 25 - 31	**29"** 24 - 33
Days per year with precipitation (wet days)	**145 days** 137 - 149	**144 days** 127 - 152	**144 days** 129 - 155	**143 days** 132 - 153	**143 days** 128 - 160	**143 days** 127 - 158	**141 days** 117 - 166
Days per year with no precipitation (dry days)	**221 days** 216 - 228	**221 days** 213 - 238	**221 days** 210 - 236	**222 days** 212 - 233	**222 days** 205 - 237	**222 days** 207 - 238	**224 days** 199 - 248
Maximum number of consecutive dry days	**18 days** 15 - 19	**17 days** 16 - 20	**18 days** 16 - 21	**18 days** 16 - 23	**18 days** 15 - 21	**18 days** 15 - 21	**18 days** 14 - 23
Temperature thresholds:							
Annual days with maximum temperature > 90 °F	**13 days** 13 - 19	**33 days** 16 - 48	**36 days** 22 - 51	**44 days** 19 - 66	**51 days** 25 - 79	**53 days** 23 - 83	**80 days** 46 - 109
Annual days with maximum temperature > 100 °F	**0 days** 0 - 1	**2 days** 1 - 5	**3 days** 0 - 8	**4 days** 1 - 10	**7 days** 1 - 18	**8 days** 1 - 10	**25 days** 4 - 55

N/A = Data Not Available for the selected area

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

December 16, 2024

Jessica Mulder
Extended Ag Services, Inc.
jessica@extendedag.com

RE: Lass Farms, Inc.
T103 R44 S15 SW, Vienna Twp, Rock County
SHPO Number: 2025-0168

Dear Jessica Mulder:

Thank you for consulting with our office during the preparation of an Environmental Assessment Worksheet for the above-referenced project.

Based on our review of the project information, we conclude that there are no properties listed in the National or State Registers of Historic Places and no known or suspected archaeological properties in the area that will be affected by this project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state-level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

Please contact Kelly Gragg-Johnson, Environmental Review Program Specialist, at 651-201-3285 or kelly.graggjohnson@state.mn.us if you have any questions regarding our review of this project.

Sincerely,

Amy Spong
Deputy State Historic Preservation Officer

Land use changes Utilizing Data from EPA's U.S. GHG Emissions and Sinks 1990-2022 Report

Land use chage	Land Area (Acres)	Land Use Emissions or Reductions			
		Net CO2 Emissions Flux (metric tons CO2e)[1,3,4]	Total Area Land Use Changed in one year (hectares)[2]	Total Area Land Use Change (acres)[5]	Emissions (tons CO2e, negative value represents sink/removal of carbon) (tons/yr)
To Impervious Land Use					
Wooded/Forest to Impervious Surface 2022		58,600,000	440,000	1,089,109	0.00
Cropland to Impervious Surface 2022	2.5	2,900,000	1,228,000	3,039,604	2.39
Wetland to Impervious Surface 2022		100,000	14,000	34,653	0.00
Grassland to Impervious Surface 2022		7,500,000	1,648,000	4,079,208	0.00
To Grassland					
Cropland to grassland 2022		(12,500,000)	11,444,000	28,326,733	0.00
Forest land to grassland 2022		46,800,000	3,894,000	9,638,614	0.00
Settlement (impervious land) to grassland 2022		(800,000)	3,894,000	9,638,614	0.00
Grassland to Impervious Surface 2022		100,000	3,894,000	9,638,614	0.00
To Cropland					
grassland converted to cropland 2022		16,300,000	8,418,000	20,836,634	0.00
Forest land to grassland 2022		19,600,000	65,000	160,891	0.00
Settlement (impervious land) to cropland 2022		(100,000)	94,000	232,673	0.00
wetland to cropland 2022		400,000	75,000	185,644	0.00

1. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. Net Flux from Soil, Dead Organic Matter and Biomass Carbon Stock Change: Table 6-136 (value is for the Year 2022).
2. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. Land Use and Land-Use Change for the U.S. Managed Land Base for All 50 States.Forest Land Converted to Settlements: Table 6-5 (value for the Year 2022).
3. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. Net Flux from Soil, Dead Organic Matter and Biomass Carbon Stock Change: Table 6-51 (value is for the Year 2022).
4. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. Net Flux from Soil, Dead Organic Matter and Biomass Carbon Stock Change: Table 6-40 (value is for the Year 2022).
5. 1 acre = 0.404 hectacre

	tons CO_2-e													
	CH_4 - enteric fermentation				-				198.41				198.41	
	CH_4 - barn and manure storage				-				1,293.07				1,293.07	
	N_2O - barn and manure storage				-				150.13				150.13	
	N_2O - manure land application				-				219.89				219.89	
	Total CO2e				**-**				**1,861.51**				**1,861.51**	
		Swine < 55 lbs	**Swine 55-330 lbs**	**Swine > 330 lbs**	**Total**	**Swine < 55 lbs**	**Swine 55-330 lbs**	**Swine > 330 lbs**	**Total**	**Swine < 55 lbs**	**Swine 55-330 lbs**	**Swine > 330 lbs**	**Total**	
A	Total Head	-	-	-	-	-	4,800	-	4,800	-	4,800	-	4,800	
	Animal units/head	0.05	0.30	0.40		0.05	0.30	0.40		0.05	0.30	0.40		
B	Total animal units	0	0	0	-	0	1440	0	1,440	0	1440	0	1,440.0	
	CH_4 - enteric fermentation	**Swine < 55 lbs**	**Swine 55-330 lbs**	**Swine > 330 lbs**	**Total**	**Swine < 55 lbs**	**Swine 55-330 lbs**	**Swine > 330 lbs**	**Total**	**Swine < 55 lbs**	**Swine 55-330 lbs**	**Swine > 330 lbs**	**Total**	
A	animal inventory (head)	-	-	-		-	4,800	-		-	4,800	-		
B	kg CH_4/head/yr (EPA)	1.50	1.50	1.50		1.50	1.50	1.50		1.50	1.50	1.50		US average basis, Table A-154
C	conversion to tons/head/year	0.0011	0.0011	0.0011		0.0011	0.0011	0.0011		0.0011	0.0011	0.0011		
	tons CH_4 (A*B*C)	-	-	-	-	-	7.94	-	7.94	-	7.94	-	**7.94**	
	tons CO_2-e	**-**	**-**	**-**	**-**	**-**	**198.41**	**-**	**198.41**	**-**	**198.41**	**-**	**198.41**	
D	livestock (head)	-	-	-		-	4,800	-		-	4,800	-		
E	animal liveweight (kg/head)	16	62	198		16	62	198		16	62	198		US average basis; for >330 lbs. class, values for beeding stock used Table A-162; for 55-330 lbs class, values from USEPA Table A-162's 50-119 lbs, 120-179 lbs, and >180 lbs categories were used when calculating a weighted average from these weight classes in USDA 2006-2018 MN's Ag Stats distribution of hogs (2020) [not in USEPA Tables]
F	volatile solids (vs) production rate (kg VS/kg animal liveweight/yr)	3.2	2	1		3.2	2	1		3.2	2	1		Minnesota-specific estimates, Table A-163 (see note)
G	rate of CH_4 production (potential) (m^3 CH_4/kg VS)	0.48	0.48	0.48		0.48	0.48	0.48		0.48	0.48	0.48		US average basis, Table A-162
H	convert from m^3 to kgs (kg CH_4/m^3 CH_4)	0.662	0.662	0.662		0.662	0.662	0.662		0.662	0.662	0.662		
I	maximum potential CH_4 production (kg/yr) (D*E*F*G*H)	-	-	-		-	187,691	-		-	187,691	-		
J	methane conversion factor (MCF) (% of potential CH_4)	0.250	0.250	0.250		25%	25%	25%		25%	25%	25%		US average basis, Tables A-168 and A-169
K	CH_4 (metric tons/yr) (I*J)	-	-	-		-	46.92	-		-	46.92	-		
L	convert to short tons	1.1023	1.1023	1.1023		1.1023	1.1023	1.1023		1.1023	1.1023	1.1023		
M	CH_4 (short tons/yr) (K*L)	-	-	-	-	-	51.72	-	51.72	-	51.72	-	**51.72**	
N	short tons/yr CO_2-e	**-**	**-**	**-**	**-**	**-**	**1,293.07**	**-**	**1,293.07**	**-**	**1,293.07**	**-**	**1,293.07**	
O	livestock (head)	-	-	-		-	4,800	-		-	4,800	-		
P	animal liveweight (kg/head)	16	62	198		16	62	198		16	62	198		US average basis; for >330 lbs. class, values for beeding stock used Table A-162; for 55-330 lbs class, values from USEPA Table A-162's 50-119 lbs, 120-179 lbs, and >180 lbs categories were used when calculating a weighted average from these weight classes in USDA 2006-2018 MN's Ag Stats distribution of hogs (2020) [not in USEPA Tables]
Q	excreted nitrogen (N) (kg N/kg animal liveweight/yr)	0.336	0.197	0.073		0.336	0.197	0.073		0.336	0.197	0.073		US average basis, Table A-163
R	emission factor from manure storage (kg N/kg excreted N)	0.005	0.005	0.005		0.005	0.005	0.005		0.005	0.005	0.005		US average basis, Table A-170
S	Convert N to N_2O	1.57	1.57	1.57		1.571	1.571	1.571		1.571	1.571	1.571		
T	N_2O emissions (metric tons) (O*P*Q*R*S/1000)	-	-	-		-	0.46	-		-	0.46	-		
U	convert to short tons	1.1023	1.1023	1.1023		1.102	1.102	1.102		1.10	1.10	1.10		
V	N_2O emissions (short tons) (T*U)	-	-	-	-	-	0.50	-	0.50	-	0.50	-	0.50	
W	short tons/yr CO_2-e	**-**	**-**	**-**	**-**	**-**	**150.13**	**-**	**150.13**	**-**	**150.13**	**-**	**150.13**	
X	N remaining in manure used as fertilizer ((O+P+Q)-T*1000/S) (kg/yr)	-	-	-		-	57,890	-		-	57,890	-		
Y	feedlot runoff/leaching rate (%)	0.4%	0.4%	0.4%		0.4%	0.4%	0.4%		0.4%	0.4%	0.4%		regional basis, Table A-171
Z	feedlot volatilization rate (%)	26%	26%	26%		26%	26%	26%		26%	26%	26%		regional basis, Table A-171
AA	emission factor (%)	1%	1%	1%		1%	1%	1%		1%	1%	1%		US average basis, "Nitrous Oxide Emission Factors" or "Emission Factor for Volatilization"
AB	convert N to N2O	1.57	1.57	1.57		1.57	1.57	1.57		1.57	1.57	1.57		
AC	N_2O emissions (metric tons) ([X-(X*(Y+Z))*AA*AB/1000])	-	-	-		-	0.67	-		-	0.67	-		
AD	convert to short tons	1.1023	1.1023	1.1023		1.1023	1.1023	1.1023		1.1023	1.1023	1.1023		
AE	N_2O emissions (short tons) (AC*AD)	-	-	-	-	-	0.74	-	0.74	-	0.74	-	0.74	
AF	short tons/yr CO_2-e	**-**	**-**	**-**	**-**	**-**	**219.89**	**-**	**219.89**	**-**	**219.89**	**-**	**219.89**	

Global Warming Potential (conversion to CO2e)

CH4	**25**
N2O	**298**

GWP Source: International Panel on Climate Change Fourth Assessment Report.

The source used for emission factors and equations below came from USEPA, Inventory of US Sources and Sinks of Greenhouse Gases (2022)

Swine Specific		**Notes**
outdoor liquid/slurry basin/tank	0.250	Table A-169, Minnesota
any liquid/slurry	0.250	Table A-169, Minnesota
long-term below barn pit storage	0.250	Table A-169, Minnesota [deep pit]
anaerobic lagoon	0.680	Table A-169, Minnesota
Cattle Specific		
stall floor accumulation/periodic removal	0.200	Table A-168, cool climate
No Specified Animal Type		
aerobic lagoon	0.000	Table A-168, cool climate
stall floor accumulation/periodic removal	0.200	Table A-168, cool climate
dry lot	0.010	Table A-168, cool climate
solid storage	0.020	Table A-168, cool climate
daily haul and spread	0.001	Table A-168, cool climate
pasture	0.0047	Table A-168, cool climate
composting - in vessel	0.005	Table A-168, cool climate
composting - static pile	0.010	Table A-168, cool climate
composting - extensive/passive	0.010	Table A-168, cool climate
composting - intensive	0.005	Table A-168, cool climate
N2O - barn and manure storage		
kg N2O-N/kg N produced in feedlot by manure storage type		
any liquid/slurry	0.005	Table A-170
anaerobic lagoon	0.000	Table A-170
aerobic lagoon (natural aeration)	0.010	Table A-170
outdoor liquid/slurry basin/tank, no natural cru	0.005	Table A-170
long-term below barn pit storage	0.002	Table A-170 [pit storage]
dry lot	0.020	Table A-170
solid storage	0.005	Table A-170
daily spread	0.000	Table A-170
pasture	0.000	Table A-170
composting - in vessel	0.006	Table A-170
compost - static pile	0.006	Table A-170
composting-passive	0.010	Table A-170
composting-intensive	0.100	Table A-170
N_2O - manure land application		

N losses at feedlot to volatilization and leaching/run-off (% of available N) *

Swine Specific	run-off/leaching rate	volatilization rate	**Notes**
anaerobic lagoons	0.4%	58%	Table A-171, Midwest
outdoor liquid/slurry storage	0.4%	26%	Table A-171, Midwest
below barn pit storage	0.0%	34%	Table A-171, Midwest [deep pit]
solid storage	0.0%	45%	Table A-171, Midwest
pasture	0.0%	0%	Table A-171, Midwest

* Data for nitrogen losses due to leaching were no available, so the values represent only nitrogen losses due to runoff. Table A-171. Source: EBA (2002

EPA Simplified GHG Emissions Calculator ("the Calculator")

September 2024

The EPA Simplified GHG Emissions Calculator ("the Calculator") is designed as a simplified calculation tool to help organizations estimate and inventory their annual greenhouse gas (GHG) emissions for US-based operations. All methodologies and default values provided are based on the most current Center for Corporate Climate Leadership Greenhouse *Gas Inventory Guidance Documents* and the *Emission Factors Hub*. The Calculator will quantify the direct and indirect emissions from sources at an organization when activity data are entered into the various sections of the workbook for one annual period.

Before entering data, please: 1) Enable Macros and 2) Familiarize yourself with the *Simplified Guide to GHG Management for Organizations.*

Access the guide: https://www.epa.gov/system/files/documents/2022-09/Simplified_Guide_GHG_Management_Organizations.pdf

The simplified guide presents more details and information covered in the calculator; please check the guide for more info if you have questions

There are three primary steps in completing a GHG inventory. Each emissions source also has these three steps.

(1) **DEFINE**: The first step in completing a GHG inventory is to determine the boundaries and emissions sources included within those boundaries. After you have defined your organizational and operational boundaries, you can use the questions on the "Boundary Questions" worksheet to help you determine which emissions sources are relevant to your business.

Go to Boundary Questions

(2) **COLLECT**: The second step is to collect data for the defined annual period. This step is typically the most time consuming, since the data can be difficult to gather. This Calculator has help sheets with suggestions and guidance for each emissions source and a general help sheet for data management. **Click the drop down menu boxes below to navigate to these sheets**.

Help - Market-Based Method

(3) **QUANTIFY**: The third step is to calculate emissions. This Calculator is designed to complete the emissions quantification step for you. Once the user enters data in this MS Excel spreadsheet, the emissions will be calculated and totaled on the "Summary" sheet.

Calculator Guidance - Important Information

(A) Navigate to the data entry sheets using the drop down menu in the dark grey cell below and then clicking on the "Go To Data Entry Sheet" button. On the data entry sheets enter data in ORANGE cells only.

(B) This Calculator has several "Tool Sheets" with useful reference data such as unit conversions, heat contents, and emission factors. Click on the buttons below to go to the appropriate Tool Sheet.

(C) Data must be entered in the units specified on the data entry sheets. Use the "Unit Conversions" or "Heat Content" sheets if unit conversion is necessary prior to entering data into the Calculator.

(D) If more guidance is needed, you can reference the emission factor data sources found on the "Emission Factors" sheet.

Tool Sheets	Quick Data Entry Navigation
Unit Conversions	Stationary Combustion

Heat Content

Emission Factors

Calculator Notes

Emission sources of all seven major GHGs are accounted for in the inventory and in this Calculator: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). The Calculator allows the user to estimate GHG emissions from scope 1 (direct), scope 2 (indirect), and some scope 3 (other indirect) sources.

The Calculator uses U.S.-specific cross-sector emission factors from the *Emission Factors Hub*. Many industrial sectors also have process-related emissions sources that are specific to their sector. EPA's Greenhouse Gas Reporting Program provides guidance and tools that can aid in the calculation and reporting of these emissions:

https://www.epa.gov/ghgreporting

The GHG Protocol also provides guidance on calculating emissions from industrial processes.

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Operational Boundary Questions - Emissions Sources to Include

Guidance
Use the questions below to help you determine which emissions sources should be included in the inventory.

Emissions Source Questions
A typical office-based organization will likely have the following (scope 1 and scope 2) emissions sources:

- Stationary Combustion
- Refrigeration and AC
- Electricity

If you answer "yes" to a question below, that emissions source should be included in your inventory. For each facility within the defined organizational boundary, collect the necessary data for the selected time period. Use the corresponding Excel sheet to quantify these emissions.

Tip: you may need to ask your landlord about heating sources, steam purchased and refrigerants

Stationary Combustion	**Yes or No?**
Do you have facilities that burn fuels on-site (e.g., natural gas, propane, coal, fuel oil for heating, diesel fuel for backup generators, biomass fuels)?	Y
Mobile Sources	
Do any vehicles fall within your organizational boundary? This can include cars, trucks, propane forklifts, aircraft, boats. Only vehicles owned or leased by your organization should be included here.	Y
Refrigeration and Air Conditioning	
Do your facilities use refrigeration or air conditioning equipment?	N
Fire Suppression	
Do your facilities use chemical fire suppressants?	N
Purchased Gases	
Do you purchase any industrial gases for use in your business? These gases may be purchased for use in manufacturing, testing, or laboratories.	N
Electricity	
Does your inventory include facilities that use electricity?	Y
Steam	
Do you purchase steam for heating or cooling in your facilities?	N
Market-Based Emission Factors (entered on Electricity and or Steam tabs)	
Do you purchase renewable energy certificates (RECs) or green power products? Do you purchase electricity through a power purchase agreement (PPA)? Do you have supplier-specific emission factors?	N

The questions below refer to scope 3 emissions sources and offsets. If you answer "yes" you may choose whether or not to include these emissions sources in your inventory. Use the corresponding sheet to enter data.

Business Travel	**Yes or No?**
Do your employees travel for business using transportation other than owned or leased vehicles (e.g., commercial airline flights, rental cars, trains)?	N
Employee Commuting	
Do your employees commute to work in personal vehicles or use public transportation?	Y
Upstream Transportation and Distribution	
Do you hire another company to transport products or other materials to or from your	Y
Waste Generated in Operations	
Do you generate waste that is disposed of in a facility owned by another organization?	N
Offsets	
Do you purchase greenhouse gas offsets?	N

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Emissions Summary

Guidance

The total GHG emissions from each source category are provided below. You may also use this summary sheet to fill out the *Annual GHG Inventory Summary and Target Tracking Form* (.xls) as this Calculator only quantifies one year of emissions at a time. The form is available here: https://www.epa.gov/climateleadership/target-setting

By entering the data below into the appropriate cell of the *Annual GHG Inventory Summary and Target Tracking Form,* you will be able to compare multiple years of data.

If you have multiple Calculator files covering sub-sets of your inventory for a particular reporting period, sum each of the emission categories (e.g. Stationary Combustion) to an organizational total, which then can be entered into the *Annual GHG Inventory Summary and Target Tracking Form* .

(A) Enter organization information into the orange cells. Other cells on this sheet will be automatically calculated from the data entered in the sheets in this workbook. Blue cells indicate required emission sources if applicable. Green cells indicate scope 3 emission sources and offsets, which organizations may optionally include in its inventory.

(B) The "Go To Sheet" buttons can be used to navigate to the data entry sheets.

Organizational Information:

Organization Name:	Lass Farms, Inc.
Inventory Reporting Period:	*Calendar Year 2025*
Start:	*1/1/2025*
End:	*12/31/2025*
Name of Preparer:	
Contact Information of Preparer:	
Date Prepared:	

Scope 1 Emissions

		CO_2-e (metric tons)
Go To Sheet	Stationary Combustion	0
Go To Sheet	Mobile Sources	16
Go To Sheet	Refrigeration / AC Equipment Use	0
Go To Sheet	Fire Suppression	0
Go To Sheet	Purchased Gases	0

	CO2-e (metric tons)		
	Gross	Offsets	Net
Scope 1 Summary			

Scope 2 Emissions

Location-Based Scope 2 Emissions	CO_2-e (metric tons)

Go To Sheet	Purchased and Consumed Electricity	0
Go To Sheet	Purchased and Consumed Steam	0

	CO_2-e (metric tons)		
	Gross	Offsets	Net
Location-Based Scope 2 Summary			

	Market-Based Scope 2 Emissions	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Electricity	0
Go To Sheet	Purchased and Consumed Steam	0

	CO_2-e (metric tons)		
	Gross	Offsets	Net
Market-Based Scope 2 Summary			

Scope 1 & 2 Summary

	CO_2-e (metric tons)	
	Gross	Net
Total Scope 1 & Location-Based Scope 2		
Total Scope 1 & Market-Based Scope 2		

Scope 3 Emissions

		CO_2-e (metric tons)		
		Gross	Offsets	Net
Go To Sheet	Business Travel	0	0	0
Go To Sheet	Employee Commuting	0	0	0
Go To Sheet	Upstream Transportation and Distribution	0	0	0
Go To Sheet	Waste	0	0	0

Required Supplemental Information

		CO_2-e (metric tons)
Go To Sheet	Biomass CO_2 Emissions from Stationary Sources	0
Go To Sheet	Biomass CO_2 Emissions from Mobile Sources	0

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Scope 1 Emissions from Stationary Combustion Sources

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Guidance

(A) Enter annual data for each combustion unit, facility, or site (by fuel type) in ORANGE cells on **Table 1**. Example entry is shown in first row (*GREEN Italics*).

- Select "Fuel Combusted" from drop down box.
- Enter "Quantity Combusted" and choose the appropriate units from the drop down box in the unit column. If it's necessary to convert units, common heat contents can be found on the "Heat Content" sheet and unit conversions on the "Unit Conversion" sheet.

(B) If fuel is consumed in a facility but stationary fuel consumption data are not available, an estimate should be made for completeness. See the "Items to Note" section of the Help sheet for suggested estimation approaches.

