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

Notice of Availability of an Environmental Assessment Worksheet (EAW)

Litchfield AD1

Doc Type: Public Notice

Public comment information

EAW public comment period begins: June 10, 2025

EAW public comment period ends: July 10, 2025

Notice published in the EQB Monitor: June 10, 2025

Facility specific information

Facility name and location:

Litchfield AD1
65501 295th Street
Litchfield, Minnesota 55355-4706
Meeker County

MPCA contact information

MPCA EAW contact person:

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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/?id=hRFKfUtTs. If you would like a copy of the EAW or have any questions on the EAW, contact the appropriate person(s) listed above.

Description of proposed project

Vanguard Organics, LLC (Vanguard) proposes construction and operation of the Litchfield AD1 Facility (Project) which would include two anaerobic digesters, storage buildings, and other necessary infrastructure within a lease area on the Wagner Dairy Farm, northeast of the intersection of 650th Avenue and 288th Street in Forest City Township, Minnesota. The goal of the Project is to take both manure from the Wagner Dairy Farm and food waste from other sources and convert these organic wastes into renewable natural gas, organic fertilizer, and bio-solids for animal bedding.

To submit written comments on the EAW

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
  c/o Audrey Maass
  520 Lafayette Road North
  Saint Paul, Minnesota 55155

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.

December 2022 version

Environmental Assessment Worksheet

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board's website at: https://www.eqb.state.mn.us/. The EAW form provides information about a project that may have the potential for significant environmental effects. Guidance documents provide additional detail and links to resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title:** Litchfield AD1 Facility

2. **Proposer:** Vanguard Renewables

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   Address: 133 Boston Post Road
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3. **RGU:** Minnesota Pollution Control Agency

   Contact person: Audrey Maass
   Title: Project Manager
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4. Reason for EAW preparation: (check one):

   Required:
   ☐ EIS Scoping
   ☑ Mandatory EAW

   Discretionary:
   ☐ Citizen petition
   ☐ RGU discretion
   ☐ Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):

Fuel Conversion Facilities – Minn. R. 4410.4300, subp. 5(A).

5. Project location:

   - County: Meeker
   - City/Township: Forest City Township
   - PLS Location (¼, ¼, Section, Township, Range): SE 1/4 of the SW 1/4 of Section 28, Township 120N, Range 30W
   - Watershed (81 major watershed scale): 18- North Fork Crow River
   - GPS Coordinates: 45.16731N, -94.45286W
   - Tax Parcel Number: 09-2977000, 09-0294000, & 090337000

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project.
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.
- List of data sources, models, and other resources (from the Item-by-Item Guidance: *Climate Adaptation and Resilience* or other) used for information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the project during the life of the project (as detailed below in item 7. Climate Adaptation and Resilience).

6. Project description:

a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

Vanguard Organics, LLC (Vanguard) proposes construction and operation of the Litchfield AD1 Facility (Project) which would include two anaerobic digesters, storage buildings, and other necessary infrastructure within a lease area on the Wagner Dairy Farm, northeast of the intersection of 650th Avenue and 288th Street in Forest City Township, Minnesota. The goal of the Project is to take both manure from the Wagner Dairy Farm and food waste from other sources and convert these organic wastes into renewable natural gas, organic fertilizer, and bio-solids for animal bedding.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal, or remodeling of existing structures, and 4) timing and duration of construction activities

The Project would include construction and operation of two anaerobic digesters expected to process up to 115,000 tons of organic wastes per year. The digesters would be built and operate within a lease area on the existing Wagner Dairy Farm (Project Area) at 65501 295th Street in Forest City Township, Minnesota. Currently the Project Area consists of cultivated cropland, turf grasses, and woodland as shown on **Figure 4** in **Appendix B**.

The Project would consist of a solids separation building, hydrolysis tanks (water added to start break down of organic materials), anaerobic digester tanks, designated manure storage, solids separation area, boiler, backup generator, biogas upgrader, flare, and a clay lined nutrient (digestate) storage basin (**Figures 5** and **6**, **Appendix B**).

Various types of food waste including organics (food residues/parts from the handling, sale, preparation, cooking and serving of raw foods including produce, meats, bones, grains, dairy products, bakery items, egg shells and coffee grounds along with paper fibers (cardboard, napkins, paper towels, pizza boxes etc.)) separated by waste generators from the general solid waste stream, unwanted food, and excess or expired packaged food would serve as a feedstock component for the anaerobic digesters.

The Project will also use liquid organic wastes, fats, oils & grease (FOG), and manure (solid and liquid) provided by the Wagner Dairy Farm as feedstock for the digesters. If necessary, the digesters are capable of operating with primarily liquid feedstock. The typical composition of digester feedstock would consist of approximately 46 percent solid organic waste, 44 percent liquid organic waste and 10 percent manure (overall). Manure may also consist of approximately 20% of the liquid organic wastes.

Vanguard expects daily volume of screened food waste/organics received for the Project to be approximately 280 tons per day or 20 to 30 truckloads (dependent on truck and load size). Vanguard has not defined distances for collection of organic wastes for Project feedstock at the time of this EAW but do expect them to come from partner organizations within 100 miles of the Project Area. In addition to liquid food waste/organics as digester feedstock, the Project will use approximately 110 tons per day of liquid waste or manure from Wagner Dairy Farm. The Project would process about 390 tons of waste per day and operate up to 290 days per year, processing approximately 110,000 to 115,000 tons of waste annually.

Storage time of the processed organics within the Project Area would be minimal since the digesters require a continuous input of food waste while operating. The quantities of each material type placed into the digesters would depend on the quality of organic materials within the overall system. Less than half of the material fed into the digester would be manure, and the majority would consist of organic/food wastes generated from local third-party partner facilities/organizations.

Liquid food wastes delivered directly to the Project would be unloaded straight into the hydrolysis tanks. The hydrolysis tanks begin the digestion process and filter inorganic materials from a homogenized slurry of processed food wastes/organics for removal. Any found inorganic materials would be removed and compiled with similar materials to be sent offsite for disposal or recycling.

The Project would receive processed slurry from the hydrolysis tanks via feedstock pipelines and additional material from the manure separation area. The Project contents would be homogenized and then periodically mixed via mechanical methods. Inside the digester tanks, microbes would break down the mixture in an anaerobic environment, producing biogas (methane, carbon dioxide, hydrogen, and water vapor) and liquid digestate. A computerized Supervisory Control and Data Acquisition (SCADA) system will continuously monitor internal temperature, level and pressure of the digester tanks.

Vanguard will pipe biogas produced from the Project to a biogas upgrader within the Project Area, which upgrades the gas to pipeline quality Renewable Natural Gas (RNG) suitable for injection into a local distribution network. The upgrader removes carbon dioxide, hydrogen sulfide, water vapor and other compounds from the raw biogas to produce RNG. Excess biogas that cannot be processed through the upgrader would be directed to a flare within the Project Area (Conceptual Layout, **Appendix E**).

The Project will pump digestate material from the digesters into a screw press or similar separation equipment to remove solid (fibrous) material. The Project will then place fibrous material onto a conveyor belt to be sorted into piles. The SCADA system would control separation of digestate material and operate intermittently to reduce material volume within the digesters as needed. The solids separation area (Conceptual Layout, **Appendix E**) has capacity to store three to five days of excess fibrous material, which would be removed

by Wagner Dairy Farm and/or other local farms for use as animal bedding, topsoil etc. on a continuous basis.

Vanguard would pump the digestate material, liquid to the storage basin (**Figure 5**, **Appendix B** & Conceptual Layout, **Appendix E**) via a waste pipe prior to land application as a fertilizer on crop fields. The design of the storage basin would be to hold approximately six months of liquid storage. A pressate tank (Conceptual Layout, **Appendix E**), would also be used as temporary intermediate storage for liquid digestate and aid in transport of the liquid to the storage basin. Any liquid that cannot be used by Wagner Dairy may be used on neighboring crop fields as permitted by the landowners. Vanguard would work with both Wagner Dairy personnel and any applicable neighboring farm operators to ensure all digestate material intended for land application complies with state and local nutrient management requirements.

The Project's infrastructure needs include construction of new service lines for electric and fiber optic, a water supply well, and a septic tank for domestic wastewater management from employee activities (bathrooms, etc.). Vanguard will build a looped asphalt access road to the Project Area from 288th Street to the south on an existing field road currently under Wagner Dairy ownership.

Physical manipulation of the environment would be necessary within the Project Area including grading and soil excavation for new construction. Project preparation work includes clearing and grubbing of approximately 7.40 acres of existing woodland. Preliminary earthwork numbers for the Project include approximately 128,782 cubic yards cut and 99,044 cubic yards of fill for a net removal of approximately 29,783 cubic yards of soil. Equipment used for construction would include bulldozers, scrapers, power haulage equipment, drillers, and excavators. From the construction, typical wastes would include construction debris and concrete waste.

No existing or industrial equipment processes currently occur within the Project Area.

The Project will not require demolition, removal, or remodeling of existing structures.