(C) Biomass CO_2 emissions are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Stationary Source Fuel Combustion

Source ID	Source Description	Source Area (sq ft)	Fuel Combusted	Fuel State (solid, liquid, gas)	Quantity Combusted
BLR-012	*East Power Plant*	*12,517*	*Natural Gas*	*Gas*	*10,000*

GHG Emissions

Total Organization-Wide Stationary Source Combustion by Fuel Type

Fuel Type	Quantity Combusted	Units
Coal and Coke - Solid		
Anthracite Coal	0	short ton
Bituminous Coal	0	short ton
Sub-bituminous Coal	0	short ton
Lignite Coal	0	short ton
Mixed (Commercial Sector)	0	short ton
Mixed (Electric Power Sector)	0	short ton
Mixed (Industrial Coking)	0	short ton
Mixed (Industrial Sector)	0	short ton
Coal Coke	0	short ton
Other Fuels - Solid		
Municipal Solid Waste	0	short ton
Petroleum Coke (Solid)	0	short ton
Plastics	0	short ton
Tires	0	short ton
Biomass Fuels - Solid		
Agricultural Byproducts	0	short ton
Peat	0	short ton
Solid Byproducts	0	short ton
Wood and Wood Residuals	0	short ton
Gaseous Fuels		
Natural Gas	0	scf
Propane Gas	0	scf
Landfill Gas	0	scf
Petroleum Products		
Distillate Fuel Oil No. 2	0	gallons
Residual Fuel Oil No. 6	0	gallons
Kerosene	0	gallons
Liquefied Petroleum Gases (LPG)	0	gallons
Biomass Fuels - Liquid		
Biodiesel (100%)	0	gallons
Ethanol (100%)	0	gallons
Rendered Animal Fat	0	gallons
Vegetable Oil	0	gallons

Total Organization-Wide CO_2, CH_4 and N_2O Emissions from Stationary Source Fuel Combustion

Fuel Type	CO_2 (kg)	CH_4 (g)	N_2O (g)
Coal and Coke - Solid			
Anthracite Coal	0	0.0	0.0
Bituminous Coal	0	0.0	0.0
Sub-bituminous Coal	0	0.0	0.0
Lignite Coal	0	0.0	0.0
Mixed (Commercial Sector)	0	0.0	0.0
Mixed (Electric Power Sector)	0	0.0	0.0
Mixed (Industrial Coking)	0	0.0	0.0
Mixed (Industrial Sector)	0	0.0	0.0
Coal Coke	0	0.0	0.0
Other Fuels - Solid			
Municipal Solid Waste	0	0.0	0.0
Petroleum Coke (Solid)	0	0.0	0.0

Plastics	0	0.0	0.0
Tires	0	0.0	0.0
Gaseous Fuels			
Natural Gas	0	0.0	0.0
Propane Gas	0	0.0	0.0
Landfill Gas	0	0.0	0.0
Petroleum Products			
Distillate Fuel Oil No. 2	0	0.0	0.0
Residual Fuel Oil No. 6	0	0.0	0.0
Kerosene	0	0.0	0.0
Liquefied Petroleum Gases (LPG)	0	0.0	0.0
Total Fossil Fuel Emissions	**0**	**0.0**	**0.0**
Biomass Fuels - Solid			
Agricultural Byproducts	0	0.0	0.0
Peat	0	0.0	0.0
Solid Byproducts	0	0.0	0.0
Wood and Wood Residuals	0	0.0	0.0
Biomass Fuels - Liquid			
Biodiesel (100%)	0	0.0	0.0
Ethanol (100%)	0	0.0	0.0
Rendered Animal Fat	0	0.0	0.0
Vegetable Oil	0	0.0	0.0
Total Non-Fossil Fuel Emissions	**0**	**0.0**	**0.0**
Total Emissions for all Fuels	**0**	**0.0**	**0.0**

Total CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**0.0**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**0.0**

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Scope 1 Emissions from Mobile Sources

Guidance

(A) Enter annual data for each vehicle or group of vehicles (grouped by vehicle type, vehicle year, and fuel type) in ORANGE cells in **Table 1**. Example entry is shown in first row (GREEN *Italics*). Only enter vehicles owned or leased by your organization on this sheet. All other vehicle use such as employee commuting or business travel is considered a scope 3 emissions source and should be reported in the corresponding scope 3 sheets.

- *Note: The latest mobile combustion factors reflect year 2021 data. Therefore, for all vehicle model years 2022 onward, the 2021 year factor is used.*
- *Select "On-Road" or "Non-Road" from the drop down box to determine the Vehicle Types available. You* ***must make this selection before picking the vehicle type.***
- Select "Vehicle Type" from drop down box (closest type available).
- Enter "Fuel Usage" in appropriate units (units appear when vehicle type is selected).
  - If mileage or fuel usage is unknown, estimate using approximate fuel economy values from the manufacturer, www.fueleconomy.gov, or the Reference Table below.
  - Vehicle year and Miles traveled are not necessary for non-road equiment.

(B) When using biofuels, typically the biofuel (biodiesel or ethanol) is mixed with a petroleum fuel (diesel or gasoline) for use in vehicles. Enter the biodiesel and ethanol percentages of the fuel if known, or leave default values shown below.

Biodiesel Percent:	20	%
Ethanol Percent:	80	%

(C) Biomass CO_2 emissions from biodiesel and ethanol are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Mobile Source Fuel Combustion and Miles Traveled

Source ID	Source Description	On-Road or Non-Road?	Vehicle Type	Vehicle Year	Fuel Usage	Units
Fleet-012	*HQ Fleet*	*OnRoad*	*Passenger Cars - Gasoline*	*2019*	*500*	*gal*
Excavator - 4 Tier Engine - 60 hours		NonRoad	Construction/Mining Equipment - Diesel Equipment	2021	600	gal
Dozer - 4 Tier Engine - 60 - hours		NonRoad	Construction/Mining Equipment - Diesel Equipment	2021	132	gal
Cement Trucks - 150 loads - 21.2 mi round trip		OnRoad	Medium- and Heavy-Duty Vehicles - Diesel	2021	430	gal
Contractor - 180 days - 15.4 mi round trip		OnRoad	Light-Duty Trucks - Gasoline	2021	153	gal
Electrician - 2 vehicles - 30 days - 25 mi/roundtrip		OnRoad	Light-Duty Trucks - Gasoline	2021	82	gal
Plumber - 2 vehicles - 30 days - 25 mi/round trip		OnRoad	Light-Duty Trucks - Gasoline	2021	82	gal
Fuel Supplier - 2 vehicles - 10 days - 25 mi/round trip		OnRoad	Light-Duty Trucks - Gasoline	2021	28	gal
Equipment Deliveries - 10-15 trucks - 30 miles		OnRoad	Medium- and Heavy-Duty Vehicles - Diesel	2021	61	gal

Reference Table: Average Fuel Economy by Vehicle Type

Vehicle Type	Average Fuel Economy (mpg)
Passenger Cars	24.8
Other 2-Axle, 4-Tire Vehicles	18.1
Motorcycles	44.0
Single unit 2-Axle 6-Tire or More Trucks	7.9
Combination Trucks	6.9
Diesel Buses (Diesel Heavy-Duty Vehicles)	7.4

Average mpg values from the U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2022 (Updated February 2024), Table VM-1.

GHG Emissions

Total Organization-Wide Mobile Source Fuel Usage and CO_2 Emissions (On-Road and Off-Road Vehicles)

Fuel Type	Fuel Usage	Units	CO_2 (kg)	
Motor Gasoline	345	gallons	3,030	
Diesel Fuel	1,223	gallons	12,487	
Residual Fuel Oil	0	gallons	0	
Aviation Gasoline	0	gallons	0	
Kerosene-Type Jet Fuel	0	gallons	0	
Liquefied Petroleum Gases (LPG)	0	gallons	0	
Ethanol	0	gallons	0	*Note: emissior*
Biodiesel	0	gallons	0	*Note: emissior*
Liquefied Natural Gas (LNG)	0	gallons	0	
Compressed Natural Gas (CNG)	0	scf	0	

Total Organization-Wide On-Road Gasoline Mobile Source Mileage and CH_4/N_2O Emissions

Vehicle Type	Vehicle Year	Mileage (miles)	CH_4 (g)	N_2O (g)
Passenger Cars - Gasoline	1984-93	0	0.0	0.0
	1994	0	0.0	0.0
	1995	0	0.0	0.0
	1996	0	0.0	0.0
	1997	0	0.0	0.0
	1998	0	0.0	0.0
	1999	0	0.0	0.0
	2000	0	0.0	0.0
	2001	0	0.0	0.0
	2002	0	0.0	0.0
	2003	0	0.0	0.0
	2004	0	0.0	0.0
	2005	0	0.0	0.0
	2006	0	0.0	0.0
	2007	0	0.0	0.0
	2008	0	0.0	0.0
	2009	0	0.0	0.0
	2010	0	0.0	0.0
	2011	0	0.0	0.0
	2012	0	0.0	0.0
	2013	0	0.0	0.0
	2014	0	0.0	0.0
	2015	0	0.0	0.0
	2016	0	0.0	0.0
	2017	0	0.0	0.0
	2018	0	0.0	0.0
	2019	0	0.0	0.0
	2020	0	0.0	0.0
	2021	0	0.0	0.0

	2022	0	0.0	0.0
	2023	0	0.0	0.0
	2024	0	0.0	0.0
Light-Duty Trucks - Gasoline	1987-93	0	0.0	0.0
(Vans, Pickup Trucks, SUVs)	1994	0	0.0	0.0
	1995	0	0.0	0.0
	1996	0	0.0	0.0
	1997	0	0.0	0.0
	1998	0	0.0	0.0
	1999	0	0.0	0.0
	2000	0	0.0	0.0
	2001	0	0.0	0.0
	2002	0	0.0	0.0
	2003	0	0.0	0.0
	2004	0	0.0	0.0
	2005	0	0.0	0.0
	2006	0	0.0	0.0
	2007	0	0.0	0.0
	2008	0	0.0	0.0
	2009	0	0.0	0.0
	2010	0	0.0	0.0
	2011	0	0.0	0.0
	2012	0	0.0	0.0
	2013	0	0.0	0.0
	2014	0	0.0	0.0
	2015	0	0.0	0.0
	2016	0	0.0	0.0
	2017	0	0.0	0.0
	2018	0	0.0	0.0
	2019	0	0.0	0.0
	2020	0	0.0	0.0
	2021	6,272	49.2	7.5
	2022	0	0.0	0.0
	2023	0	0.0	0.0
	2024	0	0.0	0.0
Heavy-Duty Vehicles - Gasoline	1985-86	0	0.0	0.0
	1987	0	0.0	0.0
	1988-1989	0	0.0	0.0
	1990-1995	0	0.0	0.0
	1996	0	0.0	0.0
	1997	0	0.0	0.0
	1998	0	0.0	0.0
	1999	0	0.0	0.0
	2000	0	0.0	0.0
	2001	0	0.0	0.0
	2002	0	0.0	0.0
	2003	0	0.0	0.0
	2004	0	0.0	0.0
	2005	0	0.0	0.0
	2006	0	0.0	0.0
	2007	0	0.0	0.0
	2008	0	0.0	0.0
	2009	0	0.0	0.0
	2010	0	0.0	0.0
	2011	0	0.0	0.0
	2012	0	0.0	0.0
	2013	0	0.0	0.0

	2014	0	0.0	0.0
	2015	0	0.0	0.0
	2016	0	0.0	0.0
	2017	0	0.0	0.0
	2018	0	0.0	0.0
	2019	0	0.0	0.0
	2020	0	0.0	0.0
	2021	0	0.0	0.0
	2022	0	0.0	0.0
	2023	0	0.0	0.0
	2024	0	0.0	0.0
Motorcycles - Gasoline	1960-1995	0	0.0	0.0
	1996-2005	0	0.0	0.0
	2006-2024	0	0.0	0.0

Total Organization-Wide On-Road Non-Gasoline Mobile Source Mileage and CH_4/N_2O Emissions

Vehicle Type	Fuel Type	Vehicle Year	Mileage (miles)	CH_4 (g)	N_2O (g)
Passenger Cars - Diesel	Diesel	1960-1982	0	0.0	0.0
		1983-2006	0	0.0	0.0
		2007-2024	0	0.0	0.0
Light-Duty Trucks - Diesel	Diesel	1960-1982	0	0.0	0.0
		1983-2006	0	0.0	0.0
		2007-2024	0	0.0	0.0
Medium- and Heavy-Duty Vehicles	Diesel	1960-2006	0	0.0	0.0
		2007-2024	3,630	34.5	156.5
Light-Duty Cars	Methanol		0	0.0	0.0
	Ethanol		0	0.0	0.0
	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
Light-Duty Trucks	Ethanol		0	0.0	0.0
	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
Medium-Duty Trucks	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
Heavy-Duty Trucks	Methanol		0	0.0	0.0
	Ethanol		0	0.0	0.0
	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
Buses	Methanol		0	0.0	0.0
	Ethanol		0	0.0	0.0
	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0

Total Organization-Wide Non-Road Mobile Source Fuel Usage and CH_4/N_2O Emissions

Vehicle Type	Fuel Type	Fuel Usage (gallons)	CH_4 (g)	N_2O (g)
	Residual Fuel Oil	0	0.0	0.0

Ships and Boats	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
Locomotives	Diesel	0	0.0	0.0
Aircraft	Jet Fuel	0	0.0	0.0
	Aviation Gasoline	0	0.0	0.0
Agricultural Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Gasoline Off-Road Trucks	0	0.0	0.0
	Diesel Equipment	0	0.0	0.0
	Diesel Off-Road Trucks	0	0.0	0.0
	LPG	0	0.0	0.0
Construction/Mining Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Gasoline Off-Road Trucks	0	0.0	0.0
	Diesel Equipment	732	740.5	689.1
	Diesel Off-Road Trucks	0	0.0	0.0
	LPG	0	0.0	0.0
Lawn and Garden Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Airport Equipment	Gasoline	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Industrial/Commercial Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Logging Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
Railroad Equipment	Gasoline	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Recreational Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0

Total CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**15.8**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**0.0**

Miles Traveled
12,400
3,180
2,772
1,500
1,500
500
450

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Scope 2 Emissions from Purchase of Electricity

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U.S. Environmental Protection Agency

Guidance

The Indirect Emissions from Purchased Electricity Guidance document provides guidance for quantifying two scope 2 emissions totals, using a **location-based method** and a **market-based method**. The organization should quantify and report both totals in its GHG inventory. The location-based method considers average emission factors for the electricity grids that provide electricity. The market-based method considers contractual arrangements under which the organization procures electricity from specific sources, such as renewable energy.

(A) Enter total annual electricity purchased in kWh and each eGRID subregion for each facility or site in ORANGE cells of **Table 1**.
(B) If electricity consumption data are not available for a facility, an estimate should be made for completeness.
See the "Items to Note" section of the Help sheet for suggested estimation approaches.
(C) Select "eGRID subregion" from drop box and enter "Electricity Purchased."
- Use map (Figure 1) at bottom of sheet to determine appropriate eGRID subregion. If subregion cannot be determined from the map, find the correct subregion by entering the location's zip code into EPA's Power Profiler:
https://www.epa.gov/egrid/power-profiler#/
(D) See the market-based emission factor hierarchy on the market-based method Help sheet. If any of the first four types of emission factors are applicable, enter the factors in the yellow cells marked as "<enter factor>". If not, leave the yellow cells as is, and eGRID subregion factors will be used for market-based emissions.

Example entry is shown in first row (*GREEN Italics*) for a facility that purchases RECs for 100% of its consumption, and therefore has a market-based emission factor of 0.

Tips: Enter electricity usage by location and then look up the eGRID subregion for each location.
If you purchase renewable energy that is less than 100% of your site's electricity, see the example in the market-based method Help sheet.

Table 1. Total Amount of Electricity Purchased by eGRID Subregion

					Market-		
					Use these cells to enter applicable		
					Emission Factors		
Source ID	**Source Description**	**Source Area (sq ft)**	**eGRID Subregion** *where electricity is consumed*	**Electricity Purchased (kWh)**	**CO_2 Emissions (lb/MWh)**	**CH_4 Emissions (lb/MWh)**	**N_2O Emissions (lb/MWh)**
Bldg-012	*East Power Plant*	*12,517*	*HICC Miscellaneous*	*200,000*	*0*	*0*	*0*
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
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					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
Total Emissions for All Sources				**0**			

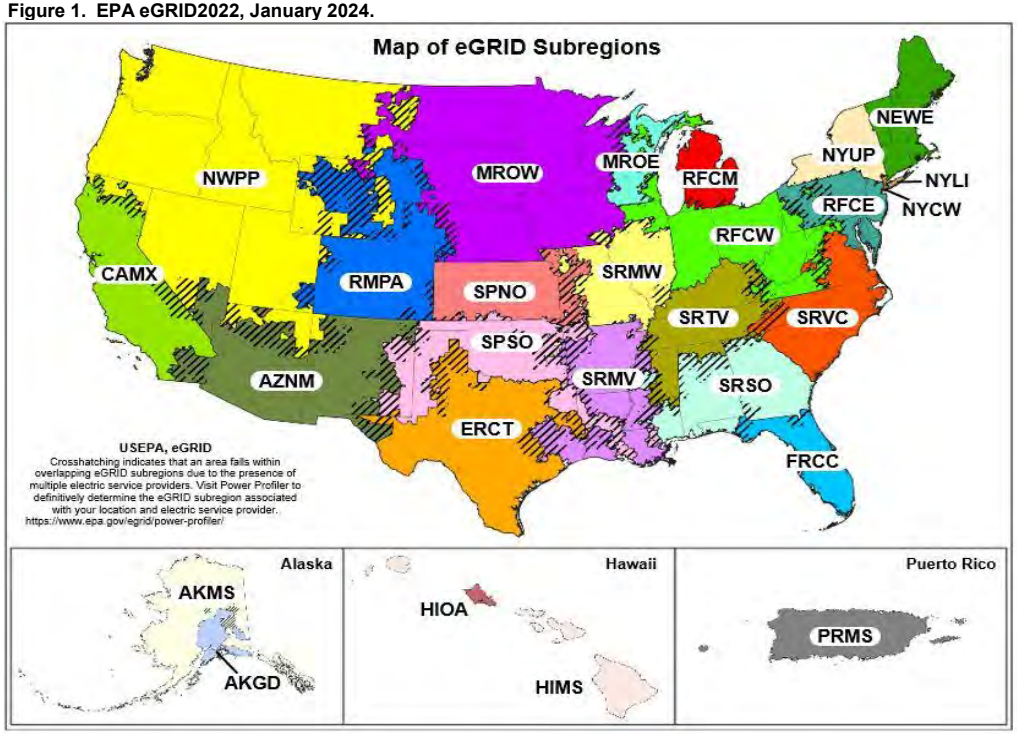
GHG Emissions

CO_2 Equivalent Emissions (metric tons)	
Location-Based Electricity Emissions	0.0
Market-Based Electricity Emissions	0.0

Notes:

1. CO_2, CH_4 and N_2O emissions are estimated using methodology provided in EPA's Center for Corporate Climate Leadership Greenhouse Gas Inventory Guidance - Indirect Emissions from Purchased Electricity (January 2016).

Figure 1. EPA eGRID2022, January 2024.



Based *e market-based emission factors*			Location-Based		
Emissions			Emissions		
CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)	CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)
0.0	*0.0*	*0.0*	*231,097.2*	*24.8*	*3.8*

0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

EPA Simplified GHG Emissions Calculator ("the Calculator")

September 2024

The EPA Simplified GHG Emissions Calculator ("the Calculator") is designed as a simplified calculation tool to help organizations estimate and inventory their annual greenhouse gas (GHG) emissions for US-based operations. All methodologies and default values provided are based on the most current Center for Corporate Climate Leadership Greenhouse *Gas Inventory Guidance Documents* and the *Emission Factors Hub*. The Calculator will quantify the direct and indirect emissions from sources at an organization when activity data are entered into the various sections of the workbook for one annual period.

Before entering data, please: 1) Enable Macros and 2) Familiarize yourself with the S*implified Guide to GHG Management for Organizations.*

Access the guide: https://www.epa.gov/system/files/documents/2022-09/Simplified_Guide_GHG_Management_Organizations.pdf

The simplified guide presents more details and information covered in the calculator; please check the guide for more info if you have questions

There are three primary steps in completing a GHG inventory. Each emissions source also has these three steps.

(1) **DEFINE**: The first step in completing a GHG inventory is to determine the boundaries and emissions sources included within those boundaries. After you have defined your organizational and operational boundaries, you can use the questions on the "Boundary Questions" worksheet to help you determine which emissions sources are relevant to your business.

Go to Boundary Questions

(2) **COLLECT**: The second step is to collect data for the defined annual period. This step is typically the most time consuming, since the data can be difficult to gather. This Calculator has help sheets with suggestions and guidance for each emissions source and a general help sheet for data management. **Click the drop down menu boxes below to navigate to these sheets**.

Help - Market-Based Method

(3) **QUANTIFY**: The third step is to calculate emissions. This Calculator is designed to complete the emissions quantification step for you. Once the user enters data in this MS Excel spreadsheet, the emissions will be calculated and totaled on the "Summary" sheet.

Calculator Guidance - Important Information

(A) Navigate to the data entry sheets using the drop down menu in the dark grey cell below and then clicking on the "Go To Data Entry Sheet" button. On the data entry sheets enter data in ORANGE cells only.

(B) This Calculator has several "Tool Sheets" with useful reference data such as unit conversions, heat contents, and emission factors. Click on the buttons below to go to the appropriate Tool Sheet.

(C) Data must be entered in the units specified on the data entry sheets. Use the "Unit Conversions" or "Heat Content" sheets if unit conversion is necessary prior to entering data into the Calculator.

(D) If more guidance is needed, you can reference the emission factor data sources found on the "Emission Factors" sheet.

Tool Sheets	Quick Data Entry Navigation
Unit Conversions	Stationary Combustion
Heat Content	
Emission Factors	

Calculator Notes
Emission sources of all seven major GHGs are accounted for in the inventory and in this Calculator: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). The Calculator allows the user to estimate GHG emissions from scope 1 (direct), scope 2 (indirect), and some scope 3 (other indirect) sources. The Calculator uses U.S.-specific cross-sector emission factors from the *Emission Factors Hub* . Many industrial sectors also have process-related emissions sources that are specific to their sector. EPA's Greenhouse Gas Reporting Program provides guidance and tools that can aid in the calculation and reporting of these emissions: https://www.epa.gov/ghgreporting The GHG Protocol also provides guidance on calculating emissions from industrial processes.

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Operational Boundary Questions - Emissions Sources to Include

Guidance
Use the questions below to help you determine which emissions sources should be included in the inventory.

Emissions Source Questions
A typical office-based organization will likely have the following (scope 1 and scope 2) emissions sources:

- Stationary Combustion
- Refrigeration and AC
- Electricity

If you answer "yes" to a question below, that emissions source should be included in your inventory. For each facility within the defined organizational boundary, collect the necessary data for the selected time period. Use the corresponding Excel sheet to quantify these emissions.

Tip: you may need to ask your landlord about heating sources, steam purchased and refrigerants

Stationary Combustion	**Yes or No?**
Do you have facilities that burn fuels on-site (e.g., natural gas, propane, coal, fuel oil for heating, diesel fuel for backup generators, biomass fuels)?	Y
Mobile Sources	
Do any vehicles fall within your organizational boundary? This can include cars, trucks, propane forklifts, aircraft, boats. Only vehicles owned or leased by your organization should be included here.	Y
Refrigeration and Air Conditioning	
Do your facilities use refrigeration or air conditioning equipment?	N
Fire Suppression	
Do your facilities use chemical fire suppressants?	N
Purchased Gases	
Do you purchase any industrial gases for use in your business? These gases may be purchased for use in manufacturing, testing, or laboratories.	N
Electricity	
Does your inventory include facilities that use electricity?	Y
Steam	
Do you purchase steam for heating or cooling in your facilities?	N
Market-Based Emission Factors (entered on Electricity and or Steam tabs)	
Do you purchase renewable energy certificates (RECs) or green power products? Do you purchase electricity through a power purchase agreement (PPA)? Do you have supplier-specific emission factors?	N

The questions below refer to scope 3 emissions sources and offsets. If you answer "yes" you may choose whether or not to include these emissions sources in your inventory. Use the corresponding sheet to enter data.

Business Travel	**Yes or No?**
Do your employees travel for business using transportation other than owned or leased vehicles (e.g., commercial airline flights, rental cars, trains)?	N
Employee Commuting	
Do your employees commute to work in personal vehicles or use public transportation?	Y
Upstream Transportation and Distribution	
Do you hire another company to transport products or other materials to or from your	Y
Waste Generated in Operations	
Do you generate waste that is disposed of in a facility owned by another organization?	N
Offsets	
Do you purchase greenhouse gas offsets?	N

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Emissions Summary

Guidance

The total GHG emissions from each source category are provided below. You may also use this summary sheet to fill out the *Annual GHG Inventory Summary and Target Tracking Form* (.xls) as this Calculator only quantifies one year of emissions at a time. The form is available here: https://www.epa.gov/climateleadership/target-setting

By entering the data below into the appropriate cell of the *Annual GHG Inventory Summary and Target Tracking Form,* you will be able to compare multiple years of data.

If you have multiple Calculator files covering sub-sets of your inventory for a particular reporting period, sum each of the emission categories (e.g. Stationary Combustion) to an organizational total, which then can be entered into the *Annual GHG Inventory Summary and Target Tracking Form*.

(A) Enter organization information into the orange cells. Other cells on this sheet will be automatically calculated from the data entered in the sheets in this workbook. Blue cells indicate required emission sources if applicable. Green cells indicate scope 3 emission sources and offsets, which organizations may optionally include in its inventory.

(B) The "Go To Sheet" buttons can be used to navigate to the data entry sheets.

Organizational Information:

Organization Name:	Lass Farms, Inc.
Organization Address:	
Inventory Reporting Period:	*Calendar Year 2025*
Start:	*1/1/2025*
End:	*12/31/2025*
Name of Preparer:	Jessica Mulder
Contact Information of Preparer:	507-662-5005
Date Prepared:	10/15/2024

Summary of Organization's Emissions:

Scope 1 Emissions

		CO_2-e (metric tons)
Go To Sheet	Stationary Combustion	74
Go To Sheet	Mobile Sources	13
Go To Sheet	Refrigeration / AC Equipment Use	0
Go To Sheet	Fire Suppression	0
Go To Sheet	Purchased Gases	0

	CO2-e (metric tons)		
	Gross	Offsets	Net
Scope 1 Summary	87	0	87

Scope 2 Emissions

Location-Based Scope 2 Emissions		CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Electricity	41
Go To Sheet	Purchased and Consumed Steam	0

	CO_2-e (metric tons)		
	Gross	Offsets	Net
Location-Based Scope 2 Summary	41	0	41

	Market-Based Scope 2 Emissions	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Electricity	41
Go To Sheet	Purchased and Consumed Steam	0

	CO_2-e (metric tons)		
	Gross	Offsets	Net
Market-Based Scope 2 Summary			

Scope 1 & 2 Summary

	CO_2-e (metric tons)	
	Gross	Net
Total Scope 1 & Location-Based Scope 2		
Total Scope 1 & Market-Based Scope 2		

Scope 3 Emissions

		CO_2-e (metric tons)		
		Gross	Offsets	Net
Go To Sheet	Business Travel	0	0	0
Go To Sheet	Employee Commuting	0	0	0
Go To Sheet	Upstream Transportation and Distribution	0	0	0
Go To Sheet	Waste	0	0	0

Required Supplemental Information

		CO_2-e (metric tons)
Go To Sheet	Biomass CO_2 Emissions from Stationary Sources	0
Go To Sheet	Biomass CO_2 Emissions from Mobile Sources	0

Scope 1 Emissions from Stationary Combustion Sources

Guidance

(A) Enter annual data for each combustion unit, facility, or site (by fuel type) in ORANGE cells on **Table 1**. Example entry is shown in first row (*GREEN Italics*).

- Select "Fuel Combusted" from drop down box.
- Enter "Quantity Combusted" and choose the appropriate units from the drop down box in the unit column. If it's necessary to convert units, common heat contents can be found on the "Heat Content" sheet and unit conversions on the "Unit Conversion" sheet.

(B) If fuel is consumed in a facility but stationary fuel consumption data are not available, an estimate should be made for completeness. See the "Items to Note" section of the Help sheet for suggested estimation approaches.

(C) Biomass CO_2 emissions are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Stationary Source Fuel Combustion

Source ID	Source Description	Source Area (sq ft)	Fuel Combusted	Fuel State (solid, liquid, gas)	Quantity Combusted
BLR-012	*East Power Plant*	*12,517*	*Natural Gas*	*Gas*	*10,000*
	Cooperative 9600 gal/2gal per pig space	40,656	Propane Gas	Gas	1,200

GHG Emissions

Total Organization-Wide Stationary Source Combustion by Fuel Type

Fuel Type	Quantity Combusted	Units
Coal and Coke - Solid		
Anthracite Coal	0	short ton
Bituminous Coal	0	short ton
Sub-bituminous Coal	0	short ton
Lignite Coal	0	short ton
Mixed (Commercial Sector)	0	short ton
Mixed (Electric Power Sector)	0	short ton
Mixed (Industrial Coking)	0	short ton
Mixed (Industrial Sector)	0	short ton
Coal Coke	0	short ton
Other Fuels - Solid		
Municipal Solid Waste	0	short ton
Petroleum Coke (Solid)	0	short ton
Plastics	0	short ton
Tires	0	short ton
Biomass Fuels - Solid		
Agricultural Byproducts	0	short ton
Peat	0	short ton
Solid Byproducts	0	short ton
Wood and Wood Residuals	0	short ton
Gaseous Fuels		
Natural Gas	0	scf
Propane Gas	476,948	scf
Landfill Gas	0	scf
Petroleum Products		
Distillate Fuel Oil No. 2	0	gallons
Residual Fuel Oil No. 6	0	gallons
Kerosene	0	gallons
Liquefied Petroleum Gases (LPG)	0	gallons
Biomass Fuels - Liquid		
Biodiesel (100%)	0	gallons
Ethanol (100%)	0	gallons
Rendered Animal Fat	0	gallons
Vegetable Oil	0	gallons

Total Organization-Wide CO_2, CH_4 and N_2O Emissions from Stationary Source Fuel Combustion

Fuel Type	CO_2 (kg)	CH_4 (g)	N_2O (g)
Coal and Coke - Solid			
Anthracite Coal	0	0.0	0.0
Bituminous Coal	0	0.0	0.0
Sub-bituminous Coal	0	0.0	0.0
Lignite Coal	0	0.0	0.0
Mixed (Commercial Sector)	0	0.0	0.0
Mixed (Electric Power Sector)	0	0.0	0.0
Mixed (Industrial Coking)	0	0.0	0.0
Mixed (Industrial Sector)	0	0.0	0.0
Coal Coke	0	0.0	0.0
Other Fuels - Solid			
Municipal Solid Waste	0	0.0	0.0
Petroleum Coke (Solid)	0	0.0	0.0
Plastics	0	0.0	0.0
Tires	0	0.0	0.0
Gaseous Fuels			
Natural Gas	0	0.0	0.0
Propane Gas	73,750	3,600.0	720.2
Landfill Gas	0	0.0	0.0
Petroleum Products			
Distillate Fuel Oil No. 2	0	0.0	0.0

Residual Fuel Oil No. 6	0	0.0	0.0
Kerosene	0	0.0	0.0
Liquefied Petroleum Gases (LPG)	0	0.0	0.0
Total Fossil Fuel Emissions	**73,750**	**3,600.0**	**720.2**
Biomass Fuels - Solid			
Agricultural Byproducts	0	0.0	0.0
Peat	0	0.0	0.0
Solid Byproducts	0	0.0	0.0
Wood and Wood Residuals	0	0.0	0.0
Biomass Fuels - Liquid			
Biodiesel (100%)	0	0.0	0.0
Ethanol (100%)	0	0.0	0.0
Rendered Animal Fat	0	0.0	0.0
Vegetable Oil	0	0.0	0.0
Total Non-Fossil Fuel Emissions	**0**	**0.0**	**0.0**
Total Emissions for all Fuels	**73,750**	**3,600.0**	**720.2**

Total CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**74.0**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Stationary Combustion	**0.0**

Units
MMBtu
MMBtu

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Scope 1 Emissions from Mobile Sources

Guidance

(A) Enter annual data for each vehicle or group of vehicles (grouped by vehicle type, vehicle year, and fuel type) in ORANGE cells in **Table 1**. Example entry is shown in first row (GREEN *Italics*). Only enter vehicles owned or leased by your organization on this sheet. All other vehicle use such as employee commuting or business travel is considered a scope 3 emissions source and should be reported in the corresponding scope 3 sheets.

- *Note: The latest mobile combustion factors reflect year 2021 data. Therefore, for all vehicle model years 2022 onward, the 2021 year factor is used.*
- *Select "On-Road" or "Non-Road" from the drop down box to determine the Vehicle Types available. You* ***must make this selection before picking the vehicle type.***
- Select "Vehicle Type" from drop down box (closest type available).
- Enter "Fuel Usage" in appropriate units (units appear when vehicle type is selected).
  - If mileage or fuel usage is unknown, estimate using approximate fuel economy values from the manufacturer, www.fueleconomy.gov, or the Reference Table below.
  - Vehicle year and Miles traveled are not necessary for non-road equiment.

(B) When using biofuels, typically the biofuel (biodiesel or ethanol) is mixed with a petroleum fuel (diesel or gasoline) for use in vehicles. Enter the biodiesel and ethanol percentages of the fuel if known, or leave default values shown below.

Biodiesel Percent:	20	%
Ethanol Percent:	80	%

(C) Biomass CO_2 emissions from biodiesel and ethanol are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Mobile Source Fuel Combustion and Miles Traveled

Source ID	Source Description	On-Road or Non-Road?	Vehicle Type	Vehicle Year	Fuel Usage	Units
Fleet-012	*HQ Fleet*	*OnRoad*	*Passenger Cars - Gasoline*	*2019*	*500*	*gal*
Producer - 365 days x 2 - 6 mi	Daily Inspection	OnRoad	Light-Duty Trucks - Gasoline	2021	242	gal
Feed Supply - 3 loads/wk - 156 load	Feed	OnRoad	Medium- and Heavy-Duty Vehicles - Diesel	2021	211	gal
Rendering Service 1 day/wk - 52 trip	Dead Animal Pickup	OnRoad	Medium- and Heavy-Duty Vehicles - Diesel	2021	166	gal
Livestock Hauling - 72 trucks/yr/50 r	Stocking/Depopulating	OnRoad	Medium- and Heavy-Duty Vehicles - Diesel	2021	486	gal
Manure Application - 48 hours/6mi r	Land Application of Manure	NonRoad	Agricultural Equipment - Diesel Equipment	2021	219	gal

Reference Table: Average Fuel Economy by Vehicle Type

Vehicle Type	Average Fuel Economy (mpg)
Passenger Cars	24.8
Other 2-Axle, 4-Tire Vehicles	18.1
Motorcycles	44.0
Single unit 2-Axle 6-Tire or More Trucks	7.9
Combination Trucks	6.9
Diesel Buses (Diesel Heavy-Duty Vehicles)	7.4

Average mpg values from the U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2022 (Updated February 2024), Table VM-1.

GHG Emissions

Total Organization-Wide Mobile Source Fuel Usage and CO_2 Emissions (On-Road and Off-Road Vehicles)

Fuel Type	Fuel Usage	Units	CO_2 (kg)
Motor Gasoline	242	gallons	2,125
Diesel Fuel	1,082	gallons	11,047

Residual Fuel Oil	0	gallons	0	
Aviation Gasoline	0	gallons	0	
Kerosene-Type Jet Fuel	0	gallons	0	
Liquefied Petroleum Gases (LPG)	0	gallons	0	
Ethanol	0	gallons	0	*Note: emissior*
Biodiesel	0	gallons	0	*Note: emissior*
Liquefied Natural Gas (LNG)	0	gallons	0	
Compressed Natural Gas (CNG)	0	scf	0	

Total Organization-Wide On-Road Gasoline Mobile Source Mileage and CH_4/N_2O Emissions

Vehicle Type	Vehicle Year	Mileage (miles)	CH_4 (g)	N_2O (g)
Passenger Cars - Gasoline	1984-93	0	0.0	0.0
	1994	0	0.0	0.0
	1995	0	0.0	0.0
	1996	0	0.0	0.0
	1997	0	0.0	0.0
	1998	0	0.0	0.0
	1999	0	0.0	0.0
	2000	0	0.0	0.0
	2001	0	0.0	0.0
	2002	0	0.0	0.0
	2003	0	0.0	0.0
	2004	0	0.0	0.0
	2005	0	0.0	0.0
	2006	0	0.0	0.0
	2007	0	0.0	0.0
	2008	0	0.0	0.0
	2009	0	0.0	0.0
	2010	0	0.0	0.0
	2011	0	0.0	0.0
	2012	0	0.0	0.0
	2013	0	0.0	0.0
	2014	0	0.0	0.0
	2015	0	0.0	0.0
	2016	0	0.0	0.0
	2017	0	0.0	0.0
	2018	0	0.0	0.0
	2019	0	0.0	0.0
	2020	0	0.0	0.0
	2021	0	0.0	0.0
	2022	0	0.0	0.0
	2023	0	0.0	0.0
	2024	0	0.0	0.0
Light-Duty Trucks - Gasoline (Vans, Pickup Trucks, SUVs)	1987-93	0	0.0	0.0
	1994	0	0.0	0.0
	1995	0	0.0	0.0
	1996	0	0.0	0.0
	1997	0	0.0	0.0
	1998	0	0.0	0.0
	1999	0	0.0	0.0
	2000	0	0.0	0.0
	2001	0	0.0	0.0
	2002	0	0.0	0.0
	2003	0	0.0	0.0
	2004	0	0.0	0.0
	2005	0	0.0	0.0
	2006	0	0.0	0.0
	2007	0	0.0	0.0
	2008	0	0.0	0.0
	2009	0	0.0	0.0
	2010	0	0.0	0.0
	2011	0	0.0	0.0
	2012	0	0.0	0.0
	2013	0	0.0	0.0

	2014	0	0.0	0.0
	2015	0	0.0	0.0
	2016	0	0.0	0.0
	2017	0	0.0	0.0
	2018	0	0.0	0.0
	2019	0	0.0	0.0
	2020	0	0.0	0.0
	2021	4,380	34.4	5.3
	2022	0	0.0	0.0
	2023	0	0.0	0.0
	2024	0	0.0	0.0
Heavy-Duty Vehicles - Gasoline	1985-86	0	0.0	0.0
	1987	0	0.0	0.0
	1988-1989	0	0.0	0.0
	1990-1995	0	0.0	0.0
	1996	0	0.0	0.0
	1997	0	0.0	0.0
	1998	0	0.0	0.0
	1999	0	0.0	0.0
	2000	0	0.0	0.0
	2001	0	0.0	0.0
	2002	0	0.0	0.0
	2003	0	0.0	0.0
	2004	0	0.0	0.0
	2005	0	0.0	0.0
	2006	0	0.0	0.0
	2007	0	0.0	0.0
	2008	0	0.0	0.0
	2009	0	0.0	0.0
	2010	0	0.0	0.0
	2011	0	0.0	0.0
	2012	0	0.0	0.0
	2013	0	0.0	0.0
	2014	0	0.0	0.0
	2015	0	0.0	0.0
	2016	0	0.0	0.0
	2017	0	0.0	0.0
	2018	0	0.0	0.0
	2019	0	0.0	0.0
	2020	0	0.0	0.0
	2021	0	0.0	0.0
	2022	0	0.0	0.0
	2023	0	0.0	0.0
	2024	0	0.0	0.0
Motorcycles - Gasoline	1960-1995	0	0.0	0.0
	1996-2005	0	0.0	0.0
	2006-2024	0	0.0	0.0

Total Organization-Wide On-Road Non-Gasoline Mobile Source Mileage and CH_4/N_2O Emissions

Vehicle Type	Fuel Type	Vehicle Year	Mileage (miles)	CH_4 (g)	N_2O (g)
Passenger Cars - Diesel	Diesel	1960-1982	0	0.0	0.0
		1983-2006	0	0.0	0.0
		2007-2024	0	0.0	0.0
Light-Duty Trucks - Diesel	Diesel	1960-1982	0	0.0	0.0
		1983-2006	0	0.0	0.0
		2007-2024	0	0.0	0.0
Medium- and Heavy-Duty Vehicles -	Diesel	1960-2006	0	0.0	0.0
		2007-2024	6,304	59.9	271.7
Light-Duty Cars	Methanol		0	0.0	0.0
	Ethanol		0	0.0	0.0
	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
	Ethanol		0	0.0	0.0

Light-Duty Trucks	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
Medium-Duty Trucks	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
Heavy-Duty Trucks	Methanol		0	0.0	0.0
	Ethanol		0	0.0	0.0
	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0
Buses	Methanol		0	0.0	0.0
	Ethanol		0	0.0	0.0
	CNG		0	0.0	0.0
	LPG		0	0.0	0.0
	LNG		0	0.0	0.0
	Biodiesel		0	0.0	0.0

Total Organization-Wide Non-Road Mobile Source Fuel Usage and CH_4/N_2O Emissions

Vehicle Type	Fuel Type	Fuel Usage (gallons)	CH_4 (g)	N_2O (g)
Ships and Boats	Residual Fuel Oil	0	0.0	0.0
	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
Locomotives	Diesel	0	0.0	0.0
Aircraft	Jet Fuel	0	0.0	0.0
	Aviation Gasoline	0	0.0	0.0
Agricultural Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Gasoline Off-Road Trucks	0	0.0	0.0
	Diesel Equipment	219	277.5	234.8
	Diesel Off-Road Trucks	0	0.0	0.0
	LPG	0	0.0	0.0
Construction/Mining Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Gasoline Off-Road Trucks	0	0.0	0.0
	Diesel Equipment	0	0.0	0.0
	Diesel Off-Road Trucks	0	0.0	0.0
	LPG	0	0.0	0.0
Lawn and Garden Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Airport Equipment	Gasoline	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Industrial/Commercial Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Logging Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
Railroad Equipment	Gasoline	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0
Recreational Equipment	Gasoline (2 stroke)	0	0.0	0.0
	Gasoline (4 stroke)	0	0.0	0.0
	Diesel	0	0.0	0.0
	LPG	0	0.0	0.0

Total CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**13.3**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**0.0**

Miles Traveled
12,400
4,380
1,560
1,144
3,600
1,620

Back to Intro | Back to Summary | Help | Help - Market-Based Method

Scope 2 Emissions from Purchase of Electricity

EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Guidance

The Indirect Emissions from Purchased Electricity Guidance document provides guidance for quantifying two scope 2 emissions totals, using a **location-based method** and a **market-based method**. The organization should quantify and report both totals in its GHG inventory. The location-based method considers average emission factors for the electricity grids that provide electricity. The market-based method considers contractual arrangements under which the organization procures electricity from specific sources, such as renewable energy.

(A) Enter total annual electricity purchased in kWh and each eGRID subregion for each facility or site in ORANGE cells of **Table 1**.
(B) If electricity consumption data are not available for a facility, an estimate should be made for completeness.
See the "Items to Note" section of the Help sheet for suggested estimation approaches.
(C) Select "eGRID subregion" from drop box and enter "Electricity Purchased."
- Use map (Figure 1) at bottom of sheet to determine appropriate eGRID subregion. If subregion cannot be determined from the map, find the correct subregion by entering the location's zip code into EPA's Power Profiler:
https://www.epa.gov/egrid/power-profiler#/
(D) See the market-based emission factor hierarchy on the market-based method Help sheet. If any of the first four types of emission factors are applicable, enter the factors in the yellow cells marked as "<enter factor>". If not, leave the yellow cells as is, and eGRID subregion factors will be used for market-based emissions.

Example entry is shown in first row (*GREEN Italics*) for a facility that purchases RECs for 100% of its consumption, and therefore has a market-based emission factor of 0.

Tips: Enter electricity usage by location and then look up the eGRID subregion for each location.
If you purchase renewable energy that is less than 100% of your site's electricity, see the example in the market-based method Help sheet.

Table 1. Total Amount of Electricity Purchased by eGRID Subregion

					Market- *Use these cells to enter applicable*		
					Emission Factors		
Source ID	**Source Description**	**Source Area (sq ft)**	**eGRID Subregion** *where electricity is consumed*	**Electricity Purchased (kWh)**	**CO_2 Emissions (lb/MWh)**	**CH_4 Emissions (lb/MWh)**	**N_2O Emissions (lb/MWh)**
Bldg-012	*East Power Plant*	*12,517*	*HICC Miscellaneous*	*200,000*	*0*	*0*	*0*
	Nobles Cooperative	40,656	MRO West	96,000	<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
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					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
					<enter factor>	<enter factor>	<enter factor>
Total Emissions for All Sources				**96,000**			

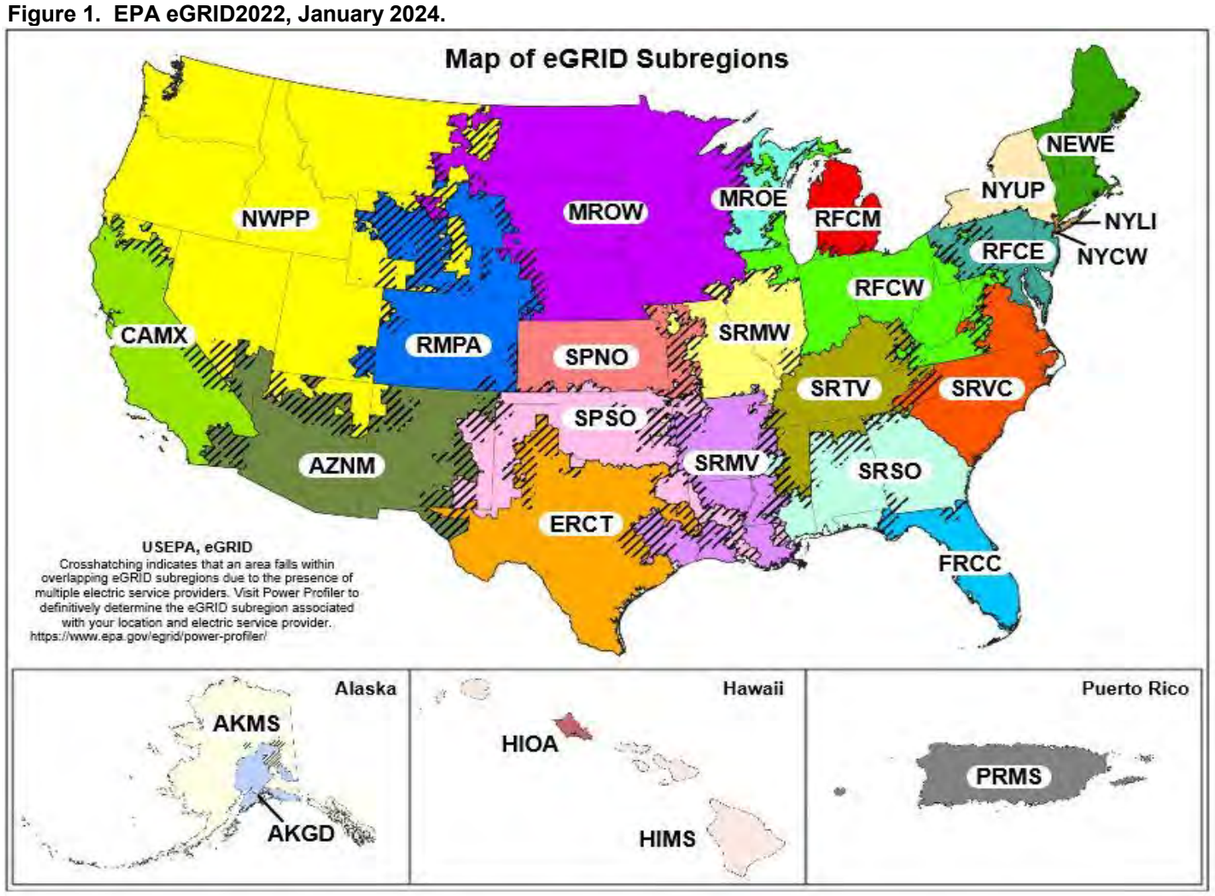
GHG Emissions

CO_2 Equivalent Emissions (metric tons)	
Location-Based Electricity Emissions	41.1
Market-Based Electricity Emissions	41.1

Notes:

1. CO_2, CH_4 and N_2O emissions are estimated using methodology provided in EPA's Center for Corporate Climate Leadership Greenhouse Gas Inventory Guidance - Indirect Emissions from Purchased Electricity (January 2016).

Figure 1. EPA eGRID2022, January 2024.