The Project would include the following construction activities from 2025 through 2026:

- Conditional Use Approvals and Permits – Summer 2025
- Site Preparation –Summer 2025
- Start Earthwork, Utility installation – Summer 2025
- Earthwork, Construction of Buildings/Structures – Summer 2025 to Spring/Summer 2026
- Commissioning – Summer/Early Fall 2026
- Commence Operation – Late Summer/Fall 2026

c. Project magnitude:

Table 2: Project magnitude

Description	Number
Total Project Acreage	Approximately 21.99 acres
Linear Project length	N/A
Number and type of residential units	N/A
Residential building area (in square feet)	N/A

Description	Number
Commercial building area (in square feet)	N/A
Industrial building area (in square feet)	See **Table 3**
Institutional building area (in square feet)	N/A
Other uses – specify (in square feet)	N/A
Structure height(s)	Refer to **Table 4**

Table 3: Building areas

Description	Area (square feet)
Digesters	12,723.4
Hydrolysis Tanks	2,277.7
Fire Water Tank	380.1
Process Water Tank	314.1
Flare	144
Heat Exchangers	720
Boiler	120
Ferric Dosing Tank	113.1
Biogas upgrader	5,551
Metering & Regulating Station	22,500
Septic Tank	100
Solid Separation Area	1,471.5
Pressate Holding Tank	176.7
Clarified Manure Tank	113.1
Truck Load Out Station	225
Pump Containers	640
Pump Shed	640
Transformer	120
Generator	56
Utility Building	2,000
Digestate Storage Basin(uncovered)	152,500
Manure Pit	224
Propane Tank	63.6
Car Parking	1,000
Liquid Offload Area	1,600
TOTAL	**205,773.3**

Table 4: Maximum Structure Heights

Structure	Approximate maximum height (feet)
Digesters	32
Hydrolysis Tanks	24
Process Water Tank	15
Solids Separation Area	35
Biogas Upgrader (Stack)	20
Flare	35

d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The goal of the Project is to construct and operate two anaerobic digesters to convert food waste/organics into RNG. The RNG produced would provide an additional supply of natural gas to the local distribution network while reducing greenhouse gas emissions from landfilling large quantities of food waste generated at local or regional businesses, facilities, and institutions.

e. Are future stages of this development including development on any other property planned or likely to happen? ☒ Yes ☐ No
If yes, briefly describe future stages, relationship to present project, timeline, and plans for environmental review.

An interconnection from the Project to Center Point Energy's natural gas distribution system will be required for the injection of RNG produced by the Project's anaerobic digesters. Center Point Energy evaluated three options for RNG interconnections for the Project as detailed in the interconnection study included in **Appendix D**.

Of the three options evaluated, the construction of an approximate 40,000-foot, six-inch diameter high density plastic pipeline to the Center Point Energy distribution system for direct transfer of RNG generated by the Project is under consideration (refer to Option D, **Appendix D**). The pipeline requires a pressure of 95 pounds per square inch gauge (psig) for the transfer of RNG from the Project to the Center Point Energy distribution system. This pipeline would also provide fossil natural gas service from Center Point's distribution system to the Project. Final pipeline size (diameter) and length would be dependent on project permits, licenses, and easement acquisitions from third party landowners along the proposed route.

The system loads at the applicable Center Point Town Border Station (TBS), and seasonal natural gas demands (summer versus winter heating season) would restrict the amounts of RNG injected from the Project into Center Point's distribution system. Depending on distribution system loads, pipeline maintenance projects, or emergencies a reduction of RNG transferred may be required.

The timing for construction of the interconnection pipe to the Project will depend on the interconnection agreement enacted between Vanguard and Center Point Energy. At the time of this EAW, the interconnection agreement is still under development. Upon enactment of the interconnection agreement, the proposed scale and activities for

construction of the interconnection pipeline by Center Point will determine the required environmental review and subsequent timeline for the review.

f. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No
If yes, briefly describe the past development, timeline, and any past environmental review.

7. Climate adaptation and resilience:

a. Describe the climate trends in the general location of the project (see guidance: *Climate Adaptation and Resilience*) and how climate change is anticipated to affect that location during the life of the project.

Using several online Minnesota climate resources such as the Minnesota Climate Explorer, U.S. Climate Resilience Toolkit, and CREAT Climate Scenario Projection Map, the Project Area's climatic conditions were evaluated. All these resources were queried using the smallest geographical area possible for the Project Area including watershed, city limits, or county.

Graphs showing these trends for past, current, and future climate trends through the decades are in **Appendix F**. Climate trends from 1980 to2024 and projected climate changes for Minnesota and Meeker County are summarized in **Table 5**.

Table 5: Summary of reported climate trends

State of Minnesota historic climate trends (data-driven) & projected climate changes (model driven)	**Meeker County trends**	**Climate effects on project location (project impacts)**
Increasing average annual temperature	According to data from the Minnesota Climate Explorer tool Meeker County's average temperature from 1980 to2024 was 43.49°F, increasing 0.21°F per decade (**Figure 17, Appendix F**). Based on the range of future emissions scenarios (intermediate, high, very high) modeled by the Minnesota Climate Mapping and Analysis Tool (CliMAT), the daily average temperature is predicted to increase to an average of 47.73 to 49.0°F by mid-century (2040-2059) depending on the emissions scenario adopted (Liess, et al., 2023) (**Figures 18-20, Appendix F**).	Increased electricity demands for employee air conditioning would occur from higher temperatures. Additional power may also be needed for equipment cooling (if necessary).

State of Minnesota historic climate trends (data-driven) & projected climate changes (model driven)	Meeker County trends	Climate effects on project location (project impacts)
Increasing average precipitation	In contrast to statewide climate trends, Minnesota Climate Explorer data shows Meeker County has experienced a decrease in average precipitation of 1.05 inches per decade from 1980 to 2024. The county averaged 27.49 inches of precipitation from 1980 to2024 (**Figure 21, Appendix F**). Despite the recent decadal decrease, annual precipitation is projected to increase under intermediate and very high emissions scenarios with mean precipitation rising to 30.90 to 32.50 inches by mid-century (2040-2059). Under the high emission scenario, average precipitation is projected to decrease to 26.76 inches (Liess, et al., 2023) (**Figures 22-24, Appendix F**).	Increased runoff and stormwater volume is expected from additional precipitation.
Cold weather warming	Minnesota Climate Explorer Data indicates minimum temperatures in Meeker County increased at a similar rate (0.21°F) per decade from 1980-20240 to the average temperature (**Figure 25, Appendix F**). Based on the range of future emissions scenarios (intermediate, high, very high) modeled by the Minnesota CliMAT, the minimum temperature is predicted to continue to increase to an average of 38.2-39.2°F by mid-century (2040-2059) depending on the emissions scenario adopted (Liess, et al., 2023) (**Figures 26-28, Appendix F**).	Less snowfall is expected from warmer winters and decreased snow cover may affect groundwater recharge in the region.
Heavier, more damaging rains	Storm intensity and flood risk are additional factors that are predicted to increase during the life of the Project. The 100-year storm intensity for the Project Area region will increase by 2.8% - 14.0% by 2035 and by 5.4% - 27.2% by 2060 according to the Environmental Protection Agency's (EPA) CREAT Climate Change Scenarios Projection Map (**Figures 29 & 30, Appendix F**). Annual days that exceed 99th percentile of precipitation will slightly increase from 5.5 to 6.0 days by 2064 according to the U.S. Climate Resilience Toolkit (**Figure 31, Appendix F**).	Risk of flash flooding may increase from higher intensity and less frequent rainfall events. An increased risk of damage to local and regional infrastructure (roads, utilities etc.) from heavier rains is also expected.

State of Minnesota historic climate trends (data-driven) & projected climate changes (model driven)	Meeker County trends	Climate effects on project location (project impacts)
Increasing heat waves	Increased risk of heat waves is expected with an increase in the number of days per year with temperatures above 90 degrees increasing from the current 10 days (modeled history 1976 to2005) to 25.7 to 28.1 days by 2044 (early century) and 35.2 to 43.6 days by 2064 (mid-century) depending on the emissions scenario adopted (U.S. Global Change Research Program, n.d.) (**Figure 32, Appendix F**).	More frequent heat waves may result in faster deterioration of access road and other impervious surfaces. Gaskets and seals on equipment could also requirement more frequent replacement from premature cracking/desiccation due to increased heat.
Increasing risk of drought	Although storm intensity and precipitation are predicted to increase, the precipitation is expected to come in less days. Days per year with precipitation is projected to decrease from 147.4 days (modeled history 1976 to2005) to 147.0 days by 2044 (early century) and 146.0 to 146.9 days by 2064 (mid-century) depending on the emissions scenario adopted (U.S. Global Change Research Program, n.d.) (**Figure 33, Appendix F**).	Reduced availability of water supply (groundwater) for the Project would occur during drought periods.

The resources used to summarize climate trends and projected changes from Minnesota and Meeker County are in **Table 6**.

Table 6: Climate trends and projections resources/tools

Climate item	Climate trend tools used	How tool was used
Current Trends	Minnesota Climate Explorer (Historical)	Historical average temperature, average precipitation, maximum temperature, minimum temperature
Modeled Changes	Minnesota Climate Mapping and Analysis Tool (CliMAT)	Future projected average temperatures and precipitation
Climate Hazard Projections	Climate Mapping for Resilience and Adaptation (CMRA) Assessment	Future projected increase in intense precipitation events, projected increase in storm intensity, drought & flood risks
	U.S. EPA (CREAT) Climate Change Scenarios Projection Map	Projected change in 100-year storm intensity
Additional Information	National Oceanic and Atmospheric Administration (NOAA)	Regional & national data context

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 proposed adaptations to address the project effects identified.

The expected interactions of the Project's activities and design with the climate changes discussed in **Item 7.a.** above are in **Table 7**.

Table 7: Interaction of proposed activities with each climate trend and projection (listed in Item 7a)

Resource category	Climate trends and future projections	Project components	Potential environmental effects	Adaptation strategies
Project Design	Increasing Average Annual Temperature	Increased impervious surfaces	Environmental impact is not expected from interaction between increased impervious surfaces and increased average temperatures.	Minimize impervious surface area and design pavements to withstand extreme temperatures.
		Use of non-renewable resources during construction.	Environmental impact is not expected from interaction between construction material sources and increased average temperatures.	If appropriate for Project application, use recycled or repurposed materials resistant to degradation from extreme temperatures in construction.
		Increased infrastructure development (utilities etc.)	Certain infrastructure components including the access road, connecting power lines and transformers (if needed) would be more vulnerable to damage or failure from increased temperatures.	Install utilities underground as feasible and use materials resistant to degradation from extreme temperatures in construction.
		Increased traffic on 288th Street and Minnesota Highway 24	Accelerated wear on roads may occur from increased temperatures.	Monitor road conditions in coordination with Meeker County & perform maintenance in accordance with Project's road agreement.
	Increasing Average Annual Precipitation	Increased impervious surfaces	An increase in stormwater runoff is expected from additional impervious surfaces in combination with an increase in long term average precipitation.	Properly sized stormwater management features are included in the Project, including filtration basins to manage the expected additional runoff from increased precipitation.
		Use of non-renewable resources during construction.	Environmental impact is not expected from interaction between construction material sources and increased average precipitation.	If appropriate for Project application, use recycled or repurposed materials resistant to degradation from increased rainfall.
		Increased infrastructure development (utilities etc.)	Roads and electrical system components (transmission lines, power poles etc.) may be more vulnerable to damage from increased precipitation.	Use sealed or water-resistant components in utility lines and ensure proper installation.

Resource category	Climate trends and future projections	Project components	Potential environmental effects	Adaptation strategies
				Design drainage away from electrical system structures (power poles bases, transfer stations, transformers).
		Increased traffic on 288th Street and Minnesota Highway 24	Accelerated wear on roads may occur from higher runoff volumes due to increased average precipitation.	Incorporate adequate drainage and stormwater management features into the 288th Street improvements and design for expected runoff volumes from increased precipitation.
	Cold Weather Warming	Increased impervious surfaces	Environmental impact is not expected from interaction between increased impervious surfaces and warmer winter temperatures.	Minimize impervious surface area and design pavements to withstand extreme temperatures.
		Use of non-renewable resources during construction.	Environmental impact is not expected from interaction between construction material sources and warmer winter temperatures.	If appropriate for Project application, use recycled or repurposed materials resistant to degradation from extreme temperatures in construction.
		Increased infrastructure development (utilities etc.)	Roads are the infrastructure components most vulnerable to damage from more frequent freeze/thaw cycles as a result of warmer winter temperatures. Powerlines and other electrical system components are typically most affected by significant ice accumulation and high winds, which may occur with greater frequency due to winter warming resulting in more rain/freezing rain and less snow (see potential environmental effects discussion under heavier, more damaging rains below).	Use sealed or water-resistant components in utility lines and ensure proper installation, particularly with underground powerlines
		Increased traffic on 288th Street and Minnesota Highway 24	Accelerated wear on roads would occur from more frequent freeze/thaw cycles as a result of warmer winter temperatures. This typically leads to increased cracking, potholes, and eventually failure of the road surface.	Monitor road conditions in coordination with Meeker County & perform maintenance in accordance with Project's road agreement. Maintain or design proper drainage in future road construction or maintenance projects.

Resource category	Climate trends and future projections	Project components	Potential environmental effects	Adaptation strategies
	Heavier, More Damaging Rains	Increased impervious surfaces	Increases in both stormwater runoff rates and volume are expected from additional impervious surfaces in combination with higher intensity rainfall.	Properly sized stormwater management features are included in the Project, including filtration basins to manage the projected higher runoff volumes from heavier rains.
		Use of non-renewable resources during construction.	Environmental impact is not expected from interaction between construction material sources and higher intensity rainfall.	If appropriate for Project application, use recycled or repurposed materials resistant to degradation from heavy rains.
		Increased infrastructure development (utilities etc.)	Infrastructure at increased risk of damage from flash flooding. Heavy or freezing rain can add significant weight to powerlines causing them to sag or break and result in outages. Damage may also occur from falling branches or trees. Erosion from flooding/increased runoff may weaken foundations of power poles, transformers etc. and result in damage. Flooding from heavy rains may also inundate underground powerlines resulting in damage and outages.	Use sealed or water-resistant components in utility lines and ensure proper installation, particularly with underground lines. Keep powerlines clear of contact with trees or overhanging branches. Additional soil stabilization near utility structures may also be warranted depending on utility type and location (underground vs above).
		Increased traffic on 288th Street and Minnesota Highway 24	Roads may be at increased risk of severe damage from flash flooding due to heavier rains. Erosion of sub-surface soils and aggregate base materials may also occur leading to washouts and road failures.	Incorporate adequate drainage and stormwater management features into 288th Street improvements and design for 500-year (or greater) storm event runoff volumes.
	Increasing Risk of Heatwaves	Increased impervious surfaces	Damage to pavements may results from extreme high temperatures. Asphalt can soften causing buckling & failure under high temperatures. Concrete will also expand under extreme heat and may crack.	Minimize impervious surface area and design pavements to withstand extreme temperatures.
		Use of non-renewable resources during construction.	Environmental impact is not expected from interaction between construction material sources and increasing heat waves.	If appropriate for Project application, use recycled or repurposed materials resistant to degradation from extreme temperatures in construction.
		Increased infrastructure	Powerlines will expand under extreme high temperatures,	Install utilities underground as feasible and use materials

Resource category	Climate trends and future projections	Project components	Potential environmental effects	Adaptation strategies
		development (utilities etc.)	causing them to sag and increasing the risk of clearance issues or fire from contact with trees. Additionally overloading of the lines and/or reduced transmission capacity may occur, particularly during high electricity demand.	resistant to degradation from extreme temperatures in construction.
		Increased traffic on 288th Street and Minnesota Highway 24	Roads are at increased risk of severe damage from extreme high temperatures. Roads may soften/separate (asphalt binder from aggregate) and buckle under extreme heat causing cracking to the point of failure. Softer roads also become more slippery under higher temperatures, which reduces vehicle traction.	If feasible, reduce traffic to and from the Project Area. Monitor road conditions in coordination with Meeker County & perform maintenance in accordance with Project's road agreement.
	Increasing Risk of Drought	Increased impervious surfaces	Environmental impact is not expected from interaction between increased impervious surfaces and increased drought risk.	Minimize impervious surface area and design pavements to withstand extreme conditions.
		Use of non-renewable resources during construction	Environmental impact is not expected from interaction between construction material sources and increased drought risk.	If appropriate for Project application, use recycled or repurposed materials resistant to degradation from extreme conditions during construction.
		Increased infrastructure development (utilities etc.)	Increased risk of wildfire from above ground power lines, transformers etc. would occur with increased drought risk.	Install utilities underground as feasible and use materials resistant to degradation under extreme conditions during construction.
		Increased traffic on 288th Street and Minnesota Highway 24	Increased risk of wildfire from hot vehicle exhaust pipes, sparks from chains/other metal vehicle hauling components would occur during drought conditions.	Ensure Project vehicles are strictly traveling & parking on paved surfaces. Reduce sparking potential by enforcing no dragging of chains or other equipment used on trucks traveling to or from the Project Area.
Land Use	Addressed in item 10.			
Water Resources	Addressed in item 12.			
Contamination/ Hazardous	Addressed in item 13.			

Resource category	Climate trends and future projections	Project components	Potential environmental effects	Adaptation strategies
Materials/ Wastes				
Fish, wildlife, plant communities, and sensitive ecological resources (rare features)	Addressed in item 14.			

8. Cover types: Estimate the acreage of the Project Area with each of the following cover types before and after development:

Table 8: Land cover types (existing and proposed)

Cover types	Before(acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	0	0
Deep lakes (>2 meters deep)	0	0
Wooded/forest	7.40	0
Rivers /streams	0	0
Brush/Grassland	0	0
Cropland	10.90	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	3.20	10.15
Green infrastructure TOTAL (from **Table 9** below*)	0	0
Impervious surface	0.49	11.13
Stormwater Pond (wet sedimentation basin)	0	0.71
Other (describe)	0	0
TOTAL	21.99	21.99

Table 9: Green infrastructure

Green infrastructure*	Before (acreage)	After (acreage)
Constructed infiltration systems (infiltration basins/infiltration trenches/ rainwater gardens/bioretention areas without underdrains/swales with impermeable check dams)	0	0
Constructed tree trenches and tree boxes	0	0

Constructed wetlands	0	0
Constructed green roofs	0	0
Constructed permeable pavements	0	0
Other (describe)	0	0
TOTAL*	0	0

Table 10: Tree Cover

Trees	Percent	Number
Percent tree canopy removed, or number of mature trees removed during development	100	N/A
Number of new trees planted	0	16

9. **Permits and approvals required:** List all known local, state, and federal permits, approvals, certifications, and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

Table 11: Permits and approvals

Unit of Government	Type of application	Status
Minnesota Pollution Control Agency (MPCA)	NPDES/SDS Construction Stormwater General Permit (NPDES CSW)	To be applied for and obtained
	NPDES/SDS Industrial Stormwater General Permit (NPDES ISW)	To be applied for and obtained
	Aboveground Storage Tank Registration	To be applied for and obtained
	Air Emission Project Permit	Applied for, to be obtained
	Land Application of Industrial By-products	To be applied for and obtained
MN Department of Natural Resources (DNR)	Water Appropriation Permit – Temporary Construction Dewatering	To be applied for and obtained if needed
MN Department of Labor and Industry	Electrical Permit	To be applied for and obtained
	Plumbing Inspection Permit	To be applied for and obtained
Minnesota Department of Health	Well Construction Permit	To be applied for and obtained
Minnesota Department of Public Safety	Fire Sprinkler Permit	To be applied for and obtained
Meeker County	Wetland Conservation Act – Wetland Boundary & Type	Obtained (September 8, 2023)
	Fence Permit	To be applied for and obtained if needed
	Sign Permit	To be applied for and obtained if needed

Unit of Government	Type of application	Status
	Fill (Grading) Permit	To be applied for and obtained
	Excavation and Utility Connection Permit	To be applied for and obtained
	Erosion and Sediment Control Permit	To be applied for and obtained
	Septic Permit	To be applied for and obtained
	Building Permit	To be applied for and obtained
	Land Use Permit	To be applied for and obtained
	Site Plan Review	To be applied for and obtained
	Conditional Use Permit	Applied for, to be obtained
	Preliminary and Final Plat	To be applied for and obtained
	Street and Utility Permits	To be applied for and obtained if needed
	General Permit of Work in Right-of-Way	To be applied for and obtained if needed

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 10-20, or the RGU can address all cumulative potential effects in response to EAW Item No.22. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 21.