Based *e market-based emission factors*			Location-Based		
Emissions			Emissions		
CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)	CO_2 Emissions (lb)	CH_4 Emissions (lb)	N_2O Emissions (lb)
0.0	*0.0*	*0.0*	*231,097.2*	*24.8*	*3.8*
89,902.6	9.8	1.4	89,902.6	9.8	1.4

89,902.6	**9.8**	**1.4**	**89,902.6**	**9.8**	**1.4**

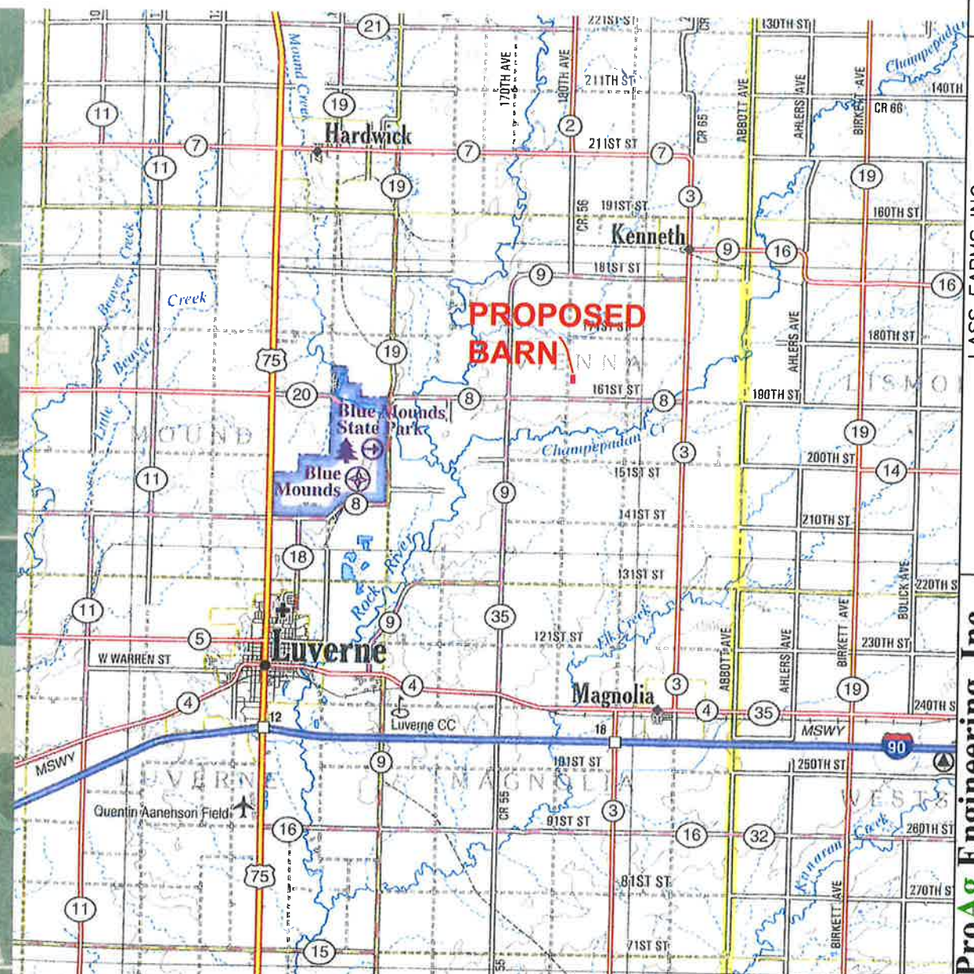
TABLE OF CONTENTS

REGISTERED PROFESSIONAL ENGINEER
46735
NICHOLAUS J. ROWE
MINNESOTA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Nicholaus J. Rowe Date 2/12/24

Nicholaus J. Rowe, P.E.
License number 46735
My license renewal date is June 30, 2024
Pages or sheets covered by this seal: Sheets 1-8



SHEET	1/8
Project No.	24-005
Checked By	N.J.R.
Date	2/8/24
Drawn	D.D.A.

LASS FARMS INC.
PROPOSED SWINE CONFINEMENT BARN
SW 1/4, SECTION 15, T103N, R44W
ROCK COUNTY, MINNESOTA

ProAg Engineering, Inc.
77402 U.S. Highway 71, P.O. Box 181
Jackson, MN 56143
(507) 849-7200

GRAPHIC SCALE

100 0 50 100

(IN FEET)
1 inch = 100 ft.

PROPOSED MANURE GENERATION & STORAGE VOLUMES

1.) ON SITE ANNUAL LIQUID MANURE GENERATION:
4,800 HEAD FINISHING SWINE = 0.12 C.F./HEAD/DAY @ 365 DAYS = 210,240 C.F.
2.) ANNUAL WASTEWATER & SPILLAGE VOLUME = 20% x 210,240 C.F. = 42,048 C.F.
3.) TOTAL ANNUAL WASTE VOLUME GENERATED = 210,240 C.F. + 42,048 C.F. = 252,288 C.F.
4.) DEEP PIT BARN VOLUME = 333'-8" x 119'-4" x 6.5' = 258,814 C.F.
5.) TOTAL NUMBER OF DAYS STORAGE = 375 DAYS = 258,814 C.F. / 252,288 C.F. x 365 DAYS

PROPOSED CONSTRUCTION WILL DISTURB LESS THAN 3 ACRES AND WILL CREATE MORE THAN AN ACRE OF IMPERVIOUS AREA. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN DEVELOPED. THE BARN ROOF RUNOFF WATER WILL BE COLLECTED IN A STORM WATER DETENTION POND. ALL CONSTRUCTION RUNOFF WILL FLOW TO THE NORTH INTO THE STORMWATER DETENTION POND.

3313' TO NEAREST WATER SOURCE

600' SOUTH OF DRIVEWAY TO PROPOSED BARN

3960' SETBACK FROM RESIDENCE

180TH AVENUE

PROPOSED HIGH POINT OF PERIMETER DRAIN TILE PLACED AROUND THE PIT FOOTING, SLOPE TILE @ 0.1% TO SW CORNER OF PIT

SB#1

SB#2

1911' TO ASSUMED PROPERTY LINE

336'

121'-8"

PROPOSED 4,800 HEAD SWINE FINISHING CONFINEMENT BARN (336-0" x 121'-8") WITH 8' CONCRETE PIT (336'-0"x 121'-8") BELOW THE SLATTED BARN FLOOR, BARN FLOOR ELEVATION 1543, BOTTOM OF PIT ELEVATION 1535.

400' FROM CENTERLINE TO BUILDING

300' SETBACK FROM CENTERLINE

+1541

LOADOUT

BIN PADS

3960' SETBACK FROM RESIDENCE

PROPOSED PERIMETER TILE TO CONNECT TO EXISTING FIELD TILE. LOCATE OUTLET PRIOR TO CONSTRUCTION

2233' TO NEAREST RESIDENCE (WAIVER OBTAINED FOR BARN, NO AIR MODEL WAIVER YET)

+1536

1536

+1534

TOD 1537

377' TO ASSUMED PROPERTY LINE (OWNED BY FAMILY)

EXISTING RURAL WATER LINE

ASSUMED WEST LINE OF SECTION 15, T-103-N, R-44-W OF ROCK COUNTY, MINNESOTA

PROPOSED STORM WATER DETENTION POND
IMPERVIOUS AREA =XX ACRES
TOP OF DIKE ELEVATION 1537, BOTTOM ELEVATION 1536- 1534
REQUIRED 1/2" RUNOFF TREATMENT VOLUME = 41,370 GAL.
EFFECTIVE VOLUME @ ELEV. 1537 = 109,664 GAL. PLACE SURFACE INTAKE ON 4"Ø DRAIN TILE w/ FL IN ELEV. 1534.
DAYLIGHT OUTLET ABOVE GROUND

1547 1546 1545 1544 1543 1542 1541 1540 1538 1537 1536 1535

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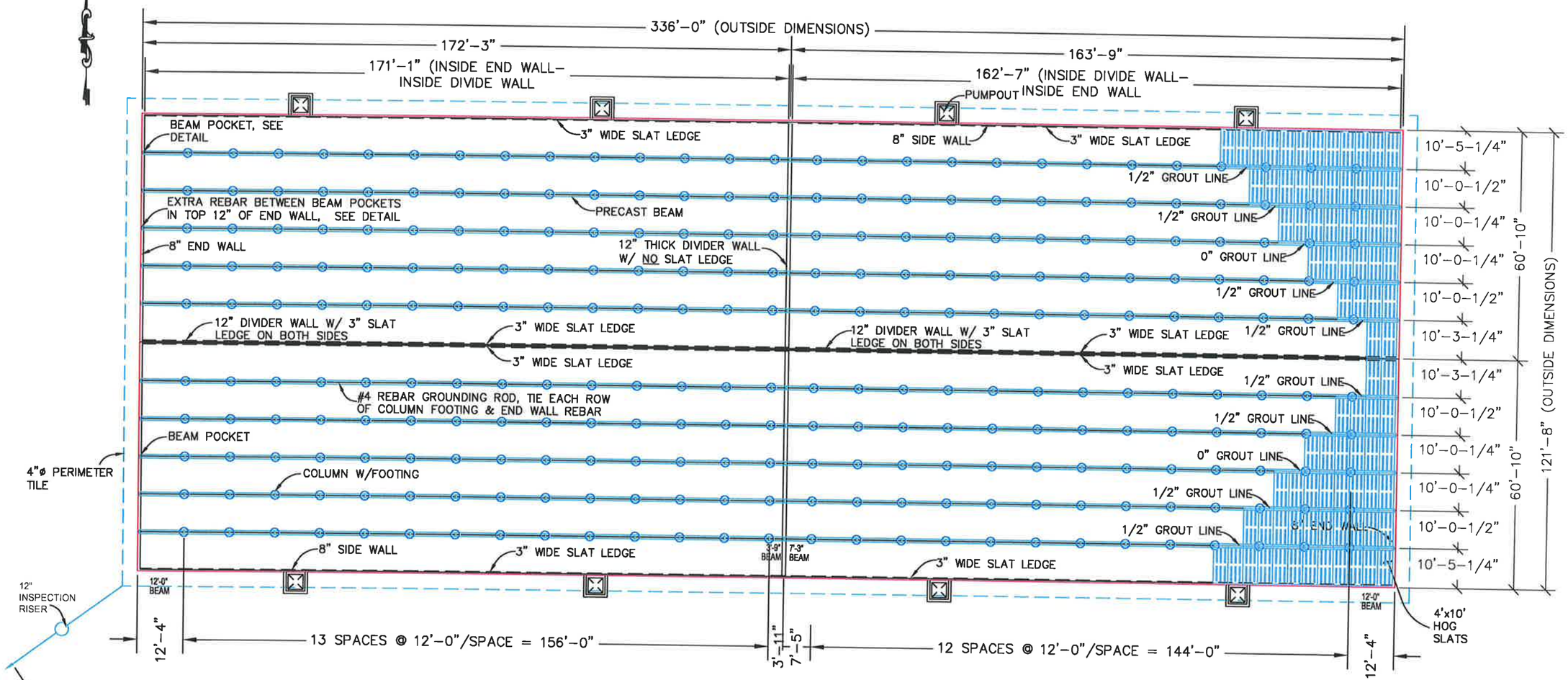
ROCK COUNTY, MINNESOTA

Date	2/8/24	Checked By	Project No.	SHEET 2/8
Drawn	D.D.A.	N.J.R.	24-005	

*IMPORTANT NOTE-NUMBER OF PUMPOUTS & LOCATIONS DETERMINED BY OWNERS DISCRETION. PRECAST DIMENSIONS CHANGE BETWEEN SUPPLIERS. PUMPOUT LOCATIONS AND PRECAST DIMENSIONS MUST BE VERIFIED WITH THE OWNER PRIOR TO CONSTRUCTION.



PROPOSED PERIMETER TILE TO CONNECT TO EXISTING FIELD TILE OR DAYLIGHT INTO ROAD DITCH. IF TILE CAN'T OUTLET ABOVE GROUND INSTALL SUMP & DISCHARGE ABOVE GRADE FOR VISUAL INSPECTION (SEE DETAIL). LOCATE OUTLET PRIOR TO CONSTRUCTION

PIT FLOOR PLAN
(OUTSIDE DIMENSIONS 336'-0"x 121'-8")
NOT TO SCALE

SHEET 3/8

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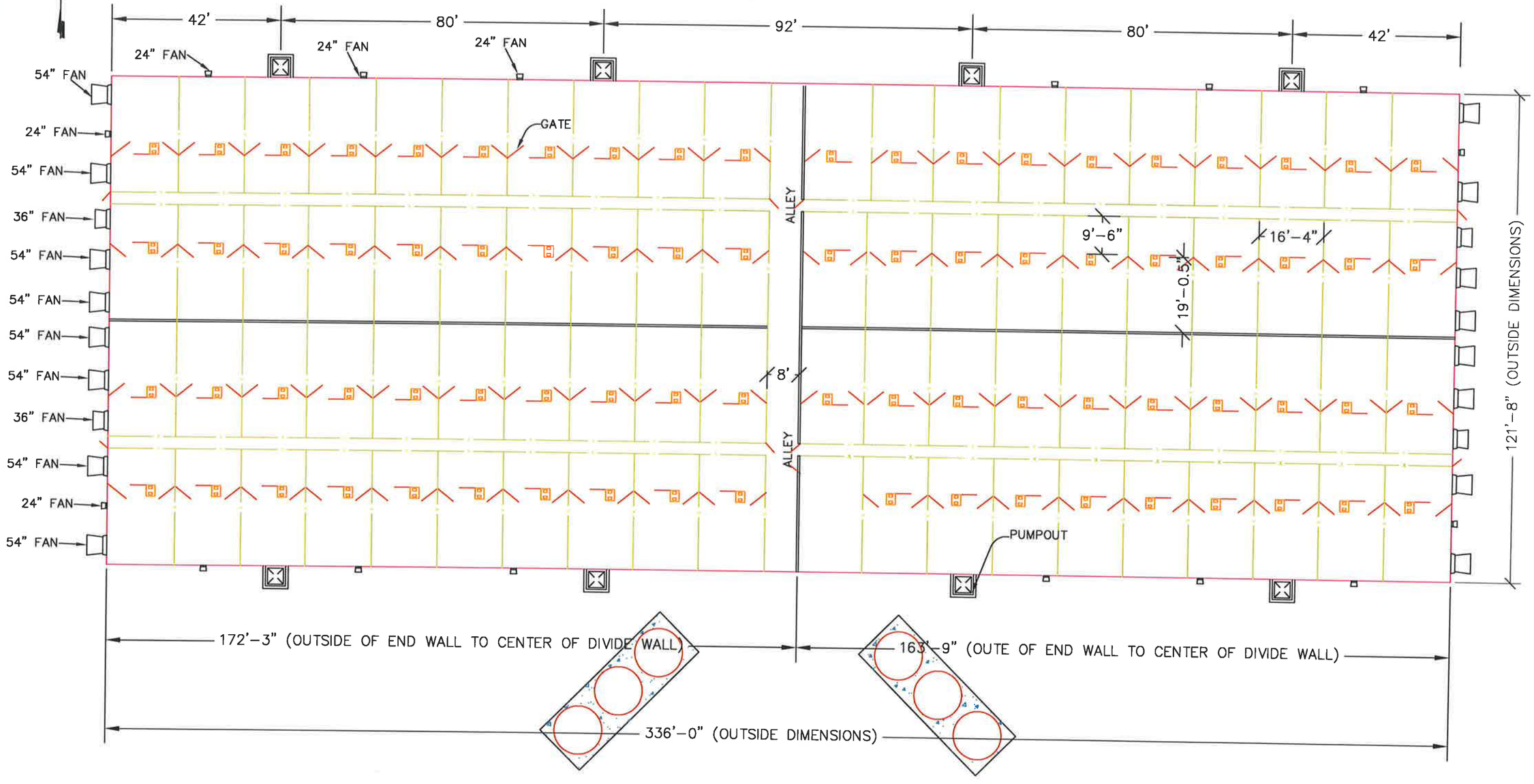
FLOOR PLAN
(OUTSIDE DIMENSIONS 336'-0"x 121'-8")
NOT TO SCALE



SHEET 4/8

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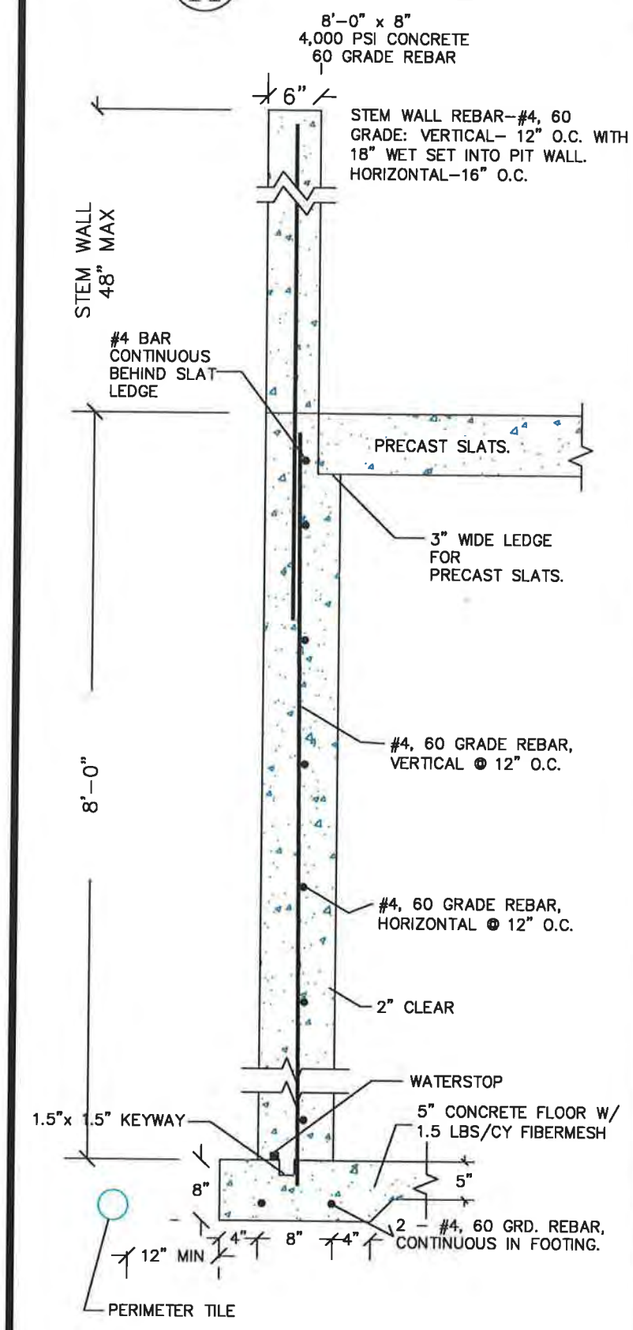
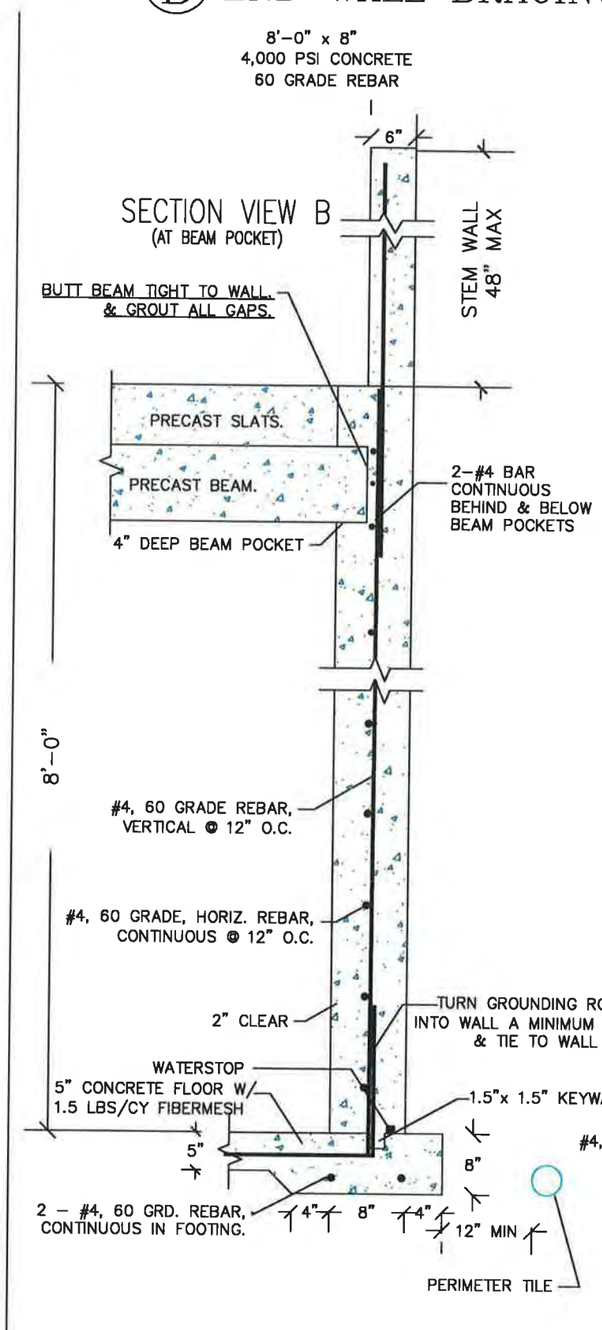
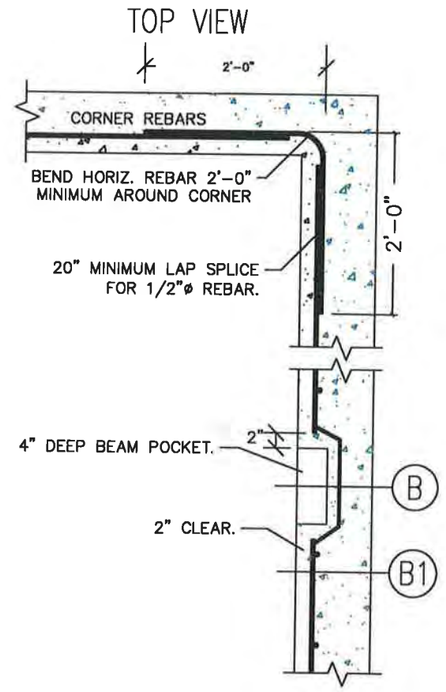
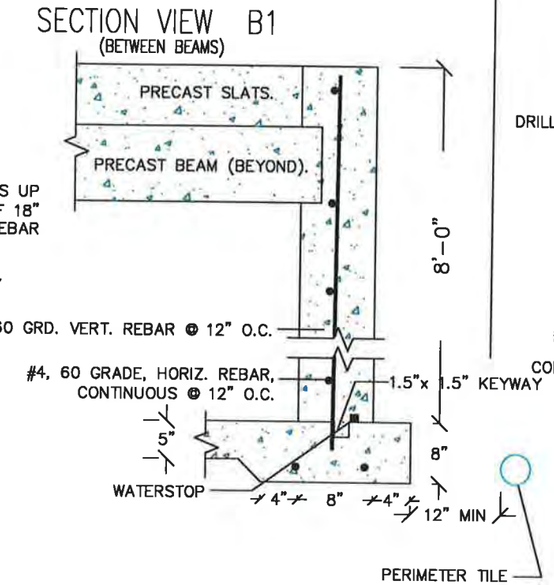
(A) SIDE WALL



(B) END WALL BRACING & BEAM POCKET

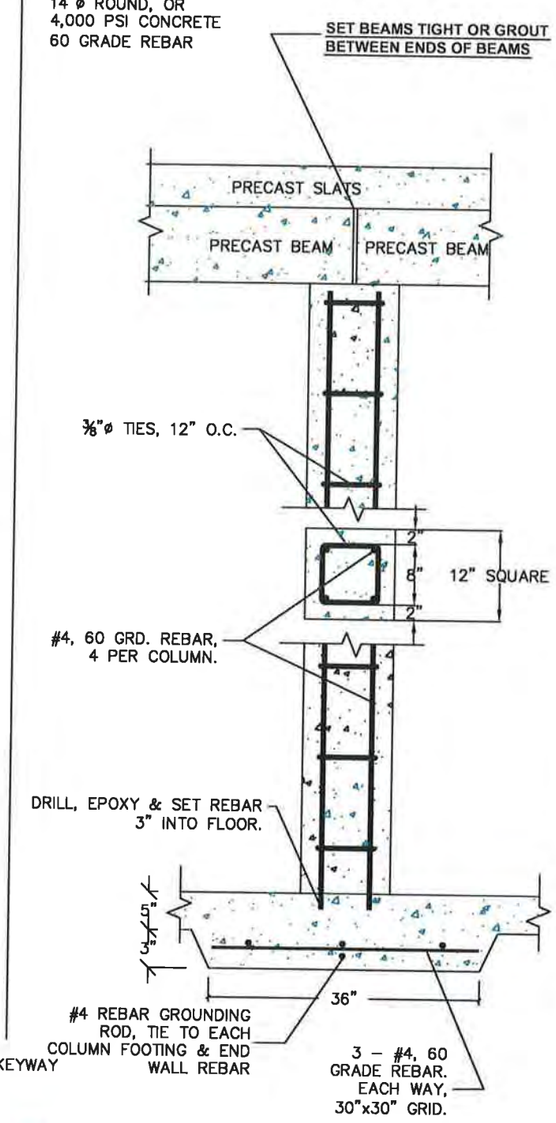






*IMPORTANT NOTE- PRECAST DIMENSIONS CHANGE BETWEEN SUPPLIERS. PRECAST DIMENSIONS MUST BE VERIFIED WITH THE OWNER PRIOR TO CONSTRUCTION.