10. Land use:

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks and open space, cemeteries, trails, prime or unique farmlands.

The Project Area and surrounding vicinity consist primarily of cultivated cropland and are zoned as agricultural land (**Figure 7**, **Appendix B**) per the 2000 Meeker County Comprehensive plan (most current available plan) (Mid-Minnesota Development Commission & Meeker County, 2000). Existing conditions within the Project Area consist of cultivated cropland, woodland, and turf grasses with a portion of a field access road along the eastern boundary (**Figure 4**, **Appendix B**). A wetland borders the southern Project Area boundary (**Item 12.a.i**.) as shown on **Figure 13** in **Appendix C**. The nearest rural residential parcels are adjacent to the proposed access road route along 288th Street south of the Project Area.

No parks, trails or recreational areas are present within or adjacent to the Project Area. There are several waterfowl production areas within two miles of the Project Area; the Forest City Waterfowl production area is the closest, approximately 1.1 miles northeast. Public lands within the greater surrounding area includes the Peifer School Waterfowl Production area (1.52 miles) to the southeast and the Dunn's Lake Aquatic Management Area (1.32 miles) to the southeast.

Within five miles there are public water accesses on the Crow River, Richardson Lake, and Dunn's Lake. Madsen Wildlife Management Area (WMA) is five miles northwest.

Recreational facilities in the city of Litchfield within five miles of the Project Area include the Litchfield Sports Park, Litchfield Golf Club, Anderson Gardens, and multiple municipal parks. The parks, trails, and recreation areas within five miles of the Project Area are on **Figure 10** in **Appendix B**.

According to the U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) web soil survey, approximately 51.4 percent of the Project Area is classified as prime farmland and approximately 45.1 percent of the Project Area is classified as prime farmland if drained. The remaining 3.5 percent of the Project Area is not classified as any type of prime farmland (**Figure 11**, **Appendix C**).

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The Project Area is mapped as A-1 General Agricultural according to the zoning map from the 2000 Meeker County Comprehensive Land Use Plan (Mid-Minnesota Development Commission & Meeker County, 2000). Since the Project Area is within Forest City Township, which has no currently available planning or zoning information, any zoning or planning ordinances for the Project Area would default to the county. Meeker County has a Comprehensive Water Plan that was last updated in 2013. This plan does not designate any specific land uses or restrictions for the Project Area (Mid-Minnesota Development Commission & Meeker County, 2013).

According to the Meeker County 2007 Comprehensive Future Land Use Map (most recent), the Project Area and surrounding parcels were expected to remain zoned as "A-1 General Agriculture" for the foreseeable future (2020 is the year listed in the 2000 Meeker County Comprehensive Land Use Plan) (Mid-Minnesota Development Commission, 2007).

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The Project Area is zoned within an agricultural portion of Meeker County and not within a mapped floodplain, wild and scenic river, critical area, agricultural preserve, or special district.

iv. If any critical facilities (i.e., facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity.

No critical facilities are within or adjacent to the Project Area, nor are or would any critical facilities be within floodplain areas as a result of the Project.

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

Since the Project Area is currently zoned for "general agricultural use" and the Project would not be considered an agricultural-zoned entity per Meeker County Ordinance, a Conditional Use Permit (CUP) will be required for construction and operation of the Project.

Manure and/or organic wastes from agricultural land uses (excess corn silage, damaged/unsellable crops) are optional feedstock components for the digesters, which also produce useful byproducts for farm operations (bio-solids & nutrient rich fertilizer). Upon obtaining the county CUP, the end use compatibility between agricultural activities and the anaerobic digestion process (intake of manure by digesters and use of bio-solids and

fertilizer (digestate) on farms) makes this Project compatible with activities typical of the surrounding land use (agriculture).

Conversion of land cover within the Project Area from cropland and woodland to mostly impervious surfaces would result in a loss of vegetation. As shown in **Tables 8 and 10**, vegetation loss would occur primarily through tree clearing, which would lead to decreased shade and carbon absorption within the Project Area. In combination with expected Meeker County climate changes discussed in **Item 7. a.**(increased temperatures, heat waves, drought risk), ambient temperatures within the Project Area would rise from the loss of tree shade. Changes in herbaceous vegetation species and coverage are also expected from the combination of increased temperatures and shade loss.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.

Vanguard will obtain a CUP from Meeker County for the Project prior to construction. Vanguard does not anticipate any other measures necessary to mitigate incompatibility with current county land use plans and zoning. Vanguard has considered relevant county plans while developing the project design. Sixteen trees are proposed for planting as part of the Project to provide a visual screen on the digestate storage basin and offset some shade loss within the Project Area from the required tree clearing for construction.

11. Geology, soils, and topography/landforms:

a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

The unconsolidated sediments within the Project Area are primarily Loamy Till (diamicton) according to the Minnesota Geological Survey (Meyer, C-35, Geologic Atlas of Meeker County, Minnesota, 2015).

Diamicton is a mostly loam to sandy loamed textured, unsorted sediments, pebbly with scattered cobbles and rare boulders. Lake Sand & Silt is also mapped by the Minnesota Geological Survey in small areas within the eastern portion of the Project Area. The Lake Sand & Silt mapped in the Project Area is described as mostly very fine to fine grained sand interbedded with very fine-grained sandy silt to silt with inclusions of medium-grained sand beds and scattered lenses of thick silt. Coarse, gravelly sand also occurs locally near adjacent till deposits (Meyer, C-35, Geologic Atlas of Meeker County, Minnesota, 2015). The distribution of unconsolidated sediments within the Project Area is in **Figure 12** in **Appendix C**.

Vanguard estimates the depth to bedrock within the Project Area to be 201-250 feet from the surface (Meyer, C-35, Geologic Atlas of Meeker County, Minnesota, 2015). The upper most bed rock within the vicinity of the Project Area is the Dakota Formation (Meyer, C-35, Geologic Atlas of Meeker County, Minnesota, 2015). The Dakota Formation is described as Interbedded sandstone, siltstone, and mudstone. The sandstone is quartzose, and can be

described as white, gray, brown, or orange in color. Sand grains in the sandstone are fine to coarse grained. The mudstone can be described as dark gray to dark brown in color with light brown to white silty laminations (Meyer, C-35, Geologic Atlas of Meeker County, Minnesota, 2015).

No sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions are known or mapped to be present within the Project Area (Minnesota Department of Natural Resources, 2024). Depth to ground water within the Project Area is anywhere from zero to ten feet from the ground surface (Resources, 2019). Vanguard does not expect activities proposed within the Project Area to have adverse impacts on geologic features outside of the movement of soils during construction. Proper soil stabilization and topsoil preservation will take place within construction limits where needed and will be in accordance with the Project's Stormwater Pollution Prevention Plan (SWPPP) during construction.

b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Vanguard will address erosion/sedimentation control related to stormwater runoff in the response to Item 12.b. ii.

According to the USDA- NRCS Web Soil Survey, the soils within the Project Area consist of the following classifications:

Table 12: USDA-NRCS soil types

Map unit symbol	Map unit name	Percent of project area
L353B	Wadenill Loam, 2 to 6 percent slopes	27.6%
L322A	Uniongrove Loam, 0 to 2 percent slopes	51.4%
L347A	Klossner and Lundlake soils, 0 to 1 percent slopes, ponded	3.5%
L350A	Marcellon loam, 0 to 3 percent slopes	14.8%
1801B	Gardencity very fine sandy loam, 2 to 6 percent slopes	2.7%

Figure 11 in **Appendix C** is a map of the soil unit locations. As indicated in **Table 12** above, USDA-NRCS soil survey data suggests soils within the Project Area are mostly somewhat poorly drained to very poorly drained loams to sandy loams. There are very poorly drained mucky soils mapped along the south-central border, consistent with the bordering wetland identified in this location (USDA-NRCS, 2024). Well drained loam to sandy loam textured soils are mapped within the current woodland portion of the Project Area and general location for most proposed buildings/infrastructure.

As discussed in **Item 10.a.i.**, the Project Area soils are dominantly classified as either prime farmland or prime farmland if drained (USDA-NRCS, 2024). These soils were mostly cultivated with corn and soybeans rotations as the principal crops. Undisturbed native

vegetation (if present) is predominantly prairie or forest edge species including Canada goldenrod and big bluestem.

Surface elevations within the Project Area range from approximately 1,112 feet in the northeast corner and eastern portion to 1,122 feet above mean sea level in the north central portion and southwest corner, according to the United States Geologic Survey (USGS) 7.5-minute quadrangles for Forest City, MN and available LiDAR topographic data (**Appendix A**, **Figure 3**). The vicinity within the Project Area generally slopes to the east-southeast towards Richardson and Dunn's Lakes approximately 0.5 to 1.2 miles southeast.

Vanguard expects preliminary grading would include grading activities on up to nearly 22 acres and a minimum 15-foot-deep excavation for the digestate storage basin. Approximate volumes of topsoil and embankment expected for the Project are still under development. Placement of aggregate base for the Project buildings and access road would also occur after earthwork is completed.

- NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 12 must be consistent with the geology, soils and topography/landforms and potential effects described in EAW Item 11.

12. Water resources:

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches.Include any special designations such as public waters, shoreland classification and floodway/floodplain, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive speciesand the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

There are no surface waters within or adjacent to the Project Area or in the immediate surrounding vicinity. The nearest surface waters to the Project are two unnamed streams mapped by the USGS National Hydrography Dataset (NHD) approximately 0.5 miles to the east and south respectively. NHD mapped these streams as draining into Richardson Lake, approximately 0.75 miles southeast of the Project. A larger unnamed stream and a county ditch are present within one mile to the southwest of the Project (USGS, 2024). **Figure 13** in **Appendix C** shows all surface waters present within one mile of the Project.