(C) COLUMN DETAIL



SHEET 5/8

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Date 2/8/24	Drawn D.D.A.

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PUMP OUT PLAN

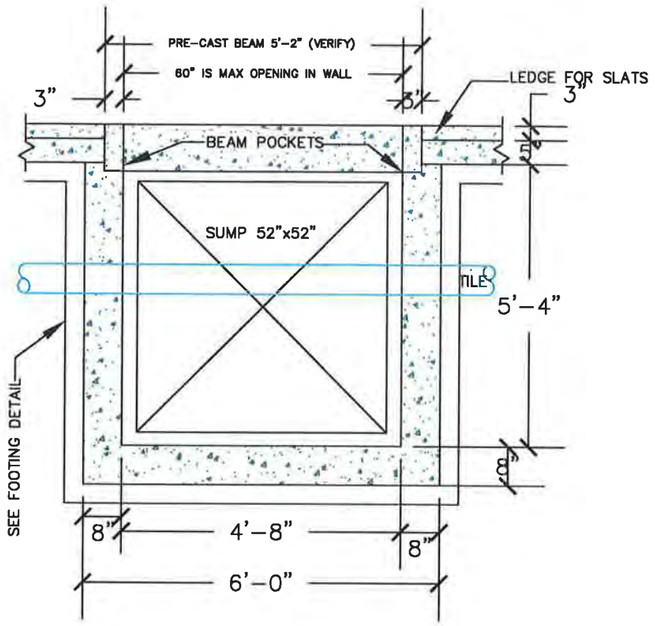
BEAM MAY BE CAST-IN-PLACE WITH STEM WALL.
MINIMUM OF 2-#4, 60 GRADE REBARS IN BOTTOM OF BEAM.

PUMPOUT FOOTINGS AND FLOOR SHALL BE POURED WITHOUT CONSTRUCTION JOINTS-SEE DETAIL 1.

KEYWAY UNDER WALLS SHALL BE CONTINUOUS AROUND CORNERS AND PUMPOUTS.

CONSTRUCTION JOINTS ARE NOT TO BE WITHIN THREE (3) FEET OF A PUMPOUT.

CAUTION: DO NOT DRIVE STAKES THRU PERIMETER TILE.

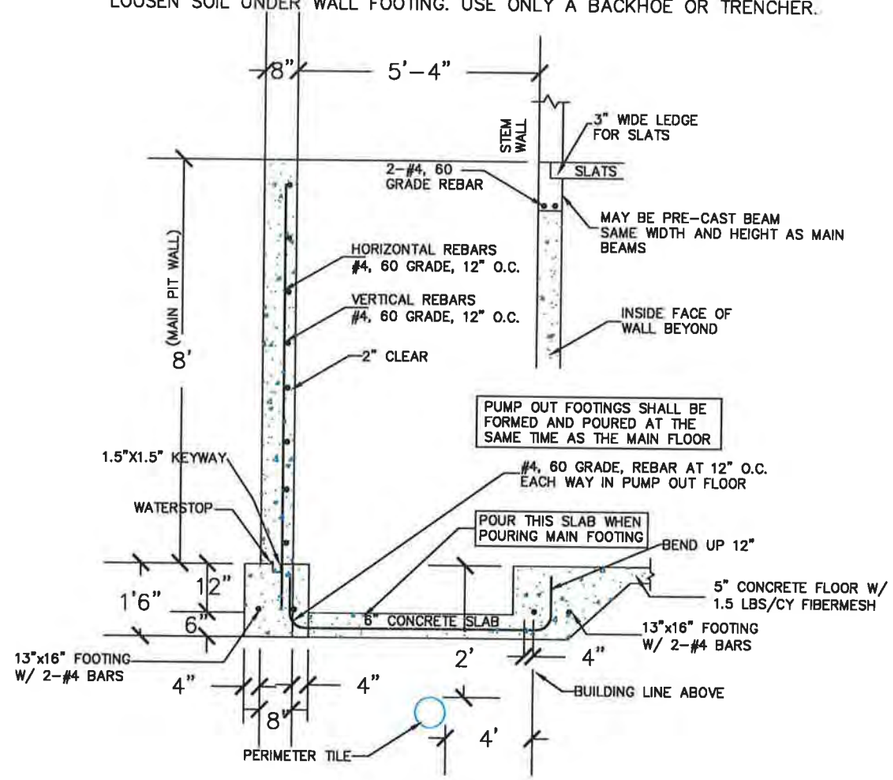


PUMP OUT SECTION

8" THICK WALLS FOR 8'-0" DEEP PITS.

LOCATE PERIMETER TILE SO SIDE OF TRENCH BECOMES SIDE OF GENERAL EXCAVATION FOR PIT.

TO DEWATER THE SITE IN ADVANCE OF GENERAL EXCAVATION SHALL BE DECIDED BY THE OWNER, ENGINEER AND CONTRACTOR AT TIME OF THE PRECONSTRUCTION MEETING. IF THE TILE IS INSTALLED IN ADVANCE OF EXCAVATION, IT SHOULD BE INSTALLED 4 FT OUT FROM THE PIT WALL AND AT LEAST 2 FT BELOW THE TOP OF THE PIT FLOOR (IN ORDER TO GO UNDER PUMPOUT SUMP). SLOPE THE TILE AT 0.2 FT PER 100 FT TO THE SUMP OR DAYLIGHT OUTLET. PLOW TYPE MACHINES SHALL NOT BE USED WHEN INSTALLING PERIMETER TILE AROUND CONCRETE MANURE STORAGE STRUCTURES PRIOR TO GENERAL EXCAVATION, BECAUSE IT WILL LOOSEN SOIL UNDER WALL FOOTING. USE ONLY A BACKHOE OR TRENCHER.



SHEET 6/8

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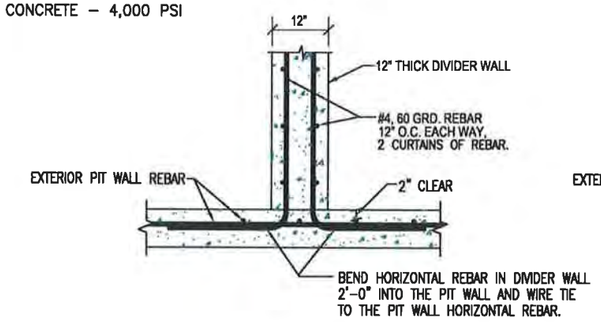
12" DIVIDER WALL

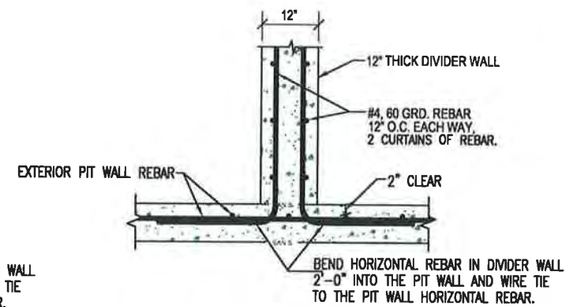
STEEL GRADE - 60
CONCRETE – 4,000 PSI

SECTION 1

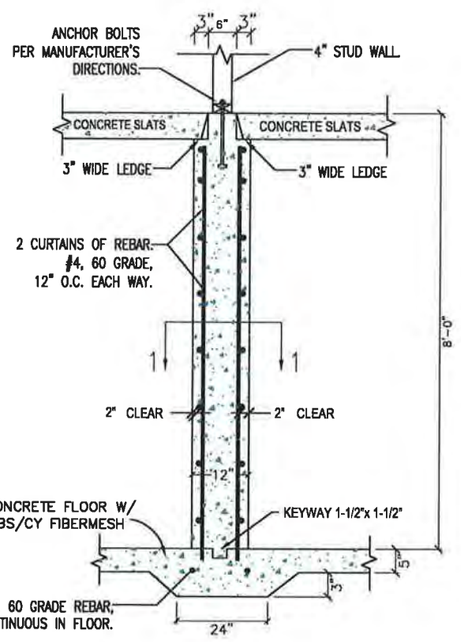


STEEL GRADE - 60
CONCRETE – 4,000 PSI

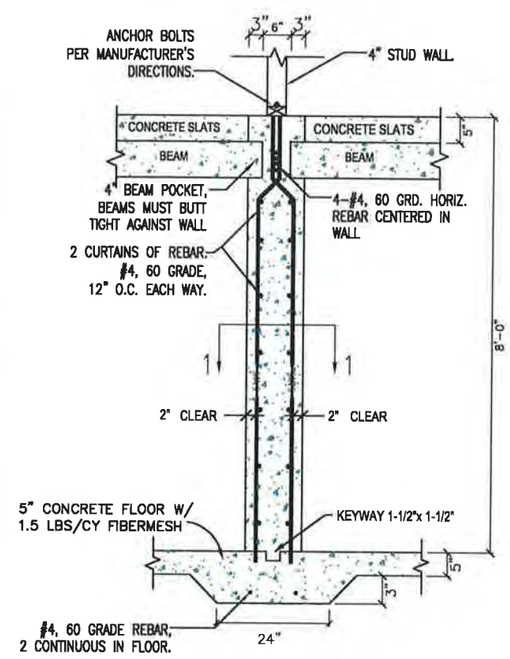
SECTION 1

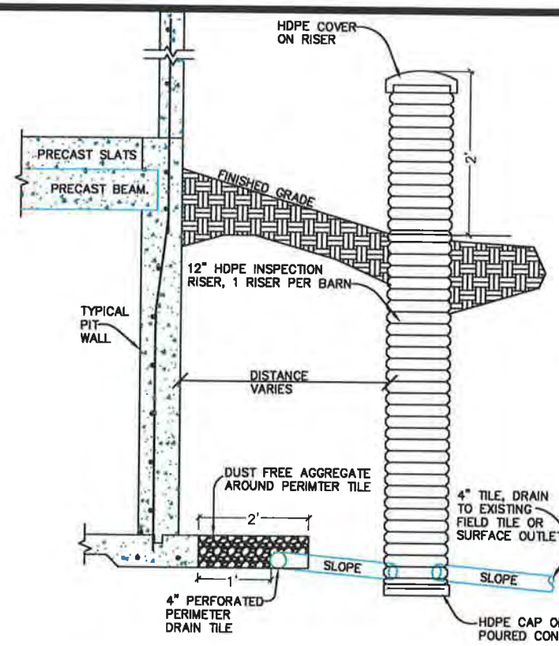


SECTION VIEW



SECTION VIEW



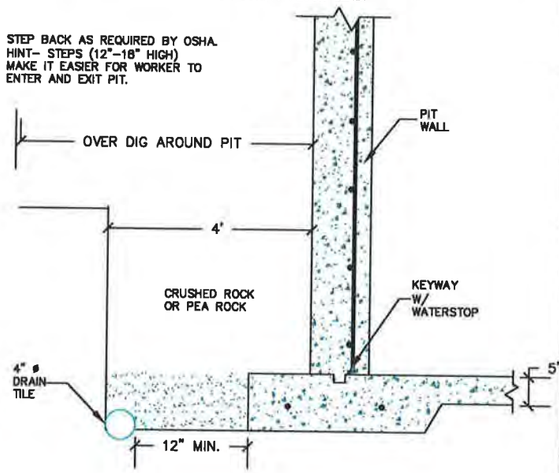


INSPECTION RISER DETAIL-SECTION VIEW

*IMPORTANT NOTE - PRECAST DIMENSIONS CHANGE BETWEEN SUPPLIERS. PRECAST DIMENSIONS MUST BE VERIFIED WITH THE OWNER PRIOR TO CONSTRUCTION.

PERIMETER TILE

PERIMETER TILE WITH PEA ROCK COVER INSTALLED BY CONCRETE CONTRACTOR BEFORE POURING FLOOR SLAB.

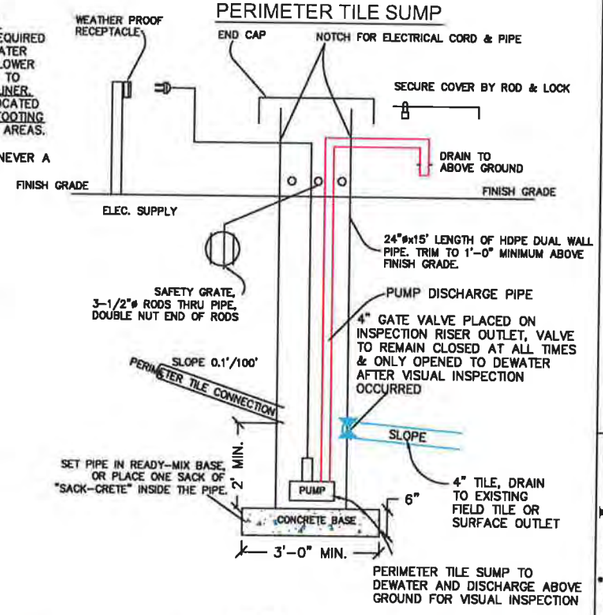


PERIMETER TILE SYSTEM

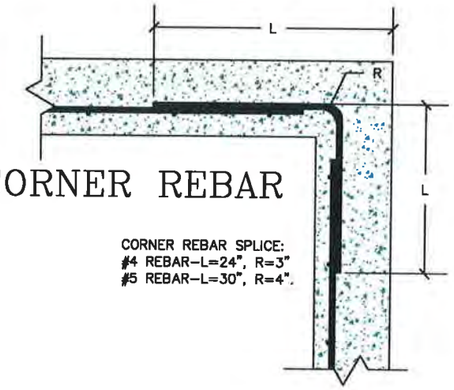
WHERE A PERIMETER TILE SYSTEM IS REQUIRED TO CONTROL THE ELEVATION OF THE WATER TABLE OR SATURATED SOILS, IT MUST LOWER THE WATER TABLE OR SATURATED SOIL TO BELOW THE BOTTOM OF THE STORAGE LINER. PERIMETER DRAINAGE TILE SHALL BE LOCATED AT LEAST ONE FOOT OUTSIDE OF THE FOOTING OF CONCRETE-LINED MANURE STORAGE AREAS.

SUMP PUMPS SHALL BE REQUIRED WHENEVER A GRAVITY OUTLET IS NOT AVAILABLE.

PERIMETER TILE SUMP

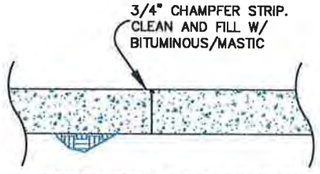


CORNER REBAR

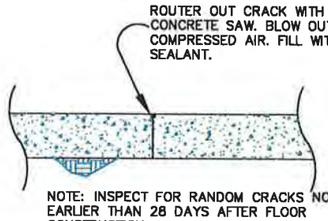


CORNER REBAR SPLICE:
#4 REBAR-L=24", R=3"
#5 REBAR-L=30", R=4".

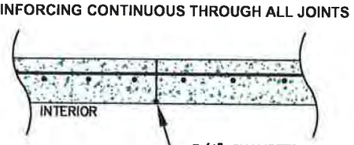
CONSTRUCTION JOINTS



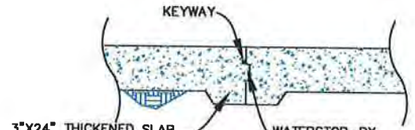
CONTRACTION JOINT DETAIL (SLAB)



RANDOM CRACK REPAIR FOR CONCRETE PIT FLOOR
(NOT TO SCALE)



CONTRACTION JOINT DETAIL (WALL)



CONSTRUCTION JOINT DETAIL (SLAB)

CONSTRUCTION JOINT DETAIL (WALL)

SHEET 7/8

Project No.	24-005
Checked By	N.J.R.
Date	2/8/24
Drawn	D.D.A.

LASS FARMS INC.
PROPOSED SWINE CONFINEMENT BARN
SW 1/4, SECTION 15, T103N, R44W
ROCK COUNTY, MINNESOTA

ProAg Engineering, Inc.
77402 U.S. Highway 71, P.O. Box 181
Jackson, MN 56143
(507) 849-7200

CONCRETE & STRUCTURAL NOTES:

A. GENERAL
1.) NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS TAKE PRECEDENCE OVER THESE STRUCTURAL NOTES.
2.) THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS PRIOR TO STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPENCIES.
3.) IN NO CASE SHALL DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THE STRUCTURAL DRAWINGS.
4.) DESIGN CHANGES MUST BE APPROVED IN WRITING BY BOTH THE OWNER AND ENGINEER BEFORE PROCEEDING WITH THE WORK. SOME DESIGN CHANGES MAY ALSO REQUIRE MPCA, COUNTY FEEDLOT OFFICER AND/OR NRCS APPROVAL.
5.) ANCHOR BOLTS SHALL BE SET AS SPECIFIED BY BUILDING CONTRACTOR.
6.) ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING CODES:
   a. UNIFORM BUILDING CODE (UBC)
   b. MINNESOTA STATE BUILDING CODE
   c. AMERICAN CONCRETE INSTITUTE (ACI)
   d. CONCRETE REINFORCING STEEL INSTITUTE (CRSI) MANUAL OF STANDARD PRACTICE

B. DRAIN TILE
1.) BEFORE ANY PIT CONSTRUCTION, TRENCH AND INSTALL DRAIN AROUND THE PROPOSED PIT, THE DRAIN TILE FLOW LINE MUST BE A MINIMUM OF 12" BELOW THE TOP.
2.) THE DRAIN TILE SHALL BE HEAVY DUTY PERFORATED POLYETHYLENE TUBING 4"ø TILE WITH PEA ROCK COVER OR 4"ø TILE W/ FABRIC SLEEVE AND SAND/GRAVEL COVER.
3.) CONNECT THE DRAIN TILE TO AN EXISTING FARM TILE IF AVAILABLE; DISCHARGE TO SURFACE DRAINAGE; OR DRAIN TO A SUMP AND PUMP TO SURFACE.

C. TEMPORARY BRACING AND BACKFILL
1). PROVIDE TEMPORARY LATERAL SUPPORT FOR ALL WALLS WHERE GRADE VARIES ON THE TWO SIDES UNTIL THE PERMANENT STRUCTURAL SUPPORT SYSTEM IS IN PLACE.
2.) BACKFILL ONLY AFTER THE FLOOR SLATS OR SOLID FLOOR HAS BEEN INSTALLED.
3.) DO NOT BACKFILL AGAINST WALL UNTIL SLATS ARE INSTALLED AND GROUTED.
4.) CONCRETE IN ALL WALLS SHALL BE ALLOWED TO CURE FOR A MINIMUM OF 14 DAYS BEFORE BACKFILL IS PLACED AGAINST WALLS. EXERCISE CAUTION WHEN BACKFILLING TO BRING UP THE LEVEL UNIFORMLY ON ALL SIDES OF TANKS AND PITS.

D. FOOTINGS, FOUNDATIONS & SUBGRADE
1.) SOIL BEARING DESIGN VALUE;.....3000 PSF (ASSUMED) ON VIRGIN SOIL OR COMPACTED FILL FOR FOOTINGS.
2.) PROTECT FOUNDATION EXCAVATIONS FROM FROST. DO NOT PLACE CONCRETE ON FROZEN GROUND.
3.). EXISTING DISTURBED SUBGRADE SHALL BE RECOMPACTED TO 95 % OF STANDARD PROCTOR DENSITY.
4.) ALL FILL UNDER FOOTINGS AND SLAB SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95 % OF MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T-180.
5.) SAND FILL AS REQUIRED FOR LEVELING SUBGRADES SHALL BE PROVIDED AT ALL SLAB ON GRADE AREAS.

E. REINFORCED CONCRETE
1.) ALL CONCRETE AND REINFORCING WORK SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE'S" STANDARD BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", (ACI 318-05)
2.) CONCRETE WORK SHALL CONFORM TO ALL THE REQUIREMENTS OF ACI 301.
3.) CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF f'C=3500 PSI FLOOR, 4000 PSI WALLS
4.) WATER CEMENT RATIO SHALL BE 0.45 MAXIMUM
5.) CEMENT SHALL CONFORM TO ASTM C150, TYPE 1.
6.) COARSE AGGREGATE SHALL BE 1".
7.) READY-MIX CONCRETE SHALL BE MIXED & DELIVERED IN ACCORDANCE WITH ASTM C94.
8.) SLUMP SHALL BE MAXIMUM OF 5"
9.) AIR CONTENT SHALL BE 5% TO 7%
10.) CONCRETE TO BE CURED WITH SONOBORN CURE AND SEAL OR EQUAL.
11.) ADMIXTURES MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER FOR THE PURPOSE OF INCREASING THE WORKABILITY BUT NOT TO REDUCE THE SPECIFIED MINIMUM CEMENT CONTENT. CALCIUM CHLORIDE SHALL NOT BE USED.
12.) FLOORS SHALL BE 5" THK. WITH WITH 1-1/2#/CY OF 3/4" FIBRILLATED POLYPROPOLENE FIBERS.
13.) REINFORCING STEEL SHALL BE PLACED IN THE CENTER OF CONCRETE PLACEMENT UNLESS NOTED OTHERWISE. STEEL MUST BE SUPPORTED WITH APPROPRIATE CHAIRS OR CONCRETE BLOCKS.
14.) IF CONSTRUCTION JOINTS NECESSARY, COORDINATE LOCATION WITH ENGINEER.
15.) CONSTRUCTION JOINTS ARE NOT PERMITTED IN THE END WALLS OR WITHIN 3 FT. OF A PUMPOUT. THE PUMPOUT FLOOR AND FOOTING MUST BE FORMED AND POURED WITH THE PIT FLOOR. THE PUMPOUT WALLS MUST BE FORMED AND POURED WITH THE PIT WALLS.

F. STEEL
1.) F'Y = GRADE 60 (60,000 PSI) DEFORMED STEEL.
2.) REINFORCING SHALL BE CONTINUOUS AND LAP A MINIMUM OF 40 BAR DIAMETER UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL BE LAPPED A MINIMUM OF EIGHT INCHES.
3.) MINIMUM BENDING RADIUS SHALL BE 6 BAR DIAMETERS.
4.) MINIMUM BEND AROUND CORNERS FOR #4 BARS - 24", FOR #5 BARS - 30".
5.) ALL CONCRETE IS REINFORCED UNLESS SPECIFICALLY CALLED OUT AS "NOT REINFORCED". REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH THE SAME STEEL AS IN SIMILAR SECTIONS OR AREAS.
6.) THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR FOR REINFORCEMENT UNLESS OTHERWISE NOTED:
   WHERE CAST AGAINST EARTH ..... 3 INCHES
   WALLS AND SLABS (EXPOSED TO EARTH OR WEATHER)..... 2 INCHES
   OTHER..... 2 INCHES

G. TOLERANCES & QUALITY CONTROL
1.) COLUMN FINISH ELEVATIONS SHALL BE + OR - 1/4" FROM DESIGN ELEVATION.
2.) WALL ALIGNMENT (HORIZONTAL) SHALL DEVIATE NO MORE THAN 1/4" IN 10 FT. NO MORE THAN 3/4" OVER THE FULL LENGTH OF WALL.
3.) WALL BEARING LEDGE ELEVATIONS SHALL BE + OR - 1/4"FROM DESIGN ELEVATION IN 10 FT. AND NO MORE THAN 1/2" OVER THE FULL LENGTH OF WALL.
4.) OVERALL FOUNDATION LENGTH & WIDTH DIMENSIONS AND DIAGONAL DIMENSIONS SHOULD BE WITHIN 1/2" OF PLAN DIMENSIONS.
5.) HONEYCOMB AND SHRINKAGE CRACKS WIDER THAN THE THICKNESS OF A PLASTIC CREDIT CARD SHALL BE FILLED WITHIN 48 HOURS WITH CEMENT GROUT SLURRY MOPPED INTO THE CRACKS. DO THE GROUTING OF FLOOR CRACKS BEFORE DIRT AND EQUIPMENT ARE BROUGHT ON THE FLOOR.

H. ELECTRICAL GROUND
1.) INSTALL REINFORCING BARS AS PER ELECTRICAL CODE GROUND AT A MINIMUM LOCATIONS AS PER ELECTRIC CODE NOTIFY THE LOCAL ELECTRICAL INSPECTOR FOR INSPECTION PRIOR TO PLACING CONCRETE.

I. COLD WEATHER CONCRETING
1.) WHEN, FOR MORE THAN 3 CONSECUTIVE DAYS, THE MEAN DAILY TEMPERATURE DROPS BELOW 40° F., THE CONTRACTOR SHALL PLACE AND PROTECT THE CONCRETE IN ACCORDANCE WITH ACI 306.

J. HOT WEATHER CONCRETING
1.) WHEN IT IS LIKELY THAT TEMPERATURE BETWEEN 75° F AND 100°F WILL BE APPROACHED OR EXCEEDED; THAT LOW RELATIVE HUMIDITY IS PRESENT; OR WIND VELOCITY WILL EXCEED 10 MPH, THE CONTRACTOR SHALL PLACE & PROTECT THE CONCRETE IN ACCORDANCE WITH CHAPTERS 4 & 5 OF ACI 305.

K. WATERSTOPS & SEALANTS
1.) WATERSTOP TO BE RIBBED PVC, OR BENTONITE ROLL, AT CONTRACTORS OPTION.
2.) 3/8"x3/4" BENTONITE/BUTYL RUBBER EQUAL TO WATERSTOP-RX BY AMERICAN COLLIED COMPANY WATERSTOPS SHALL BE PLACED IN ALL CONSTRUCTION JOINTS ON THE FLOOR AND IN THE WALLS. LOCATION AND NUMBER OF CONSTRUCTION JOINTS ARE TO BE DETERMINED BY THE CONTRACTOR. WATERSTOPS SHALL BE SUITABLE FOR USE WITH MANURE.
3.) MAKE PVC WATERSTOP SPLICES WITH SPLICING IRON.
4.) SEALANT TO BE ELASTOMETRIC POLYURETHANE OR BITUMINOUS ASPHALT BASED.

*IMPORTANT NOTE- PRECAST DIMENSIONS CHANGE BETWEEN SUPPLIERS. PRECAST DIMENSIONS MUST BE VERIFIED WITH THE OWNER PRIOR TO CONSTRUCTION.

SLAT LEDGES & STEM WALL CONCRETE NOTES

1.) ANY SLAB ON GRADE WHICH WILL HAVE A VERTICAL WALL ON TOP SHALL HAVE A KEYWAY AND WATERSTOP AT SLAB/WALL INTERFACE.

2.) WATERSTOP TO BE BENTONITE ROLL OR RIBBED PVC @ CONTRACTORS OPTION.

3.) SLAT LEDGES MUST BE 3" WIDE x 5 1/2" HIGH.

4.) 12" CENTER DIVIDER WALLS: THE 3" WIDE x 5 1/2"LEDGE ON BOTH SIDES OF THE 12" WALL MUST BE FORMED AND POURED WITH THE WALL.

5.) 8" OUTSIDE WALLS: THE 3" WIDE x 5 1/2" LEDGE ON INSIDE SIDE OF 8" WALL MUST BE FORMED AND POURED WITH WALL.

DO NOT POUR WALL AND SET SLATS ON TOP. DO NOT EVEN ASK, BECAUSE THE 5 1/2" HIGH STEM IS NEEDED FOR SLATS BRACING THE TOP OF WALL

6.) A CONSTRUCTION JOINT IS PERMITTED BETWEEN THE PIT WALL AND STEM WALL, BUT THE CONSTRUCTION JOINT MUST BE EQUAL OR HIGHER THAN THE TOP OF THE PRE-CAST SLATS.

SHEET 8/8

Project No.	24-005
Checked By	N.J.R.
Date	2/8/24
Drawn	D.D.A.

LASS FARMS INC.
PROPOSED SWINE CONFINEMENT BARN
SW 1/4, SECTION 15, T103N, R44W
ROCK COUNTY, MINNESOTA

ProAg Engineering, Inc.
77402 U.S. Highway 71, P.O. Box 181
Jackson, MN 56143
(507) 849-7200

SUBSURFACE SOIL LOG

PROJECT: Lass Farms Inc.

PROJECT NO: 24-005

DRILLED BY: Contractor

CLASSIFIED BY: Travis Anderson

BORING NO: 1

DATE DRILLED: 1/26/2024

ProAg Engineering, Inc.
77402 Highway 71 P.O. Box 181
Jackson, MN 56143 (507-849-7200)

ELEVATION (USGS)		DEPTH BELOW SURFACE	SOIL DESCRIPTION	USCS Symbol
1540.3	GRADE			
	0	--	(TOPSOIL) DARK BROWN SILTY CLAY LOAM (FROST 0-18")	CL
~NO GROUNDWATER MEASURED, HOLE WAS DRY ON 1/26/24	2	--	BROWN SILTY CLAY LOAM, TRACE Fe CONCRETIONS, TRACE FINE SAND, MEDIUM CONSISTENCY	CL
	4	--	BROWN SANDY CLAY LOAM, TRACE GRAY MOTTLES, TRACE Fe CONCRETIONS, MEDIUM CONSISTENCY	CL
1535.0	PROPOSED BOTTOM OF PIT			
	6	--		
	8	--		
	10	--	(GLACIAL TILL) BROWNISH YELLOW SILTY CLAY LOAM, TRACE GRAY MOTTLES, TRACE Fe CONCRETIONS, STIFF CONSISTENCY	CH
1528.3	BOTTOM OF TEST HOLE	12	--	
	14	--	*TEST HOLE DUG & FILLED BY EXCAVATOR TO PREVENT VERTICAL GROUNDWATER TRANSPORT, PER MN RULES*	
	16	--	*SOILS ARE SUITABLE FOR PROPOSED PIT FOUNDATION	
	18	--	**PERIMETER TILE REQUIRED**	
	20	--		
	22	--		
	24	--		
	26	--		
	28	--		
	30	--		
	32	--		

SUBSURFACE SOIL LOG

PROJECT: Lass Farms Inc.

PROJECT NO: 24-005

DRILLED BY: Contractor

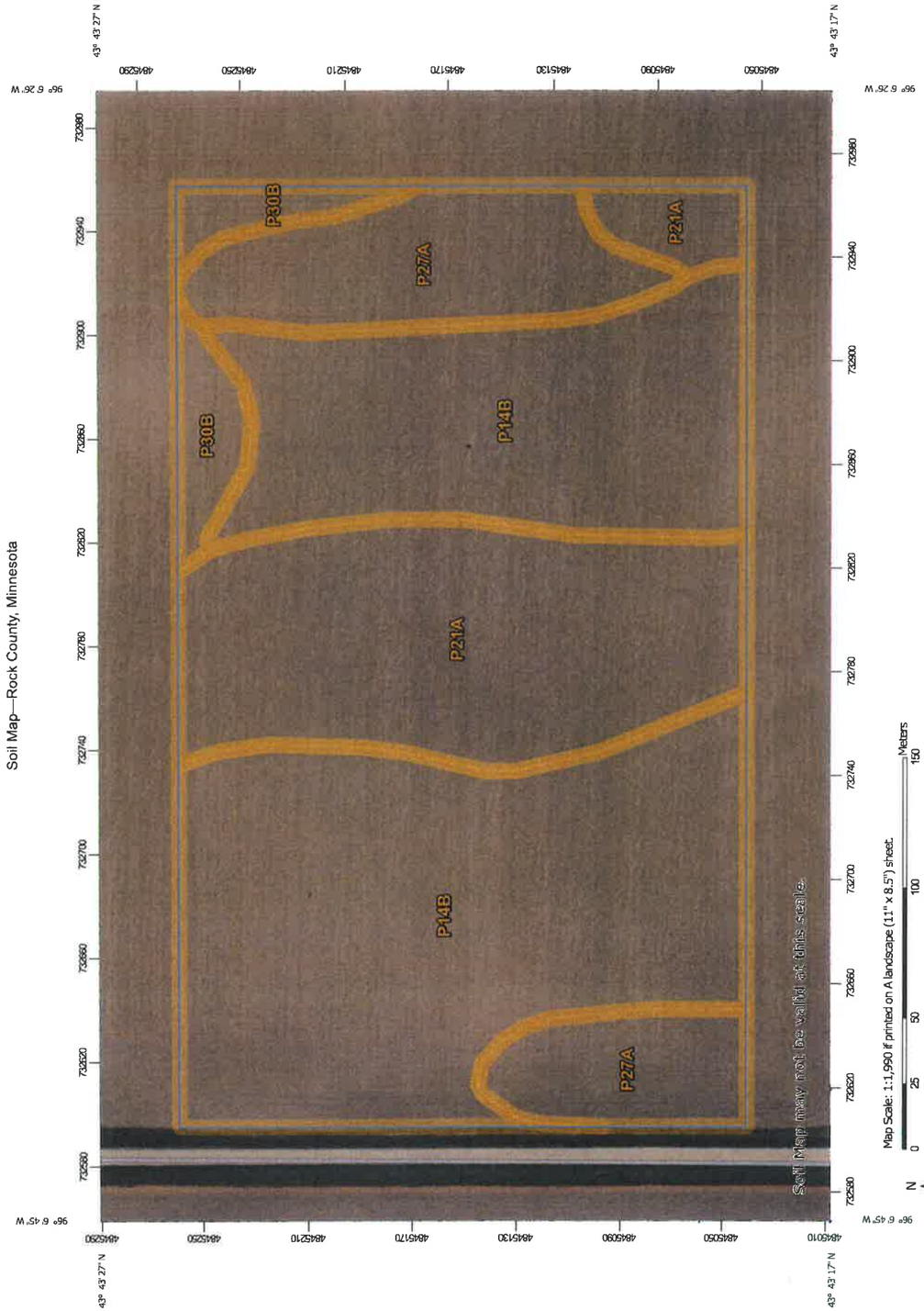
CLASSIFIED BY: Travis Anderson

BORING NO: 2

DATE DRILLED: 1/26/2024

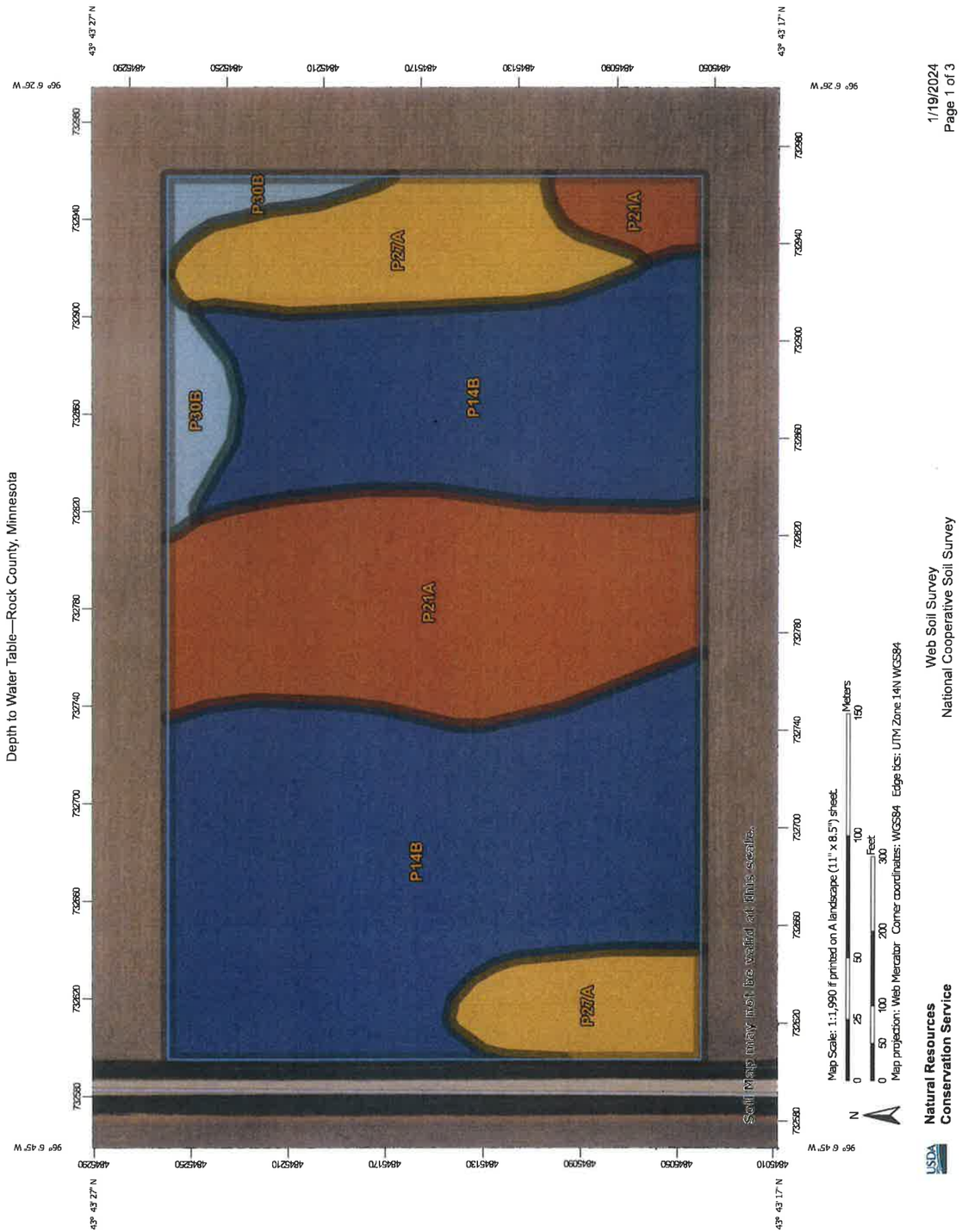
ProAg Engineering, Inc.
77402 Highway 71 P.O. Box 181
Jackson, MN 56143 (507-849-7200)

ELEVATION (USGS)		DEPTH BELOW SURFACE	SOIL DESCRIPTION	USCS Symbol
1539.1	GRADE			
	0	--	(TOPSOIL) DARK BROWN SILTY CLAY LOAM (FROST 0-18")	CL
~NO GROUNDWATER MEASURED, HOLE WAS DRY ON 1/26/24	2	--	BROWN SILTY CLAY LOAM, TRACE Fe CONCRETIONS, TRACE FINE SAND, MEDIUM CONSISTENCY	CL
1535.0	PROPOSED BOTTOM OF PIT	4	--	
	6	--	BROWN SANDY CLAY LOAM, TRACE GRAY MOTTLES, TRACE Fe CONCRETIONS, MEDIUM CONSISTENCY	CL
	8	--		
	10	--	(GLACIAL TILL) BROWNISH YELLOW SILTY CLAY LOAM, TRACE GRAY MOTTLES, TRACE Fe CONCRETIONS, STIFF CONSISTENCY	CH
1527.1	BOTTOM OF TEST HOLE	12	--	
	14	--	*TEST HOLE DUG & FILLED BY EXCAVATOR TO PREVENT VERTICAL GROUNDWATER TRANSPORT, PER MN RULES*	
	16	--	*SOILS ARE SUITABLE FOR PROPOSED PIT FOUNDATION	
	18	--	**PERIMETER TILE REQUIRED**	
	20	--		
	22	--		
	24	--		
	26	--		
	28	--		
	30	--		
	32	--		



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
P14B	Flandreau silt loam, 2 to 6 percent slopes	11.0	55.8%
P21A	Marcus silty clay loam, 0 to 2 percent slopes	4.9	25.0%
P27A	Primghar silty clay loam, 1 to 3 percent slopes	3.0	15.1%
P30B	Sac silty clay loam, loam substratum, 2 to 5 percent slopes	0.8	4.2%
Totals for Area of Interest		**19.7**	**100.0%**



Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
P14B	Flandreau silt loam, 2 to 6 percent slopes	>200	11.0	55.8%
P21A	Marcus silty clay loam, 0 to 2 percent slopes	0	4.9	25.0%
P27A	Primghar silty clay loam, 1 to 3 percent slopes	45	3.0	15.1%
P30B	Sac silty clay loam, loam substratum, 2 to 5 percent slopes	122	0.8	4.2%
Totals for Area of Interest			**19.7**	**100.0%**

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

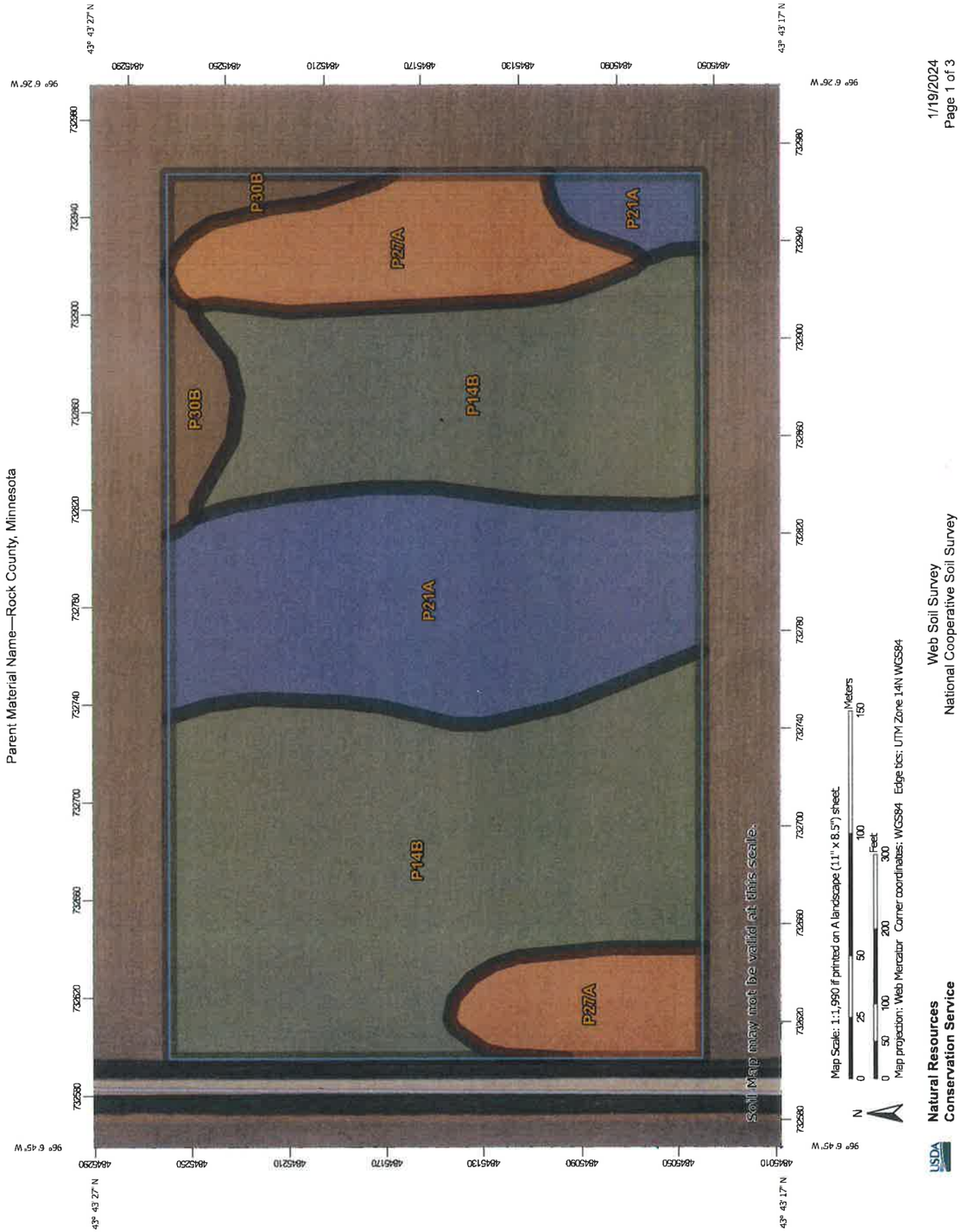
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December



Parent Material Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
P14B	Flandreau silt loam, 2 to 6 percent slopes	loess over outwash	11.0	55.8%
P21A	Marcus silty clay loam, 0 to 2 percent slopes	fine-silty loess	4.9	25.0%
P27A	Primghar silty clay loam, 1 to 3 percent slopes	loess	3.0	15.1%
P30B	Sac silty clay loam, loam substratum, 2 to 5 percent slopes	fine-silty loess over till	0.8	4.2%
Totals for Area of Interest			**19.7**	**100.0%**

Description

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.

Rating Options

Aggregation Method: Dominant Condition

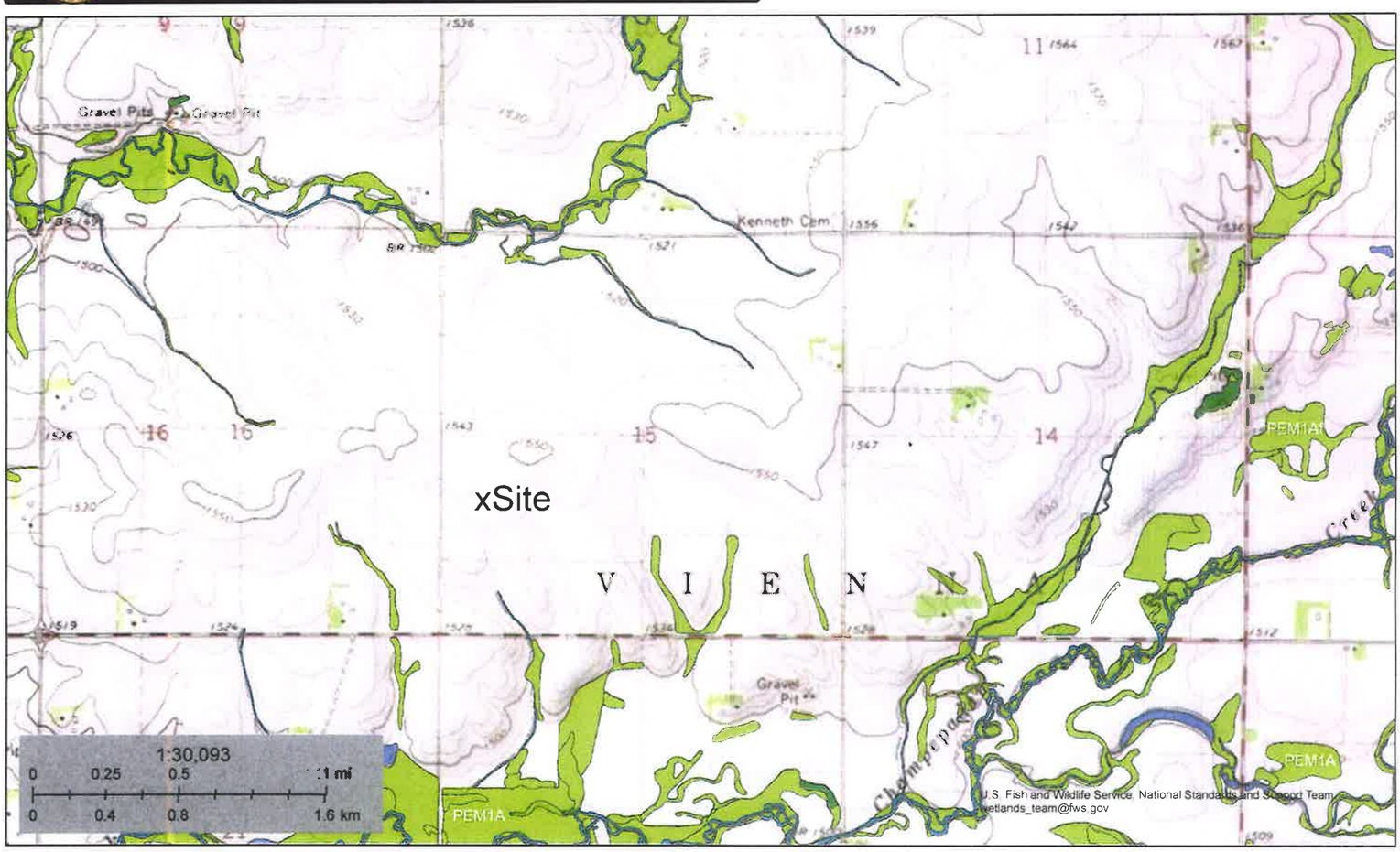
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands



January 19, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

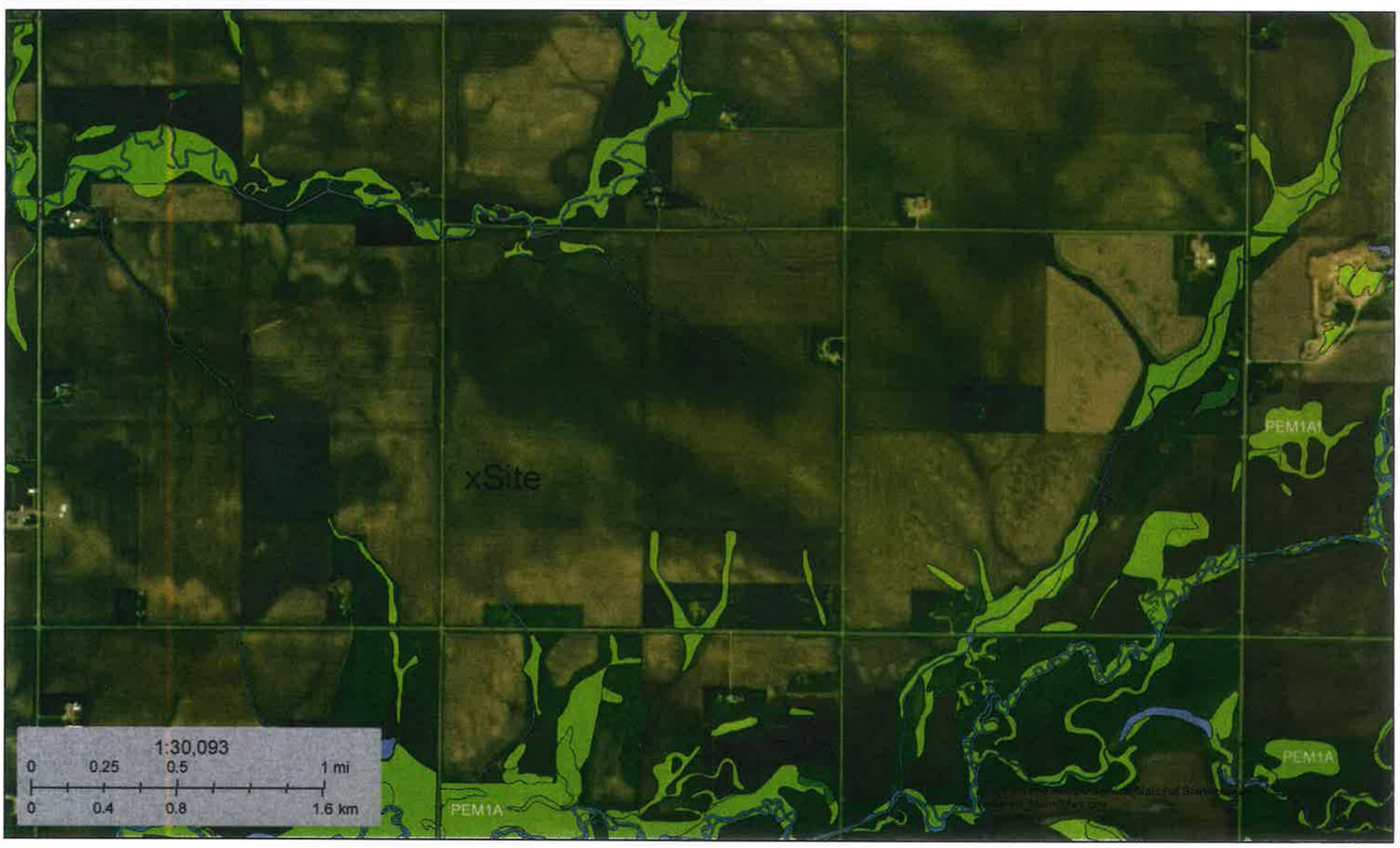
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands



January 19, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
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- Lake
- Other
- Riverine

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National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

ProAg ENGINEERING, INC.
77402 U.S. Hwy 71
P.O. Box 181
Jackson, MN 56143
507-841-3269
nic@proageng.com

TO: OWNER

INSTRUCTIONS FOR OWNER TO FOLLOW BEFORE—DURING—AFTER CONSTRUCTION OF MANURE STORAGE

1. Distribute only complete sets of plans and specifications: Keep a record of who gets plans because you may need to retrieve them later. Please call if you need more copies.
2. Ask your feedlot officer to send a copy of your feedlot permit to ProAg Engineering, Inc.. We need this so we know who issued the permit and where reports should be sent.
3. Each Contract for construction of the liquid manure storage (Concrete, tiling earthen basins) should include the following statement:
   - 10% of the contract amount will be held back until the MPCA Construction Inspection of Liquid Manure Area form has been signed by the Contractor and returned to the Engineer and Engineer certifies that the contract work is complete.
4. **A Pre-Construction Meeting shall be held before you start construction.** The pre-construction meeting must include the Owner, Engineer, Excavating Concrete Contractors, and County Feedlot Officer. If you start construction without a pre-construction meeting, we reserve the right to cancel our contract
5. You must notify ProAg Engineering, Inc. and the Permitting Agency:
   1. Three days before you start construction.
   2. Three days before you backfill.
   3. Within three days of completion.
6. Pictures should be taken as the work progresses. This is good protection for you because if problems develop later, you will have a record of what was done. If the Engineer finds problems during inspection, he may request copies of the pictures. Close up pictures showing details are more important than panoramic views. Suggest using single use or digital cameras.
7. MPCA requires that the design engineer submit a written construction report. We cannot do our final inspection and impact hammer test until the concrete is at least 28 days old and all accessory details shown on plans and specs are completed. Then allow at least 2 weeks for us to inspect and write our report.
8. **DO NOT** make a final payment to contractor until the Engineer's certifies that work is complete.
9. **DO NOT put manure in the structure until you have received Engineer's Construction Report.**

INSPECTIONS: ***ProAg Engineering, Inc. must inspect before pouring concrete**

Owner:_____

Location:_____

Barn or Tank Identification:_____
Date_____Comment_____Initials
Subgrade (No standing water or mud, forms set for proper floor thickness)

_____
Floor Reinforcement (Grade, size, clean, location)

_____
*Pouring Floor (Concrete, quality, take test cylinder

_____
Floor (Cracks sealed)

_____
Perimeter Tile, Monitoring Port or Sump & Pump, Tile Outlet (Functional before forming walls)

_____
Wall Forms and Reinforcement (Grade of steel, spacing, vertical reinforcement secured)

_____
*Pouring Walls (Concrete quality, take test cylinders)

_____
Water Supply Lines (None permitted through pit floor or walls below the HW line)

_____
Outside of Walls (Honeycomb patched prior to backfilling)

_____
Inside of Walls (Honeycomb patched)

_____
Walls (Do impact hammer test)

_____
Columns (Honeycomb patched)

_____
Beams Grouted (First 3 beams at end walls and each side of solid divider walls

_____
Slats Grouted (Prior to backfilling)

_____
Backfill (Height and slope to drain roof away from barns)

_____
Finish Grading (Roads, drives, storm water catch basins & drainage)

ProAg ENGINEERING, INC.
Nicholaus J. Rowe, P.E.
77402 U.S. Hwy 71
P.O. Box 181
Jackson, MN 56143
507-841-3269
nic@proageng.com

PRE-CONSTRUCTION MEETING

PROJECT: _____ **DATE:** _____

LOCATION: ____1/4, SECTION ____, _____ TWP._____CTY

OWNER: _____ **PHONE:** _____
Owner's Representative _____ **PHONE:** _____ **(to conduct weekly inspections for SWPPP and notify Engineer and Feedlot Officer.)**

GENERAL CONTRACTOR _____
Contact _____ **PHONE:** _____

EXCAVATION CONTRACTOR _____
Contact _____ **PHONE:** _____
Date to start excavation work _____

CONCRETE CONTRACTOR _____
Contact _____ **PHONE:** _____
Date to start concrete work _____

CONCRETE READY MIX _____
Contact _____ **PHONE:** _____

PRE-CAST CONCRETE _____
Contact _____ **PHONE:** _____

GROUTS, BEAMS AND SLATS _____
Contact _____ **PHONE:** _____

FEEDLOT OFFICER _____ **PHONE:** _____

ELECTRICAL INSPECTOR _____ **PHONE:** _____

ENGINEER _____ **PHONE:** _____

PRE-CONSTRUCTION MEETING CHECK LIST

OW-Owner, OR-Owner's Representative, CC-Concrete Contractor, EC-Electrical Contractor, EN-Engineer, EX-Excavator, PC-Precast Supplier

ITEM	RESPONSIBILITY
1) Telephone directory	_____
2) Port-a-potty or Johnny-on-the-spot	_____
3) Storm Water Pollution Prevention Plan, SWPPP, weekly inspections.	_____
4) Stake out buildings and pits	_____
5) Locate underground utilities	_____
6) Call UTILITIES CALL CENTER	_____
7) Notify Engineer three days before starting	_____
8) Notify Engineer three days before backfilling	_____
9) Notify Electrical Inspector for grounding inspections	_____
10) Notify Engineer four hours before each concrete pour	_____
11) Temporary electrical power	_____
12) Temporary Water	_____
13) Telephone service	_____
14) Layout worksite, limits of worksite	_____
15) Equipment and employee parking	_____
16) Dirt stockpile area	_____
17) Construction materials stockpile area(s)	_____
18) Keep traffic off septic drainfield area(s)	_____
19) Security (daytime, night time)	_____
20) Bio-security	_____
21) Refuse disposal dumpster/burn pit	_____
22) Concrete truck wash-out area	_____
23) Does everyone have correct plans?	_____
24) At completion of construction, notify Engineer for final inspection	_____
25) Contractor sign MPCA Construction Report	_____

01001 QUALITY ASSURANCE AND CONTROL PLAN

Work under these specifications is subject to County and MPCA inspection and review.

A. BEFORE STARTING CONSTRUCTION, Owner shall:
   1. Consult the feedlot permit for required submittals, notifications and approvals.
   2. Arrange for pre-construction meeting with engineer, owner and contractors.
   3. Notify engineer, 3 days before starting construction.
   4. Notify permitting agency (MPCA or County) 3 days before starting construction.

B. DURING CONSTRUCTION, Concrete Contractor shall:
   1. Notify Engineer, minimum 4 hrs before each concrete pour.
   2. Wait for Engineer's inspection before pouring concrete.
   3. Concrete testing will occur at a minimum of one sample per 100 yards of placed concrete. Testing will include: Air/Slump/Strength per ASTM standards. Sampled concrete will be later tested at a certified testing facility to determine PSI strength requirements and quality assurance.
   4. If concrete is provided by different supplier or with different mixes, additional testing will be done on the first truck according to ASTM standards. Engineer must be notified immediately if any change does occur.

C. BEFORE POURING CONCRETE PIT FLOORS; the following must be completed:
   1. Contractor give Engineer & Electrical Inspector advance notice.
   2. Engineer inspect subgrade and floor slab thickness (full 5" thick).
   3. Engineer inspect grade and placement of reinforcing steel.
      Steel shall be supported on chairs and tied.
   4. Perimeter tile shall be laid at least 12 inches from pit wall and covered with pea rock or 1/4" – 1/2" crushed rock.
   5. Grounding inspection by Electrical Inspector.

Placement of the perimeter tile and rock cover shall be done by the Concrete Contractor. Tile and rock provided by Owner.

D. BEFORE POURING CONCRETE PIT WALLS; the following must be completed:
   1. Contractor give Engineer & Electrical Inspector advance notice.
   2. Engineer inspect forms, reinforcing steel, waterstop and tile.
   3. Tile system shall be working with (temporary or permanent) automatic sump pump or daylight outlet.
   4. Grounding inspection by Electrical Inspector.

E. BEFORE BACKFILLING; Items 1 thru 4 must be complete, then Owner notify Engineer, and MPCA or CFO and allow 3 work days for inspection.
   1. Concrete contractor shall have patched all cracks and honeycomb.
   2. Pre-cast concrete beams, slats and slabs in place and grouted.
   3. Permanent tile sump pump or inspection port set in-place, (braced if necessary) and ready for backfilling.
   4. All organic debris shall be removed from the overdig area.
   5. Engineer must inspect Items 1 thru 4 and approve before backfilling.

F. UPON COMPLETION, Owner shall notify Engineer when all of these items are done.
   1. Backfilling and finish grading completed.
   2. Pumpout covers and safety signs installed.
   3. Concrete Contractor sign MPCA Construction Inspection Form.

G. ENGINEER shall conduct inspections as specified in Section 03001.B. and submit construction report to Owner and Permitting agency.

01301 DESIGN CHANGES

Design changes must be approved in writing by both the Owner and the Engineer before proceeding with the work. Some design changes may also require MPCA, COUNTY and/or NRCS approval.

01401 SITE SURVEY

The Contractor shall be responsible for layout of the work. Bidders must visit the site and acquaint themselves with existing conditions. Contractor shall CALL GOPHER-1 and be responsible for location of existing utilities in areas of work.

01501 SUBSURFACE INFORMATION

All available data relating to the subsurface material and conditions that are based upon test borings has been obtained by the Engineer for his/her own use in designing the project. Its accuracy or completeness is not guaranteed by the Owner or Engineer and in no event is it to be considered a part of the contact plans or specifications.

02101 EARTHWORK

A. This section applies to earthwork (excavation and backfill) for concrete lined manure storage pits and tanks.

B. Remove one foot (1') of topsoil under all concrete lined manure tanks. Save topsoil for finish grading.

C. Removal of water: All excavations, fill, grading and embankments shall be maintained in a well drained condition at all times. The Contractor shall have temporary pumping equipment on site to remove water from trenches and excavations until the perimeter tile system is working.

D. Any over-excavation for concrete footings and slabs on grade shall be backfilled with compacted sand/gravel.

E. WARNING Engineer must inspect outside of wall and tile and give approval before backfilling. See Section 01001.

F. CLEAN BACKFILL TRENCH. All organic material, cardboard, wood, paper, straw, etc. shall be removed from trench before backfilling. These materials will decay and contaminate the perimeter tile system.

G. Do not backfill against concrete walls until the concrete has cured at least 7 days and all slat and slab floors and beams are in place and grouted to properly brace the walls. Exercise caution when backfilling to bring up the level uniformly on all sides of tanks and pits. Keep all heavy equipment back from the pit and tank walls a distance equal to the depth of the fill. Top off backfill with one foot (1') of topsoil, disk and leave smooth for planting grass.

02401 PERIMETER TILE SYSTEM

MPCA Rules: Where a perimeter tile system is required to control the elevation of the water table or saturated soils, it must lower the water table or saturated soils to below the bottom of the storage liner. Perimeter drainage tile shall be located at least one foot outside of the footing of the concrete-lined manure storage areas. Each manure storage area shall have a dedicated drain tile system with a dedicated riser, manhole or other access for collection of tile-water samples.

A. PERIMETER TILE shall be 4 inch (unless otherwise shown on plans) heavy duty perforated corrugated polyethylene plastic agricultural drain pipe. Tile shall be bedded and covered with pea rock or 1/4" - 1/2" crushed rock.

B. EXISTING TILE LINES intercepted during trenching for the perimeter tile system shall be removed back 10 feet from the tank wall. Existing tiles shall be connected to a suitable by-pass tile system. Do NOT connect existing area tile lines to the perimeter tile system, unless authorized by the Engineer.

C. GRAVITY OUTLET FOR PERIMETER TILE shall not be used where flood water may backup into the tile and contaminate the dedicated sampling port. The tile outlet shall have a rodent guard. The tile outlet may serve as dedicated sampling port, when it is easily accessible and will never by inundated and contaminated by flood water.

D. SUMP PUMPS shall be required whenever a gravity outlet is not available. On sites with more than one below ground manure storage structure, only one common sump pump system is required, but each structure must have an individual sampling port.

E. PUMP shall be submersible type with 20 feet heavy duty electrical cord. Pump shall have an adjustable piggy back float switch. Pump shall be capable of 25 GPM at 15 feet head. Pump shall be fitted with a discharge hose or pipe equal or larger than the discharge of the pump. Furnish and install fused weatherproof disconnect switch, plug and receptacle for each pump. Plug type connections should be used for quick exchange of pumps by farm workers.

F. ALTERNATE PLAN to dewater the site in advance of general excavation shall be decided by the owner, engineer and contractor at time of the pre-construction meeting. If the tile is installed in advance of excavation, it should be installed 4 feet out from the pit wall and at least 2 feet below the top of the pit floor. Slope the tile at 0.2 feet per 100 feet to the sump or daylight outlet. Plow type machines shall NOT be used when installing perimeter tile around concrete manure storage structures prior to general excavation, because it will loosen soil under wall footing. Use only a backhoe or trencher.

G. CLEAN BACKFILL TRENCH. All organic material, cardboard, wood, paper, straw, etc. shall be removed from trench before backfilling. These materials will decay and contaminate the perimeter tile system.

02601 SEWER SYSTEM

A. Sewer system consists of drains from the barns, cleanouts, sewer main, sewer outlet into concrete tanks and earthen basins, and level control between lagoon cells.

B. Gravity sewer pipe (non-pressurized) shall be PVC SDR-35 with gasket or glued joints. Sewer cleanouts (CO) shall be located as shown on the plan.

C. All holes for pipes passing through floors and walls shall be sealed water tight.

02701 FENCE AND GATES

All open top concrete tanks less than 4 feet of wall above ground and earthen manure storage basins shall be fenced. Fence and gates shall be child and livestock proof to prevent unsupervised access.

02801 SIGNS

The Owner shall post warning signs every 100-150 feet around open top tanks and earthen basins: "DANGER, DEEP WATER, KEEP OUT". Post warning sign at each manure pit, reception pit, pumping station and manhole where a 'confined space' may contain manure gases: "DANGER, POISONOUS GAS IN PIT, KEEP OUT".

02901 OTHER WORK

The Owner shall be responsible for putting child-proof fences around open top tanks and child-proof covers on all sumps, pump out ports and providing and utilizing safety guard fences around pump outs when open.

03000 PRECAST CONCRETE

A. The Precast manufacturer shall submit design data for checking load capacity of the precast sytem or an Engineer's Certification that the pre-cast components meet the following design loads. For design of beams, slabs and slats refer to Concrete Manure Storages Handbook, MWPS-36, by Midwest Plan Service.

Type of barn	Solid slabs & beams	Slats
Hog nursery barns	35 psf	50 plf
Hog finishing barns	60 psf	125 plf
Sow & boar barns	65 psf	150 plf
Add an additional 160 plf on the edge(s) of slabs that support farrowing stalls.		
Dairy free-stall barns	100 psf	250 plf
Dairy holding & handling pens	125 psf	312 plf

B. To properly brace pit or tank walls, space between ends of beams, slats and slabs shall be filled with grout and allowed to set 3 days before backfilling.

03001 CAST IN PLACE CONCRETE

A. READY MIX CONCRETE shall meet requirements of ASTM C-94

CONTRACTOR shall give copy of this page to Ready Mix Plant prior to bidding.

Concrete 28 day compressive strenth, f'c,psi		Aggregate, max.	Fibermesh
Footings & Floors	3,500	2"	1.5 lb/cuyd
Walls	4,000	1.5"	none
Columns	4,000	1.5"	none

Slump	3" – 6"
Air entrained	5% - 7%
Water:cement ratio	0.5

Fly Ash, maximum 20% of cementious material. Silica Fume, maximum 20% of cementious material. The combination of fly ash and silica fume shall not exceed 35% of total cementious materials. Fly ash and silica fume will increase resistance to sulfates and reduce permeability. CAUTION: fly ash slows curing, especially in cold weather.

To minimize shrinkage cracks in floors, minimize the amount of cement-water paste and maximize the amount of large aggregate. The use of water reducing plasticizers is encouraged. Contractor may order water reducing or other admixtures, except calcium chloride shall not be used.

B. INSPECTIONS AND TESTING.

1. Inspection before each concrete pour shall include evaluation of subgrade, forms, waterstop, placement and grade of reinforcing steel.

2. Concrete shall be sampled and tested for temperature, entrained air, slump and strength (test cylinders) as per ASTM C-94. Minimum of one sample per 100 yards placed.

3. The Inspector shall forward the inspection report including results of the ASTM tests to the Engineer.

4. The Engineer may request core samples be taken for any concrete of questionable strength or quality. All such concrete found to be defective shall be removed and replaced by the Contractor. If concrete is provided by different supplier or with different mixes, additional testing will be done on the first truck according to ASTM standards. Engineer must be notified immediately if any change does occur.

C. WATERSTOP shall be 3/4" x 3/8" Waterstop RX; 3/4" x 1" Swellstop; Synko-Flex; Hydro-Flex waterstop; Green-streak, Con-Seal CS-231, 220 or 102, or approved equal. These materials come in paper-backed coil or strips and shall be applied as per manufacturer's instructions.

D. All steel in the concrete floors and walls in livestock buildings must form an EQUIPOTENTIAL PLANE and be bonded to the electrical system. This must be coordinated with the Electrical Contractor and will require inspection by the Electrical Inspector prior to each pour of concrete.

E. REINFORCING STEEL shall be deformed bars, fy = 60,000 psi (Grade 60)

Steel details for deformed rerods	#4 bars	#5 bars
Bar bending radius, minimum 6d3"	4"	
Lap splices, minimum 40d	20"	25"
Bend around corner, minimum	24"	30"
Rods through construction joints	30"	36"

F. Steel reinforcement shall be tied and supported on chairs, bolsters, spacers and other devices. Dowels and rods extending through construction joints shall be secured in positions against displacement before concrete is placed and shall be cleaned before subsequent pouring.

G. Preparation of Forms and Subgrade: Prior to placement of concrete, the forms and subgrade shall be free of wood chips, sawdust, debris, standing water, ice, snow, extraneous oil, mortar and other harmful substances or coatings. Placement of concrete on mud, dried earth, un-compacted fill or frozen subgrade will not be permitted.

H. Excavations shall be made to the dimensions and elevations indicated on the drawings. Should excavation through error be carried to a greater depth or size than indicated or required, such additional depth or size shall be filled with concrete at the CONTRACTOR'S EXPENSE.

I. Tolerances: Elevations of floor slabs, top of walls, slat ledges, beam pockets and top of columns ± 1/4". Horizontal length and width of top of wall, location of beam pockets and columns ± 1/2". Straightness of top of wall ± 1/4". Anchor bolt spacing ± 1", centered in stem wall ± 1/2". Thickness of floor slab shall not be less than 5 inches at any point.

J. Shrinkage cracks and honeycomb areas shall be filled with a mixture of masonry cement and water of medium consistency and brushed into the cracks with a stiff brush. Honeycomb areas shall: 1) have loose stones hammered out, 2) be wetted by brushing in a watery paste of masonry cement, 3) and filled and sealed with mixture of masonry cement with sand.

K. COLD WEATHER. When for more than 3 consecutive days the mean daily temperature drops below 40*F, the contractor shall place and protect the concrete in accordance with ACI 306.

L. HOT WEATHER CONSTRUCTION. When it is likely that temperature between 80*F and 100*F will be approached or exceeded; that low relative humidity is present; or wind velocity will exceed 10 mph, the contractor shall place and protect the concrete in accordance with Chapters 4 & 5 of ACI 305.

M. Freeze/Thaw & Non-Use Protection, Long & Short Term After Construction: After the concrete pit is constructed and prior to its use or during non-use, the concrete floor and subgrade must be protected from freezing. If the pit is empty when the ground surface around the pit begins to freeze, a minimum liquid depth of 2 feet must be added to the pit to prevent freezing the subgrade below the floor. If the barn and pit are not being used for any extended period of time throughout the year (minimum of 60 days), a minimum liquid depth of 2 feet must be maintained in the pit to prevent freezing, groundwater pressure heaving, etc. The barn can also be heated during non-use times during cold weather to prevent freezing in the bottom of the pit instead of placing or leaving additional liquid in the pit.

*These are recommendations and are not intended to meet the requirements of a site specific SWPPP for an NPDES Storm Water Discharge Permit.

Description of the site:

The site is currently cropland. The project consists of construction of a swine confinement operation with multiple deep pits. After construction, the area surrounding pit will be planted to grass.