Richardson Lake is a Minnesota Department of Natural Resources (MDNR) Public Water, with inventory number (88P). Richardson Lake is an impaired water for nutrients and mercury in fish tissue, according to the Minnesota Pollution Control Agency (MPCA) 2024 Impaired Waters list (47-0088- 00) (MPCA, 2024). Two unnamed streams (M-064-031 & M-064-023-001- 001-003), Rice (47008700) and Dunn's Lakes (47008200) are also identified as DNR Public Waters within one mile of the Project. The MPCA 2024 Impaired Waters also lists Dunn's Lake as an impaired water (47-008-200) for nutrients (MPCA, 2024).

Braun Intertec Corporation completed a wetland delineation of the Project Area in May 2023. One wetland was identified adjacent to the southern boundary of the main portion of the Project Area (**Figure 14**, **Appendix C**). The Wetland Conservation Act Local Government Unit (Meeker County Soil & Water Conservation District) approved the wetland boundary and type determination for the delineation on September 8, 2023 (**Appendix D**).

There are no wildlife lakes, migratory waterfowl feeding/resting lakes, trout lakes/streams or outstanding resource value waters within a one mile-radius of the Project.

Since no surface waters or wetlands are present within the Project Area, no aquatic invasive species are present, and therefore the Project does not have the potential to encounter or spread aquatic invasive species.

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

The depth to groundwater ranges from zero to ten feet below the ground surface (bgs) (Resources, 2019) or approximately 1,102 to 1,112 feet above mean sea level (amsl). Based on the mapped depth, Vanguard could encounter groundwater during excavation for the installation of utilities or for the installation of Project building/structure foundations. Review of the Minnesota Department of Health (MDH) Minnesota Well Index showed no wells mapped within the Project Area (MDH, 2024).

However, 34 domestic wells and one unknown well are mapped within one mile of the Project (**Figure 8**, **Appendix B**). **Table 13 lists** these 35 wells. The closest well is a domestic well (No. 762776) owned by Justin Wagner. This well is 247 feet deep, within the quaternary buried artesian aquifer (MDH, 2024).

The Project is not within an MDH Wellhead Protection Area, nor are any wellhead protection areas within one mile (Health, 2023).

Table 13. Minnesota Department of Health index wells

Unique ID	Well name	Depth (ft)	Aquifer	Listed use	Date
211609	ROOT, ARVID	85	QBAA	Domestic	1968
211650	EWALD, JOHN	77	QBAA	Domestic	1964
211502	GEINITZ, WILBUR	148	QBAA	Unknown	05/11/1957
211500	RICK, HERMAN	46	QBAA	Domestic	04/20/1973
211651	WORDEN, PAUL	292	KRET	Domestic	1965
211501	WORDEN, LESLIE	150	QBAA	Domestic	01/07/1960
117803	SONSALLA, DAVID	73	QBAA	Domestic	06/10/1975
503887	SCHEIBER, JIM	394	PCUU	Domestic	08/04/1989
459060	ERICKSON, TIM	92	QBAA	Domestic	09/29/1989
163082	RUSSELL, TOM	133	QBAA	Domestic	07/05/1979

Unique ID	Well name	Depth (ft)	Aquifer	Listed use	Date
563119	KINSELLA, THOMAS & BARB	138	QBAA	Domestic	11/23/1995
483274	MATHEWS, GREGORY	151	QBAA	Domestic	08/09/1992
597420	LUNDIN, DAVID & JENNIFER	214	KRET	Domestic	10/27/1997
628093	FLOREY, JAMES & ROSEANNE	240	KRET	Domestic	05/03/2000
733507	WAGNER, LEONARD	160	QBAA	Domestic	10/11/2005
502667	RICK, DON	95	QBAA	Domestic	06/12/1989
186368	PIEPENBURG, KEVIN	62	QBAA	Domestic	11/22/1985
777446	STRAZZINSKI, MARK	298	UREG	Domestic	11/04/2010
651414	PITTS, DAVID A.	151	QBAA	Domestic	06/07/2001
679633	HAAPALA, JOHN & MARILYN	122	QBAA	Domestic	07/25/2003
584326	LEVINSKI, PETER	64	QBAA	Domestic	07/31/1996
651401	ZILLMER, RICK	156	QBAA	Domestic	10/26/2000
597414	EDWARDS, WES & MARY JO	182	QBAA	Domestic	11/14/1997
440210	WATT, DUANE	132	QBAA	Domestic	08/26/1987
680663	KNISLEY, STEVE	150	QBAA	Domestic	03/20/2003
762776	WAGNER, JUSTIN	247	QBAA	Domestic	09/11/2008
569225	HEAIRET, SHAWN	150	QBAA	Domestic	10/10/1995
440211	WORDEN, LES	156	QBAA	Domestic	09/14/1987
440213	WORDEN, LEE	73	QBAA	Domestic	10/22/1987
503822	RICK, JOEL	331	KRET	Domestic	07/24/1989
782777	BUNN, CURTIS	86	QBAA	Domestic	04/19/2011
815801	RAIBER, PATRICK + AMY	165	None listed	Domestic	05/03/2016
823830	WAGNER, LEONARD	158	None listed	Domestic	05/11/2017
829860	LEVINSKI, MARK	83	None listed	Domestic	09/15/2017
829872	STORMO, SCOTT	160	None listed	Domestic	09/29/2017

Acronyms:

KRET: Cretaceous, undifferentiated
PCUU: Precambrian Rocks, undifferentiated
QBAA: Quaternary Buried Artesian Aquifer
UREG: Weathering Residuum

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater - For each of the following, describe the sources, quantities, and composition of all sanitary, municipal/domestic, and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water andwaste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

The estimated domestic wastewater average flow for the Project is 240 gallons per day (GPD) from the Project locker rooms and restrooms. Vanguard will discharge domestic wastewater to an approximate 5,000-gallon septic tank within the Project Area for periodic disposal.

As detailed in **Item 6.b.**, all process water (nutrient rich liquid digestate) generated from the anaerobic digesters would be stored in the digestate storage basin after the separation of solids (dried for reuse on the Wagner Dairy Farm or other area farms). The storage basin would have approximately a six-month storage capacity for liquid digestate to account for variations in cropping schedules of local farms. The storage basin capacity also provides flexibility in the timing for land application of the liquid digestate on crop fields as a fertilizer.

2) If the wastewater discharge is to a subsurface sewage treatment system (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system. If septic systems are part of the project, describe the availability of septage disposal options within the region to handle the ongoing amounts generated as a result of the project. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity, and amount with this discussion.

As mentioned in **Item 12.b.i.(1)**, Vanguard will discharge domestic wastewater to a septic tank within the Project Area. A local certified septic contractor (to be determined) would pump out the Project's septic tank and service the system on a regular basis. There are approximately 11 septic service providers of 45 certified septic contractors operating within Meeker County according to a county published list (Meeker County, 2024).

Based on the existing number of septic service providers within Meeker County and expected volume of domestic wastewater generated, the Project would easily be accommodated by a provider in the county. Additionally, the nearest municipal wastewater treatment facility (City of Litchfield) has capacity to treat an average of 5.5 million gallons of wastewater per day and can store up to 3.25 million gallons of sludge (Litchfield, 2024), which allows sufficient capacity for septic service providers to properly dispose of the Project's domestic wastewater following servicing.

As discussed in **Item 7.a.**, less frequent and more intense rainfall events are expected in the future for the Project's region due to climate change. More frequent service of the Project's septic system may be required prior to and/or following intense rainfall events to prevent system backups or overflows. The six-month capacity of the digestate storage basin has been designed to include precipitation (average 100-year event) in addition to the anticipated volumes of liquid digestate from the Project. Depending on existing volumes, emergency

draining (land application of digestate) of the storage basin may be required in preparation for or in response to significant future precipitation events.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects.

Vanguard will not discharge any wastewater from the Project to any surface waters or groundwater.

ii. Stormwater - Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post construction including how the project will affect runoff volume, discharge rate, and change in pollutants.Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity, and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments or are classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.

Pre-construction stormwater runoff

Under current conditions, Project Area land cover consists of cultivated cropland, turf grasses and woodland, which includes shrubs, trees, forbs, planted crops and other vegetation typical for the region. Stormwater from the Project Area is divided into two drainage points: the northern half of the Project Area draining to a ditch to the north and the southern half draining towards a wetland to the south.

During construction stormwater runoff

Since construction of the Project would disturb over 1-acre, Vanguard will obtain an authorization to discharge stormwater in Minnesota associated with construction activity under the National Pollutant Discharge Elimination System /State Disposal Program (NPDES/SDS) Construction Stormwater General Permit (CSW permit) . For compliance with the CSW permit, a SWPPP would be written, inspections to ensure compliance conducted, and installation of sediment and erosion control best management practices (BMPs) within and surrounding the Project Area would occur.

A requirement of the Project's future SWPPP would be to address the BMPs specific for the Project and construction activities. BMPs may include but would not be limited to silt fence, sediment control logs, erosion control blanket, seeding, mulching, permanent stormwater pond, and stabilized construction exit(s).

Post-construction stormwater runoff

Construction of the Project would incur land disturbance and alterations to the overall drainage within the Project Area, including two permanent stormwater filtration basins: one along the southern boundary and a second along the eastern side of the proposed access road. Since the Project Area is undeveloped, a net increase of 10.64 acres of impervious surface is expected. Design of the stormwater filtration basins will meet the applicable requirements of state and recommendations/regulations.

Environmental effects from post-construction stormwater discharges on receiving waters and from operations would increase stormwater volume, however, the Project's design plans institute the construction of stormwater filtration basins adequate for managing runoff from the Project. These basins would assist in controlling the volume, temperature, and rate of stormwater runoff leaving the Project, and would allow for potential pollutants to be removed prior to discharge. Per the NPDES/SDS Industrial Stormwater (ISW) General Permit, the proposed filtration basins would not be within 1,000 feet upgradient or 100 feet downgradient of an active karst feature, nor within a wellhead protection area, and would also not be a part of a spill containment plan.