Construction Sequence and Best Management Practices (BMP's)

1. The construction site shall be planted to grass (or cover crop) prior to commencement of construction. See Grass Seeding Guidelines.
2. Areas not to be disturbed during construction shall be staked and marked. Considerable rain water and sediment can be trapped on areas planted to grass and not compacted by construction traffic.
3. Install silt fence as shown on the site plan as needed to prevent erosion.
4. All drive entrances shall be protected with rock. Install road culvert(s) as per highway department specifications.
5. Build a berm to prevent field water from entering the construction site. Make berm 18-24" high with 3:1 side slopes. Use loose top soil from the barn area. A berm is an alternative to using silt fence. The loose soil will absorb a lot of water. Construct the berm on the contour with no channel on the up-hill side of the berm.
6. Temporary stockpiles shall have silt fence or other effective sediment controls and cannot be placed in stormwater conveyances, ditches or grass waterways.
7. Dewatering of pits and basins shall be done in a manner that does not cause nuisance conditions or discharge onto down-slope property. Rain and ground water in pit excavations shall not be allowed to flow direct into open tile, unless the tile inlet has silt fence or other protection or the perimeter tile is installed and covered with pea rock or crushed rock.
8. After backfilling and final grading is done, those areas shall be planted to grass. Slopes steeper than 5:1 shall be mulched. All seeding and mulching operations shall commence within 1 week after completion of each portion of the construction or as soon as soil conditions permit. See Grass Seeding Guidelines.
9. After berms are removed and backfill around barns is re-graded (the following spring) those areas shall be re-seeded to grass.
10. Final stabilization is achieved when soils have been stabilized by a uniform perennial vegetative cover over at least 70% of the pervious area, and all drainage ditches and grass waterways have been stabilized, then the silt fence may be removed.
11. The Owner shall keep the plans and records on file for a minimum of six (6) years.

Maintenance of BMP's

1. Owner shall inspect all BMP's weekly and within 24 hours after each rain event of 1/2" or more in 24 hours.
2. Silt shall be removed from behind silt fences within 24 hours of when the depth reaches 1/3 the height of the fence.
3. Mud and crushed rock are tracked onto public roads, it shall be removed within 24 hours.
4. If sediment escapes the site, off-site accumulations must be removed in a manner and frequency sufficient to minimize off-site impacts.

Assignment of Responsibilities for Execution of the SWPPP

1. Owner shall be responsible for execution, inspection, record keeping and up-dating The SWPPP as required in Appendix C of the NPDES Feedlot Permit. See form for the Storm Water Pollution Prevention Plan Record.
2. Owner shall inspect all BMP's weekly and within 24 hours after each rain event of 1/2" or more in 24 hours and supervise proper maintenance of erosion and sediment control practices.
3. Earthwork Contractor shall be responsible for implement, manage and maintain both temporary and permanent erosion and sediment control BMP's (except seeding) until final grading has been completed on site.
4. Owner shall be responsible for seedbed preparation, planting and mulching operations prescribed by the SWPPP.
5. Changes to the SWPPP shall be approved and recorded by Owner prior to implementation.

Grass Seeding Guidelines

All inplace topsoil shall be salvaged to the maximum extent possible. It is ideal to place 6 inches of top soil in areas to be seeded. Harrowing before and packing with roller after planting will help germination, make the ground smoother and easier to mow. Seeding mixture and rates are recommendations based on DOT specs. Fertilizer is important for quick growth. Mixtures 250 and 280 can be mowed.

Temporary seeding: Fertilizer 10-10-20 at 200 lbs/acre.

- Oats at 100 lbs/ac for spring/summer seeding of areas that will be left undisturbed for 21 days or more.
- Winter wheat at 100 lbs/ac for fall seeding of areas that will be disturbed again in the spring, such as backfill around barns.

Turf and agricultural grasses: Fertilizer 20-10-20 at 350 lbs/acre.

General Roadside mix.

Brome grass, smooth	9.8 lbs/ac	14.0%
Bluegrass, Kentucky "Certified Park"	20.3	29.0
Bluegrass, Canada	9.8	14.0
Switch grass	2.1	3.0
Wheat-grass, slender	2.8	4.0
Rye-grass, perennial	14.7	21.0
Timothy	2.1	3.0
Redtop	2.1	3.0
Alfalfa, creeping	4.2	6.0
White clover	2.1	3.0
Total	70 lb/ac	

Agricultural Roadside mix.

Alfalfa, creeping	15 lb/ac	30.0%
Brome grass, smooth	10	20.0
Redtop	3	6.0
Rye-grass, perennial	15	30.0
Switch grass	2	4.0
Timothy	2	4.0
Wheat-grass, slender	3	6.0
Total	50 lb/ac	

OPERATION, INSPECTION AND MAINTENANCE PLAN

NEED FOR OPERATION, INSPECTION AND MAINTENANCE PLAN

Although this Waste Storage Structure has been designed in accordance with MPCA recommendations and its based upon the best available technical knowledge, it must be recognized that any Waste Storage Structure needs to be properly maintained, including periodic inspection. You, the Owner, are responsible for this Waste Storage Structure. The following guidelines for safe operation and maintenance are recommended.

(1) routine inspections, maintenance and record keeping to be completed to identify and document damage to the liner.

(2) methods to be used to repair areas of damaged liner;

(3) methods used to monitor the liquid level in the basin to evaluate proper operation and adequate available storage capacity; and

(4) routine inspections of perimeter tile line outlets and inspection manholes to ensure proper operation of the system..

Annually, the liquid will be mixed and removed for land application. Liquid level in the pit(s) shall be monitored quarterly (4 times per year) and after any water line breaks or abnormal additions to the pit. The level shall be measured using a rod or wood stick and the depth recorded.

SEMI-ANNUAL INSPECTION OF LIQUID STORAGE AND HANDLING SYSTEMS

Establish a time each spring and fall for a thorough inspection of the liquid storage and handling systems. DO NOT ENTER COVERED PITS & TANKS.

All concrete storage tanks and reception pits shall be inspected to evaluate the outside of structures for cracks and deterioration of concrete. Any cracks showing discharge of liquid shall be inspected by an engineer and repairs done as prescribed by the engineer.

Maintain the following in proper working order:

1) Finish earthwork around the structure should be designed to carry runoff away from the foundation. Rainwater diversions to direct 'clean' water away and 'dirty' water into storage facilities. Grass should be established in those areas not covered by concrete and gravel.
2) Childproof covers must be placed upon the pumpouts. Open pumpouts should never be left unattended.
3) Warning signs shall be posted to prevent children and others from using the pit other than the intended use.
4) Animal wastes shall be handled and utilized as specified in the Manure Management Plan.
5) The Waste Storage Structure requires continuous ventilation to safely remove poisonous and noxious gases. Manure agitation will release large amounts of gas and may create a hazardous situation. Ensure that the ventilation fans are operating before agitation and, if possible, evacuate the building.
6) Manure pits that contain bearing divider walls should be emptied using a modified pumping plan. All manure sections should be partially emptied to prevent possible divider wall failure. Removal of about 3' of manure is recommended from each section before complete emptying of any one section is undertaken.
7) No person should enter a Waste Storage Structure without proper training and without wearing a self-contained breathing device. A second person should remain outside of the structure and should have an immediate means of removing the person inside the structure in an emergency.
8) Regular quarterly inspections should be made of the structure and its surroundings for leaks, concrete deterioration and pumpout cover conditions. Inspection of the slats for signs of deterioration is advised.
9) Concrete should be inspected for large cracks and exposed reinforcing steel. Joints should be checked for unusual openings.
10) Concrete surfaces should be quarterly inspected for erosion, scaling and exposed reinforcing steel.

11) Perimeter tile, sump pumps, sampling ports and rodent guards at outlets.
12) The structure walls are designed to resist earth loads only. Do not operate any equipment on this surface.
13) The beam and flooring system is designed for animal loads only. Do not operate any equipment on this surface.
14) If, during the inspection, serious defects are discovered, remedial actions may be required. The County Feedlot Officer and Engineer should be contacted and possible the MPCA.

RECORDS

Record the inspections, evaluations and maintenance done in a spiral bound notebook. Also take and date pictures before and after any maintenance work is done on cover and liquid storage and handling facilities.

PERIMETER TILE MONITORING AND CONTINGENCY PLAN

INSPECT PERIMETER TILE AT LEAST ONE WEEK BEFORE EMPTYING STORAGE

All below ground waste storage structures require perimeter tile to relieve the hydrostatic pressures which would otherwise damage the sides of the concrete tanks and manure storage pits under barns. There is a serious problem if the water level in the sump or inspection port is above the pit floor.

It is very important that the ground water level be lowered prior to emptying the manure storage pit. It may take a week or more for the system to lower the ground water pressure once the problem has been corrected.

BASE LINE SAMPLING

It is recommended that base line sampling be done before manure is put in the storage facility to document any pre-existing contamination that may be in the soil. This is especially important if the site is in an old barn-yard area or has received heavy applications of manure for many years.

Base line samples should be collected at least two (2) times prior to the addition of manure into the waste storage structure. If there is no flow from the tile, sampling shall begin as soon as water is available for sampling. Each 'base line' sampling event shall be scheduled at least two (2) weeks apart.

1. The Owner shall contract with an independent laboratory to collect and analyze the samples. The laboratory must be certified. The laboratory report shall include: Chain of custody record, date, parameter, method used, results, units.

2. The water quality parameters to be monitored are:

Total Kjeldahl Nitrogen	Nitrate Nitrogen
Nitrite Nitrogen	Ammonium Nitrogen
Dissolved Oxygen	Chloride
Sulfate	Total Phosphorus
Fecal Coliform	pH
Temperature	Specific Conductivity

Flow (as determined by time to fill 5 gallon pail)

CHANGE IN TILE WATER COLOR OR ODOR

If visual observation of the tile water indicates a change in color or odor, then a more urgent response is necessary. A change in color or odor may be caused by either soil and/or manure water. If this should occur, immediately stop all discharge to field tile. Notify the MPCA or Engineer immediately.

Install a sump pump and discharge the tile water onto a vegetated filter strip area. If necessary, plug the line going to field tile with bentonite 'chips'. Bentonite chips may be obtained from your well driller.

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

SWPPP Template for Feedlot Construction Activities

Stormwater Pollution Prevention Plan (SWPPP)

Doc Type: Stormwater Pollution Prevention Plan

Instructions: All feedlot construction that disturbs one or more acres must develop a SWPPP. This Stormwater Pollution Prevention Plan (SWPPP) Template is intended to provide a means for feedlot construction sites to comply with the General Stormwater Permit for Construction Activity. The Minnesota General Stormwater Permit for Construction Activity (MN R100001) available is from Minnesota Pollution Control Agency (MPCA) website at http://www.pca.state.mn.us/water/stormwater/index.html.

☐ Construction at my feedlot does **not** include land disturbing activities, or disturbs less than one acre of land; therefore, a SWPPP is **not** required. (Completion of this form is not required if checked)

Note: Applications for NPDES feedlot permits using the online application system require the inclusion of a SWPPP even though it may not technically be required. To satisfy that requirement upload this page of the SWPPP template with the above box checked.

I. General construction activity information

Project name: Lass Farms Inc. **Registration Number:**

Project location:

County: Rock Township: Vienna, T103N, R44W Section: 15 ¼ Sect.: SW

Total number of acres to be disturbed: 2.5 (tenths of an acre)

Estimated construction start date: 7/1/24 **Estimated construction end date:** 12/15/24

Pre-construction acres of impervious surface: 0 (tenths of an acre)

Post-construction acres of impervious surface: 2.5 (tenths of an acre)

Total new impervious surface acres (Post – Pre): 2.5 (tenths of an acre)

Examples of impervious surface include:
- *Parking lots*
- *Rooftops*
- *Driveways*
- *Other concrete, asphalt, or gravel areas*

II. Receiving waters

List all waters within one mile (nearest straight line distance) that are likely to receive stormwater runoff from the project site either during or after construction:

Receiving waters within one mile of project property edge:

Water body ID[1]	Name of water body	Type (ditch, pond, wetland, fen, lake, stream, river)	Special water?[1] (See Stormwater Permit Appendix A)	Impaired Water?[1,2] (See Stormwater Permit Appendix A)
Creek	Champepadan Creek	Creek	☐ Yes ☒ No	☐ Yes ☒ No
			☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No
			☐ Yes ☐ No	☐ Yes ☐ No

[1] Water body ID and special and impaired waters information can be obtained with the Construction Stormwater Special Waters search tool available on the MPCA website at: http://pca-gis02.pca.state.mn.us/CSW/index.html.

[2] Impaired water for the following pollutant(s) or stressor(s): phosphorus, turbidity, dissolved oxygen, or biotic impairment

Wetland impacts:

Will construction result in any potential adverse impacts to wetlands, including excavation, degradation of water quality, draining, filling, permanent inundation or flooding, conversion to a stormwater pond? ☐ Yes ☒ No

If yes, describe below impacts and mitigation measures that will be taken to address the impacts and attach to this SWPPP, copies of permits or approvals from an official state wide wetland program issued specifically for this project or site:

III. Project plans and maps

Attach to this SWPPP site maps and/or plan sheets that depict the following features:

- The project location and construction limits.
- Location and type of all receiving waters, including wetlands, drainage ditches, stormwater ponds or basins, etc. that will receive runoff from the project. Use arrows showing the direction of flow and distance to the water body.
- Existing and final grades, including dividing lines and direction of flow for all pre and post-construction stormwater runoff drainage areas located within the project limits.
- Soil types at the site.
- Locations of impervious surfaces.
- Locations of areas not to be disturbed (e.g., buffer zones, wetlands, etc.).
- Steep slope locations.
- Locations of areas where construction will be phased to minimize duration of exposed soils.
- Locations of all temporary and permanent erosion and sediment controls.
- Standard details for erosion and sediment control Best Management Practices (BMPs) to be installed at the site.
- Portions of the site that drain to a public water with Minnesota Department of Natural Resources (DNR) work in water restrictions for fish spawning timeframes.
- Locations of Buffer zones.
- Locations of potential pollution-generating activities.

IV. Temporary erosion prevention practices

Indicate/describe the types of temporary erosion prevention BMPs expected to be implemented on this site during construction:

☐ Check dams ☐ Rip rap ☐ Construction phasing ☒ Vegetative buffers
☒ Terracing ☐ Erosion blankets ☒ Minimize soil disturbance
☐ Other (Describe):

Describe below installation techniques, procedures, and timelines for implementation of erosion prevention practices (Include estimated quantity of materials):

V. Temporary sediment control practices

Indicate/describe the methods of sediment control BMPs to be implemented at this site during construction to minimize sediment impacts to surface waters, including tile intakes:

☐ Silt fence ☒ Rock construction entrance ☒ Vegetative buffers
☐ Fiber logs ☐ Construction phasing ☒ Minimize soil disturbance/compaction
☐ Other (Describe):

Describe below installation techniques, procedures, and timelines for implementation of temporary sediment control practices (Include estimated quantity of materials):

Dewatering:

Describe below measures to be used to treat/dispose of turbid or sediment-laden water and method to prevent erosion or scour of discharge points when dewatering is required at the site:

Temporary sediment basin:

When the project includes 10 or more acres draining to a common location (5 acres or more if the site is within 1 mile of a special or impaired water) a temporary sediment basin required. Attach to this SWPPP plans for design and construction of the basin.

VI. Permanent stormwater management system

When the project results in one acre or more acres of new impervious surfaces a permanent stormwater management system is required. Indicate which option will be employed at the facility:

☐ Option 1: A water quality volume of **one inch of runoff** from the cumulative new impervious surfaces will be collected and contained within a permitted feedlot component such as a liquid manure storage area or vegetated infiltration area.

☒ Option 2: A separate stormwater management system will be constructed and will account for the following:

- a water quality volume of **one inch of runoff** from the cumulative new impervious surfaces must be retained on site through infiltration unless site specific circumstances are not favorable for the use of infiltration.
  Common instances when infiltration is not favorable include:
  - o Karst susceptibility
  - o High water table
  - o Soils with large clay content (i.e., 60%+)
  - o Soils in hydrologic group D
- If infiltration of stormwater is not favorable, identify the alternative method to handle stormwater:

  ☒ Sedimentation Basin ☐ Filtration ☒ Combination of Practices

  ☐ Other (Describe): _____
- Attach design parameters for the planned permanent stormwater management system, including
  - o location
  - o basin depth
  - o volume calculations
  - o design of pre-treatment devices
  - o outlet configurations
  - o discharge rate calculation
  - o timing of installation

For more design information consult the Minnesota Stormwater Manual on the MPCA website at http://stormwater.pca.state.mn.us/index.php/Main_Page.

- For infiltration or filtration systems attach information about soil type and distance to the seasonal water table or bedrock (from bottom of the basin) in the location of the infiltration or filtration system.
- For projects that discharge to trout streams, including tributaries to trout streams, attach a method of incorporating temperature controls into the permanent stormwater management system:

VII. Additional considerations (as applicable)

Impaired waters:

Attach to this SWPPP any additional BMPs or other specific construction related implementation activities identified in an approved Total Maximum Daily Load and Waste Load Allocations.

Special waters:

Describe below any additional stormwater mitigation measures that will be implemented when discharge is to special waters:

Environmental review:

Describe below any stormwater mitigation measures that will be implemented, as a result of an environmental review, endangered or threatened species review or archeological site review:

Karst:

Describe below any additional (or different) stormwater management measures required for karst or drinking water supply management areas to protect groundwater standards:

VIII. Pollution prevention management measures

Indicate/describe practices for storage and disposal of the following to minimize exposure to stormwater:

- solid waste
- pesticides, herbicides, insecticides, fertilizers, treatment chemical, and landscape materials
- hazardous materials or toxic waste (e.g., oil, fuel, hydraulic fluids, paint solvents, petroleum-based products, wood preservative, additives, curing compounds, and acids)
- building products with a potential to leach pollutants

☒ Store in areas protected from precipitation and dispose of materials in accordance with applicable rules and regulations

☐ Other (Describe): _____

Sanitary wastes

Indicate/describe management of sanitary wastes:

☒ Temporary facilities will be used and waste disposed of in accordance with applicable rules and regulations and the facilities will be located away from the active construction area to minimize accidental tipping by equipment.

☐ Existing permanent facilities currently exist at/near the construction site and will be available to construction personnel

☐ Other (Describe): _____

Vehicle Wastes

Wastes related to vehicles will be handled as follows:

- Materials will be on hand to minimize effects from spills related to re-fueling of equipment. Spills will be cleaned up promptly and reported to the Minnesota Duty Officer as required.
- Runoff from exterior vehicle washing will be routed to in-place control structures. No engine de-greasing will take place.

Concrete washout

Concrete washout will take place in accordance with the guidance provided in the MPCA's concrete, paint, stucco, and other washout guidance facsheet available at http://www.pca.state.mn.us/index.php/view-document.html?gid=7397.

IX. Inspections and Records

Construction BMPs:

Identify the trained* individual(s) responsible for installing, supervising, repairing, inspecting, and maintaining erosion prevention and sediment control BMPs at the site:

Company name: Lass Farms Inc. Site contact: George Lass

Phone: 507-920-3963 Email: gslass@frontiernet.net

** Attach training documentation*

Permanent stormwater management system:

Identify individual(s) responsible for operation and maintenance of permanent stormwater controls at the site:

☒ Feedlot operator ☐ Other:

Company name: Lass Farms Inc. Site contact: George Lass

Phone: 507-920-3963 Email: gslass@frontiernet.net

Inspections procedures and recordkeeping

All inspections and record keeping procedures will follow the requirements specified in the Minnesota General Stormwater Permit for Construction Activity (MN R100001).

X. Final Stabilization

Indicate/describe the methods of final stabilization to be implemented following completion of construction activites:

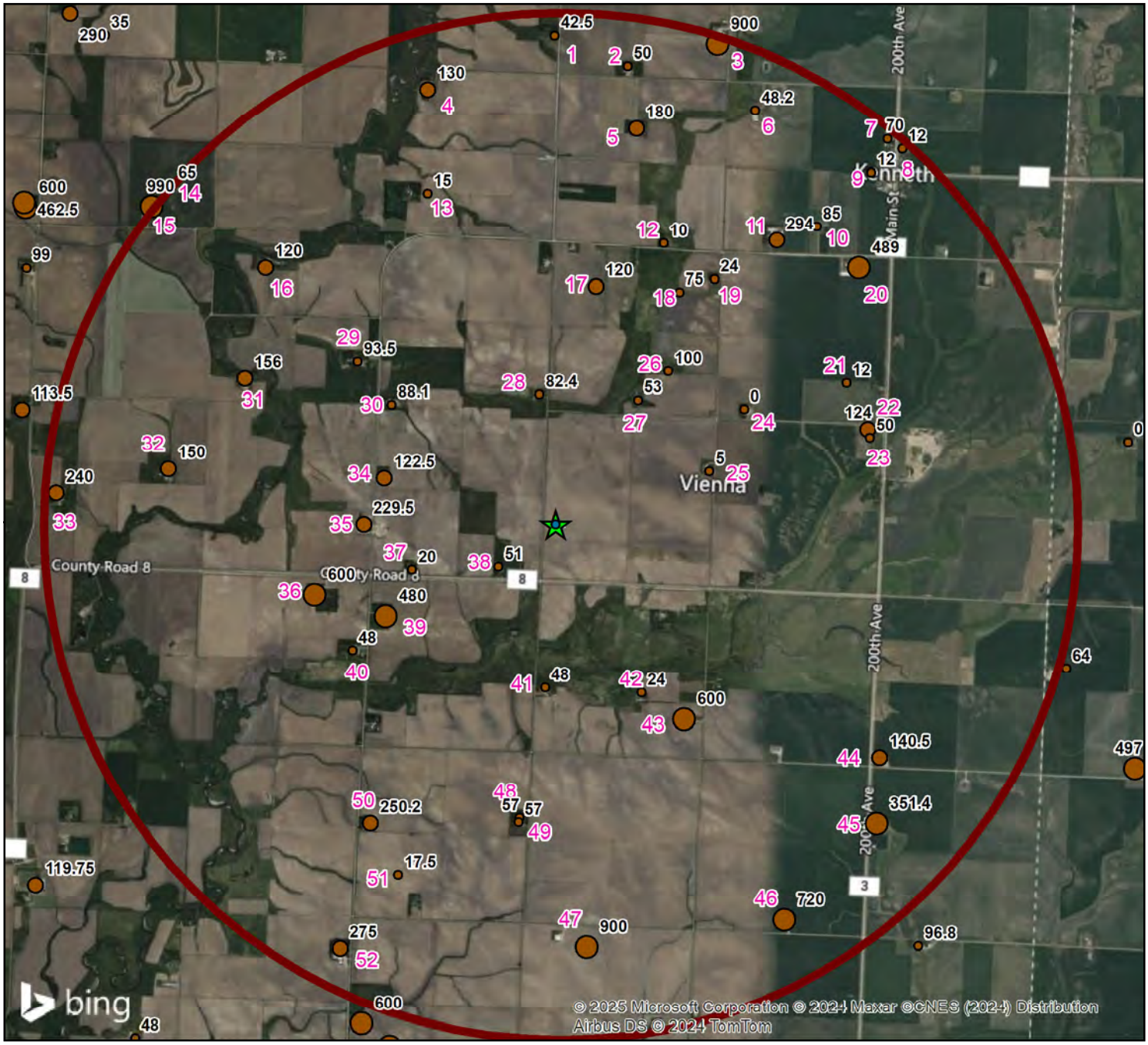
☒ Uniform perennial vegetative cover (70% of expected final growth before removal of temporary measures)

☐ Permanent stormwater controls are installed and functional (if system is required required)

☐ Other (Describe): _____

Lass Farms, Inc.

3 Mile Radius Feedlot Map



NOTES: Feedlot information courtesy of Minnesota Pollution Control Agency.
There are 52 feedlots within a 3 mile radius of the proposed site.

Legend

- 3Mile_Radius
- Site Location
- 3_Mile_Radius
- Barn

MPCA Feedlots
Total AU

- 0.0 - 100 AU
- 100.1 - 300 AU
- 300.1 - 999 AU
- 999.1 - 2000 AU
- +2000 AU

Imagery Courtesy of BING.

N

Feet

0 1,375 2,750 5,500 8,250 11,000

EXTended Ag Services, Inc.