The Project would require an NPDES ISW permit and related SWPPP. This incorporates a post- construction stormwater management plan for the operational aspects of the Project and benchmark monitoring. The Project includes greenspace and stormwater filtration basins to allow for the detention and treatment of generated stormwater. Salt applied to impervious surfaces for ice management during winter conditions would follow the parameters listed in Part II, Section 15.1 of the ISW permit.

iii. Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should the appropriation volume increase beyond infrastructure capacity or water supply for the project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.

Temporary short-term construction dewatering of groundwater may be required during Project construction (depending on weather conditions) to facilitate construction activities of phased grading, placement of structural footings, and utility trenches/pits. If

dewatering is anticipated to exceed 10,000 gallons per day or 1,000,000 gallons per year, the contractor performing the applicable work would be required to obtain a Temporary Construction Dewatering Water Appropriation Permit from the MDNR prior to initiating dewatering activities. Measures to avoid, minimize, or mitigate the environmental effects from construction related to dewatering are unknown at this time, and therefore would be determined when developing the dewatering plan as required by a future SWPPP amendment of the NPDES CSW.

A new well would be installed to source potable water for the Project and a water supply for operation of the digesters from groundwater within the Project Areal. The Project's well would draw groundwater from the area's Quaternary Buried Artesian Aquifer (QBAA). A Well Construction Permit from the MDH would be applied for and obtained prior to well installation and operation. Since the Project's supply well would not withdraw more than 10,000 gallons per day or 1,000,000 gallons per year, DNR rules would not require a Water Appropriation Permit- Water Use permit. **Table 14**below lists the expected water supply demands from the Project.

Table 14: Estimated water demand (gallons per day)

Minimum flow	Average flow	Maximum flow
600	1,661	4,163

Vanguard expects the Project's water supply well may impact groundwater recharge rates within the Project Area to a minor degree but not to significantly affect the regional aquifer (QBAA) utilized.

Increased frequency of droughts and volatility of precipitation events expected from climate change may impact wells within the region (including the Project's proposed well) through lowered water tables and an overall reduction in available supply. During times of drought, there may be an impact to the quality of groundwater available (excess sediment etc.).

Vanguard does not expect the Project to require a significant increase in water supply once operational, nor is operation of the digesters anticipated to require maximum water flow on a continuous long-term basis. During drought periods, Project water usage may be able to be reduced to help conserve groundwater supplies depending on the volume and liquid content of food waste/organics received for input into the digesters.

There are no known wells within the Project Area that would require sealing (**Figure 8**, **Appendix B**). If Vanguard discovers wells during construction, appropriate MDH well sealing measures would be followed by a licensed well contractor.

iv. Surface waters

a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed,

taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

Vanguard does not plan any direct (dredge/fill) or indirect (untreated stormwater discharge, drainage etc.) impacts to the adjacent wetland delineated in May 2023 as part of the Project. During construction, Vanguard will protect the adjacent wetland via implementation of sediment and erosion control BMPs. Once construction is complete, the stormwater filtration basins will allow for the detention and treatment of generated stormwater from the Project Area before it is released to any wetlands or surface waters.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

Vanguard does not anticipate any physical alterations or indirect effects to existing surface waters from the Project. Construction and operation of the Project would not change the type or number of watercrafts used on any nearby surface waters.

13. Contamination/hazardous materials/wastes:

a. Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

A previous environmental investigation had been prepared for the Project Area. The Phase I Environmental Site Assessment (ESA) is summarized below.

***Phase I ESA, Wagner Dairy Digestor Site, 65501 295th Street Litchfield, Minnesota,* prepared by Braun Intertec, dated February 28, 2023 (2023 Phase I ESA)**

The 10.7-acre Project Area is primarily tree-covered with the western third of the Project Area developed as cultivated agricultural farmland. There are no buildings within the Project Area. Debris, consisting of piles of tires, fencing, concrete debris, various farm equipment, a cargo storage container, heavy duty plastic piping, and two empty Above Ground Storage Tanks (ASTs) were observed in the northeast corner of the Project Area. Based on information provided by the property owner representative, the tanks were empty when they were moved to the Project Area and have not been used in their observed locations. Scattered throughout the Project Area are various debris piles of tires, trees, and boulders. There is no evidence of man-made trails throughout the Project Area. A field road runs along the Project Area's eastern border.

Based on the readily available historical information, it appears the Project Area was undeveloped or cultivated cropland since at least 1938. An unpaved road that traversed the northern portion of the Project Area was first apparent in a 1975 aerial photograph. The road appears to have provided access to the adjoining agricultural fields to the east. Some areas within the Project Area appeared to have been cleared in the 1980s and were again wooded by 2003. The northern portion was cleared again by 2019.

The surrounding properties consist of cultivated cropland to the east and west with undeveloped land present to the south. Cultivated land and the Wagner Dairy Farm, which consists of multiple buildings is present to the north. No obvious indications of environmental concerns were noted on the adjoining or nearby properties at the time of reconnaissance. Additionally, no facilities were observed in the adjoining areas that were identified on any of the regulatory databases that were indicative of a release of hazardous substances or petroleum products (Braun Intertec Corporation, 2023).

Vanguard identified additional regulated facilities within one mile of the Project using the MPCA's What's in My Neighborhood (WIMN) database. These facilities were not identified as environmental concerns due to their lack of violations recorded or closed status. **Table 15 provides** a summary of the regulated facilities within one mile identified in the WIMN query.

Table 15: WIMN Facilities within one mile

Name	Permit	Activity	Status	Date
Blake and Melissa Tangen Farm	093-127734	Feedlots	Active	8/11/2022
Lee Rick Farm	093-63915	Feedlots	Active	6/29/2021
Litchfield AD1	ENR-00992	Environmental Review	Active	10/14/2024
Lund harvesting LLC	093-64411	Feedlots	Active	8/4/2022
Randall Duscher Farm	093-110767	Feedlots	Inactive	11/25/2018
Wagner Dairy LLC	093-60107	Feedlots	Active	5/2/2024

b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate

adverse effects from the generation/storage of solidwaste including source reduction and recycling.

During each phase of construction, construction-related waste materials (i.e., wood, concrete, bituminous, metals, plastics, etc.) will be generated and recycled or disposed of at approved facilities, as appropriate. Toxic or hazardous substances used during Project construction or operations (i.e., petroleum products, hydraulic fluid, and other chemical products) will be properly stored and disposed of following local and state guidelines.

Mixed municipal and recyclable solid waste would increase within the Project Area as no operations occur there currently. Waste management would comply with applicable laws, rules, and ordinances related to the management of solid and hazardous wastes per Minnesota Statutes, section 473.811. Vanguard will manage recycling in accordance with the 2016 Recycling Law (Minnesota Statutes Chapter 115A, Section 115A.151 and Section 115A.552). Waste collection would be contracted and disposed of by a third-party hauler at a MPCA permitted landfill.

After the generation of natural gas using the liquid digestate, the digestate would be land spread on the Wagner Dairy farm or adjacent crop fields that have a need for nutrient rich fertilizer. Upon delivery of the liquid fertilizer, land application would be the landowner's responsibility. Land application of the digestate would only occur with landowners' permission and as permitted by the MPCA and local regulatory authority (if applicable). The digestate is considered an industrial by-product[1].

c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location, and size of any new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size, and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

Hazardous materials and petroleum-based products used for construction would be limited to small quantities including but not limited to cleaning products, paint related materials and various petroleum- based lubricants and fuels. Vanguard will establish temporary storage within the Project Area for construction-related activities to minimize the potential for any spills or releases. These materials would be under control by the general contractor and its subcontractors, who will maintain Safety Data Sheets (SDSs) at the Project Area in the job trailer or electronically kept for the duration of construction activities.

The Project would utilize manure and food wastes within the Project Area for anaerobic digestion to create renewable natural gas. In Minnesota, the liquid, digestate produced from the digestion process is considered an industrial byproduct[2]. However, it is rich in nutrients and can be utilized as a fertilizer or soil amendment. The Project would obtain a permit for

[1] See Land application of industrial by-products: https://www.pca.state.mn.us/business-with-us/land-application-of-industrial-by-products

[2] See Land application of industrial by-products: https://www.pca.state.mn.us/business-with-us/land-application-of-industrial-by-products

land application of industrial by-products from the MPCA prior to operation in order for the liquid digestate to be used as fertilizer on area crop fields.

One 10,000-gallon propane tank (Conceptual Layout, **Appendix E**) would be installed as a backup fuel source for the Project's boilers and generators. As discussed in **Item 17.a,** the Project's primary fuel source is expected to be natural gas (dependent on interconnection agreement with Center Point Energy). Other storage tanks for the Project would include an approximate 13,500-gallon ferric chloride tank. Table 16 provides a summary of the Project's tanks.

Table 16: Project tanks

Contents	Dimensions (feet)	Approximate volume (gallons)
Clarified Manure	12 Ø x 10	8,460
Digester 1	90 Ø x 32	1,522,847
Digester 2	90 Ø x 32	1,522,847
Ferric Chloride	12 Ø x 16	13,540
Hydrolysis (liquid food waste/organics slurry)	50 Ø x 24	352,512
Hydrolysis (liquid food waste/organics slurry)	20 Ø x 15	35,248
Pressate Holding Tank (liquid digestate)	15 Ø x 12	15,866
Process Water	20 Ø x 15	35,248
Water- Fire Suppression	22 Ø x 25	71,087
Propane	9 Ø x 24	10,000*

*Propane volume varies from dimensional calculated value due to tank shape (TBD) and 80% safety fill limit.

Prior to completion of construction, Vanguard will apply for and obtain local and state permits for handling and storage of materials. As required for storing over 1,320 gallons of product in 55-gallon containers or larger per Code of Federal Regulations Chapter 40 part 112, the Project would have a Spill Prevention, Control and Countermeasure (SPCC) plan. Any above- or underground storage tanks would be permitted and comply with State regulations.

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Vanguard does not anticipate generation and/or storage of any hazardous waste for construction-related activities or for future operations. Vanguard will contain the digestate within the Project Area in a clay lined storage basin until contracted land spreading and/or Wagner Dairy Farm personnel collects the material for offsite use.

Vanguard does not anticipate and generation of hazardous waste as regulated by the Resource Conservation and Recovery Act (RCRA)from Project operations. Should any be any generation of hazardous waste, Vanguard would follow the appliable State Statutes for management and storage.

14. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

The Project is northeast of the City of Litchfield within an agricultural area of Forest City Township. Existing land cover within the Project Area consists of woodland, turf grasses and cultivated cropland. One wetland is adjacent the southern boundary of the Project Area beyond the woodland present (**Item 12.a.i.).** The surrounding area land use is predominantly agricultural. However, there are several wetlands and a few lakes within one mile.

Woodlands and farmsteads are also present within the surrounding area. The woodland portion of the Project Area provides general wildlife habitat for passerine birds & raptors, insects, reptiles, some amphibians, and small mammals. With no waterbodies or other aquatic resources present, fish habitat is absent from the Project Area. Additionally, streams and lakes capable of supporting aquatic organisms including fish are further than a half mile from the Project.

b. Describe rare features such as state-listed (endangered, threatened, or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-038) and/or correspondence number (MCE 2024-00838) from which the data were obtained and attach the Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

Braun Intertec Corporation holds a license agreement from the MDNR for a local copy of the Natural Heritage Information System (NHIS) geodatabase (License #038). Braun Intertec Corporation queried the database on August 23, 2024, for Element Occurrences (EO) within a three-mile radius of the Project. No Element Occurrences were found in the NHIS database within three miles of the Project.

A Natural Heritage Review request was also submitted to the MDNR through the Minnesota Conservation Explorer (MCE) and the response letter indicated that after review, MnDNR staff "*do not believe the proposed project will negatively affect any known occurrences of rare features.*" A copy of the Natural Heritage Review Letter is in **Appendix C**.

An online query was submitted to the U.S. Fish & Wildlife Service (USFWS) database through the Information for Planning and Conservation (IPaC) tool on October 2, 2024 (USFWS, 2024). The IPaC results (**Appendix C**) indicated that the Project Area is within the range of the federally listed Whooping Crane *(Grus americana)*, the Monarch Butterfly (*Danaus plexippus*) and Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*); two species proposed for listing as threatened.

In Minnesota and 23 other states, the Whooping Crane's status is Non-Essential Experimental Population (NEP). The NEP designation is used for threatened or endangered species that are proposed to or have been reintroduced into a portion of their historic range and will be geographically isolated from other populations of a species. Experimental populations are primarily used as a tool for recovery and reintroduction of listed threatened or endangered species. NEP are those populations that are not vital to the survival of a federally listed species in the wild. NEP of a species are still protected from take under the federal Endangered Species Act (ESA). However, the designation of NEP allows for greater

flexibility in the management of a geographically specific species population (i.e., a broader range of land uses are allowed in areas with an NEP of a species).

The IPaC results do not indicate observations of these species near or within the Project Area. IPaC results identify species that may occur within the Project Area based on broad geographic ranges of the species (such as occurrence within the county). In contrast, the NHIS results report actual observations within a set distance (three miles was used for the Project). A summary of the listed species identified in the IPaC and NHIS queries is in **Table 17**.

Table 17: Federally listed species' status within one mile of the project area.

Common name	Scientific name	Federal status	State status	Type
USFWS IPaC Species Query Results				
Monarch Butterfly	*Danaus plexippus*	Proposed Threatened	N/A	Insect
Suckley's Cuckoo Bumble Bee	*Bombus suckleyi*	Proposed Threatened	N/A	Insect
Whooping Crane	*Grus americana*	Experimental Population, Non-Essential	N/A	Bird

*No Element Occurrences were found in the NHIS database within three miles of the Project Area.

The IPaC results also noted that bald eagles along with six migratory birds of conservation concern have been documented within the vicinity of the Project. Eagles are protected by the Bald and Golden Eagle Protection Act (BGEPA) which prohibits the take of bald or golden eagles, and this protection extends to body parts, eggs, or nests. A "taking" includes the following actions: pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. In addition to direct impacts, the BGEPA includes disturbance around eagle nests that could disrupt nesting or cause nest abandonment.

Migratory birds are legally protected by the Migratory Bird Treaty Act (MBTA), which implements international treaty agreements through federal law. The MBTA prohibits take of protected migratory bird species. Take encompasses killing, capturing, selling, trading or transport. Prohibitions extend to adult birds, juveniles, and active nests during the breeding season. Both the BGEPA and MBTA are administered by the USFWS, and if migratory birds or eagles are found occupying the Project Area during construction, any potential impacts would be permitted in accordance with all applicable state and federal laws.

Since the Project Area does not contain bogs, freshwater or brackish marshes, peatlands or tidal flats, suitable habitat is not present for the Whooping Crane. Herbaceous vegetation within the Project Area may provide habitat for monarch butterflies. However, pollinator floral resources appear to be limited since the existing landcover consists of cropland, turf grasses, and woodland. Additionally, little understory vegetation was observed within the woodland portion of the Project Area during the Braun Intertec Corporation 2023 wetland delineation. As a result, the monarch butterfly and Suckley's cuckoo bumble bee are unlikely to forage or reside within the Project Area but may be transient visitors during migration.

While no listed bat species were identified in the IPaC or NHIS query results, the trees present may provide potential maternity and pup rearing habitat in the spring and summer roosting and stopover habitat for bats. The trees within the Project Area also provide nesting and stopover habitat for migratory birds.

The Project does not occur in or near designated Critical Habitat and no portion of the Project Area is within or adjacent to a Minnesota Biological Survey site.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

While the Project Area contains woodland that provides general wildlife habitat, the habitat is fragmented and separated from other forested or wooded areas within the surrounding landscape by tens to hundreds of cropland acres. As result, there is limited presence of native ecosystems or plant communities within the Project Area and surrounding vicinity.

Seasonal considerations for required tree clearing work would minimize potential impacts to bats and migratory birds. Additionally, the treatment of Project stormwater and implementation of a SWPPP during construction would reduce potential indirect impacts from sedimentation to aquatic species in the surrounding water bodies.

The monarch butterfly and Suckley's cuckoo bumble bee are proposed for listing as threatened species by the USFWS. As a species proposed for listing, the monarch butterfly and Suckley's cuckoo bumble bee are not currently protected under the Endangered Species Act (ESA). Voluntary conservation measures for the monarch butterfly are encouraged for development projects that occur within its range. Designed conservation measures may include planting native flowering vegetation species in landscaped areas that bloom spring through fall and removal/control of invasive plant species that establish post-construction.

As discussed in **Item 7**, Minnesota's climate is projected to change in the following decades primarily through increases in both average temperatures and precipitation. These climatic changes along with the projected increased frequency of droughts, are expected to exacerbate habitat stressors (habitat loss, fragmentation, degradation, and pollution along with the introduction of invasive species and/or disease) at varying levels of severity for wildlife across Minnesota (MDNR, 2016). Ecosystems within the prairie-forest border of central Minnesota (Project region) are expected to experience more intense storms with larger blow down events, insect damage, droughts, and fire. The interactions of these stressors from climate change may result in many forests transitioning to savannas (MDNR, 2016).

Probable future effects from climate change at the Project Area may include shifts in natural vegetation from historically established species to ones that thrive under warmer temperatures (e.g., changes in tree distribution from aspen, cottonwood, and maples dominant to oak savanna species). Other expected impacts include increased stormwater and flash flooding, which could require more management.

However, since limited wildlife habitat is currently present within the Project Area, Vanguard anticipates impacts from climate change in context of the Project to any species potentially present in the future to be minimal.

d. Identify measures that will be taken to avoid, minimize, or mitigate the adverse effects to fish, wildlife, plant communities, ecosystems, and sensitive ecological resources.

During construction, all disturbed soils would be temporarily protected by sediment and erosion control measures that would be installed and maintained for the duration of the Project. Additionally, any required tree clearing would be completed between November 1 and March 31 (outside the active roosting season for bats and nesting season for migratory birds) to minimize potential impacts to bats and migratory birds. If bald eagles or other migratory birds are found nesting within the Project Area and seasonal restrictions on work activities cannot be followed, the USFWS would be consulted prior to any work beginning.

15. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or inclose proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

On February 20, 2023, Braun Intertec requested technical assistance from the Minnesota State Historic Preservation Office (SHPO) to determine whether historic structures, archaeological sites, and/or traditional cultural properties may exist on or near the Project. The SHPO response indicated there are no properties listed in the National or State Register of Historic Places and no known or suspected archaeological properties in the area would be affected by the Project. On November 7, 2024, SHPO was contacted to confirm their 2023 "no affect" determination was still valid for the Project. An updated copy of the SHPO response (dated November 7, 2024) is in **Appendix D**.

Braun Intertec reviewed the Minnesota Statewide Historic Inventory Portal (MNSHIP) for state and federally listed historical sites. No historical sites were identified within the Project Area. However, there is one state listed historic building mapped within the surrounding area, a school west across 650th Avenue. Trunk Highway 24 west of the Project is also listed as a historic structure

Since the MNSHIP database does not show archaeological resources, Braun Intertec conducted an additional search of the Office of the State Archaeologist (OSA) portal. According to the portal, no recorded archaeological resources are present within or adjacent to the Project Area.

16. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The Project Area slopes both to the south and north with general drainage to the south through the adjacent wetland. Surrounding offsite areas include agricultural and rural residential homes with agricultural fields and undeveloped greenspace. Trees obstruct the views from the Project Area to the south, and unobstructed to the west, north, and east.

Visual effects from Project operations would include vapor plumes from the buildings heating systems during winter months, flare, parking lot and other exterior lighting, and mobile vehicle/equipment lights. Vanguard does not anticipate nighttime construction for

the Project; thus, no additional lighting would be implemented during construction activities.

Mitigation efforts proposed include domed exterior lights, which are downcast and cutoff, minimizing night activities, and operation of the flare only during applicable times. Vanguard will plant fifteen trees along the western side of the digestate storage basin and provide a screen to the adjacent properties not part of the Wagner Dairy Farm.

17. Air:

a. Stationary source emissions - Describe the type, sources, quantities, and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants. Discuss effects to air quality including any sensitive receptors, human health, or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

The stationary sources of emissions from the Project include an emergency flare, two boilers, emergency engines, a biogas upgrading system, fugitive leaks from pumps, valves, and other piping components, fugitive road dust, hydrolysis tanks, and two digestate storage basins.

The emergency flare would be used during startup, periods of process upset, and periods when renewable natural gas cannot be routed to the pipeline. The flare generates products of combustion including criteria pollutants, air toxics, and greenhouse gases (GHGs) from the combustion of the raw biogas. Criteria pollutants generated from the combustion of raw biogas include particulate matter (PM), particulate matter less than ten microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2), and volatile organic compounds (VOCs). Most of the hydrogen sulfide (H_2S) in the raw biogas converts to SO_2 by the flare, but a small amount of H_2S may be emitted from the flare.

The boilers will heat the digesters and burn pipeline quality natural gas. The boiler emissions consist of products of combustion which include criteria pollutants, air toxics, and GHGs. Vanguard will only use the emergency engines and fire pump engine during emergency situations and will burn pipeline quality natural gas or diesel fuel. These units will also generate relatively small amounts of products of combustion which include criteria pollutants, air toxics, and GHGs.

The biogas upgrading system will remove impurities from the raw biogas such as H_2S, carbon dioxide (CO_2) and trace VOCs. Excess CO_2 will exit through the tail gas stack of the biogas upgrader. The tail gas will consist of a majority of CO_2 with trace amounts of methane (CH_4), VOCs, and H_2S. After processing through the biogas upgrader, approximately 745 million British Thermal Units (MMBtu) per day and up to 295,000 MMBtu per year of RNG would be produced by the digesters.

The piping components used throughout the RNG process leak small amounts of gases into the atmosphere. The emissions will consist largely of CH_4 and small amounts of VOC, H_2S, and ammonia (NH_3).

Vehicles traveling on the Project Area will generate fugitive PM, PM_{10}, and $PM_{2.5}$.

In the hydrolysis tanks, organic material is expected to emit H_2S and NH_3, and the hydrolysis tanks are equipped with odor control systems to reduce H_2S and NH_3 emissions.

Potential to emit (PTE) of the Project is in **Table 18**. Typically, PTE is the emission rate of the Project operating at maximum capacity, 365 days per year, and 24 hours per day. However, emergency engines can typically be represented assuming 500 hour per year operation. Except for the emergency engines, the emission rates below assume that the Project, including the emergency flare, is operated at maximum capacity, 365 days per year, and 24 hours for day.

Therefore, the PTE is an overestimate of what the Project will emit each year at worst-case conditions. The emission estimates below are for the Project only and do not consider emissions avoided by diverting food waste from the landfill or from changes to manure management practices.

Table 18: Project potential to emit

Pollutant	Potential to emit (tons per year)
NOx	17.68
CO	32.70
PM	1.10
PM_{10}	1.09
$PM_{2.5}$	1.08
SO_2	6.27
VOC	1.11
Lead	4.3E-05
Total HAP	1.16

Vanguard completed an Air Emissions Risk Analysis (AERA) to estimate the potential human health risks from the air emissions from the Project. The AERA evaluated the acute toxicity, chronic toxicity, cancer, and non-cancer risks associated with worst-cased emissions (PTE) from the Project and compared them to risk thresholds included in the MPCA's Risk Assessment Screening Spreadsheet (RASS). The analysis shows that risks calculated for the Project generating air emissions at its PTE are below risk guidance levels, including adjustments for early life exposures. **Table 19** presents the Air Toxics Screening results from the RASS. The AERA Report is in **Appendix D**.

Table 19: Project-specific air toxic screening results

Risk type	Calculated risk estimate	MPCA facility-specific guidance level
Total inhalation risk		
Acute	1	1
Sub chronic Noncancer	7×10^{-2}	1
Chronic Noncancer	9×10^{-2}	1
Cancer Index	3×10^{-1}	1
Total indirect pathway risks		

Risk type	Calculated risk estimate	MPCA facility-specific guidance level
Farmer Noncancer	3×10^{-3}	1
Farmer Cancer Index	1×10^{-2}	1
Urban Gardener Noncancer	1×10^{-3}	1
Urban Gardener Cancer Index	1×10^{-3}	1
Resident Noncancer	1×10^{-3}	1
Resident Cancer Index	4×10^{-4}	1
Total multi-pathway risks		
Farmer Noncancer	9×10^{-2}	1
Farmer Cancer Index	3×10^{-1}	1
Urban Gardener Noncancer	9×10^{-2}	1
Urban Gardener Cancer Index	3×10^{-1}	1
Resident Noncancer	9×10^{-2}	1
Resident Cancer Index	3×10^{-1}	1

The Project completed an air dispersion modeling analysis to compare the modeled concentrations from the Project emitting at its PTE together with ambient background levels of air pollutants and emissions contributions from nearby sources to the National Ambient Air Quality Standards (NAAQS) and Minnesota Ambient Air Quality Standards (MAAQS). The modeling demonstration shows that the air emissions from the Project are not expected to cause or contribute to a violation of the NAAQS or MAAQS. The modeling report is in **Appendix D**.

The Project first compared ambient air impacts from emissions from the Project to the Significant Impact Levels (SILs). A SIL analysis is a typical way for the MPCA to evaluate ambient impacts from a project. If the overall impacts are less than the associated SIL for the respective pollutants, the emissions from the project are determined not to adversely affect ambient air quality. **Table 20** shows modeling results for pollutants and average times below the SIL.

Table 20: Significant Impact Level (SIL) modeling results for pollutants and averaging times below the SIL

Pollutant	Averaging period	SIL (ug/m^3)	Total modeled concentration[1] (ug/m^3)	Percent of standard
CO	1-hr	2,000	122.68	6.13
	8-hr	500	97.20	14.24
SO_2	3-hr	25	10.40	41.59
	24-hr	5	4.57	91.48
	Annual	1	0.15	15.25
PM_{10}	24-hr	5	4.02	80.41

Table 21 below compares the modeled concentration of the Project to the NAAQS and MAAQS.

Table 21: Air Dispersion Modeling Results

Pollutant	Averaging period	NAAQS standard (ug/m^3)	NAAQS standard (ug/m^3)	Total modeled conc.[1] (ug/m^3)	Percent of standard (%)	
					NAAQS	MAAQs
	1-hr	40,071.5	40,071.5	N/A[2]	-	-
CO	8-hr	10,304.1	10,304.1	N/A[2]	-	-
Lead	Rolling 3 mo. avg.	0.15	0.15	0.00005	0.033	0.033
	1-hr	188.0	188.0	121.02	64.36	64.36
NO_2	Annual	99.7	99.7	13.16	13.20	13.20
	1-hr	196.4	196.4	37.77	19.27	19.27
	3-hr	1309.3	1309.3	NA[2]	-	-
	24-hr	366.6	366.6	NA[2]	-	-
SO_2	Annual	78.6	78.6	NA[2]	-	-
PM_{10}	24-hr	150.0	150.0	NA[2]	-	-
	24-hr	35.0	35.0	20.05	27.28	57.28
$PM_{2.5}$	Annual	12.0	12.0	7.10	78.89	78.89
	30-min	N/A	70.0	25.1	N/A	35.85
H_2S	30-min	N/A	42.0	25.1	N/A	59.76

[1]Including background and nearby sources.
[2]Projects impacts below Significant Impact Level, so cumulative analysis not required.

b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g., traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

Air emissions from vehicles include "tailpipe" emissions (products of combustion) as well as "fugitive dust" emissions which are particulate emissions from resuspension of loose material on the road surface caused by vehicles driving over the road surface. Emissions of vehicle traffic will depend on the conditions of the season and activity within the Project Area. Typical vehicle emissions associated with the project include emissions from employee traffic to and from the Project Area and food waste delivery trucks. During construction of the Project, both non-road and on-vehicle emissions will be used.

Vanguard expects up to 20 food waste trucks per day during operation of the Project. Vanguard will not own or operate the food waste trucks. During the operation of the Project, fugitive dust emissions were included in the air dispersion modeling demonstration discussed in **Item 17.a**. The air dispersion modeling demonstrations show that emissions from the source, including fugitive dust from vehicles will not cause or contribute to a violation of ambient air quality standards.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 17a). Discuss the effect of dust and odors in the vicinity of the

project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

Dust was discussed in **Items 16.a.** and **16.b.** above.

Handling and process of food wastes and digestate can release odorous compounds such as ammonia, VOCs, and H_2S. Once operational, possible sources of odor from the Project and associated best management practices or mitigation include:

- Liquid food waste will be unloaded directly into the hydrolysis tank(s). As the tanks' level changes, the headspace will be displaced. Emissions from the hydrolysis tank will be vented to an odor control system prior to discharge to the atmosphere. The odor control system will consist of catalytic treatment, a carbon bed, or other odor control technology.
- The anaerobic digestion process occurs in an enclosed, sealed vessel to capture the biogas. Next, the biogas is upgraded to remove contaminants such as hydrogen sulfide, VOCs, and CO_2 prior to injection into the natural gas pipeline. If there were to be any upsets during the conditioning process flaring will control the biogas.
- After the feedstock passes through the anaerobic digester, some residual digestate is leftover. The digestate then passes through a screw press to separate out the liquid and solid portions. Vanguard will store the solid digestate inside a building to dry. The solid digestate will contain little odor causing organic matter because it has undergone biological decomposition with the odorous compounds removed, including sulfur. This will reduce the potential for odors during drying and storage prior to utilization as an agricultural fertilizer.
- Liquid digestate will be stored in storage basins within the Project Area and will be applied to nearby farm fields for agronomic benefit.

The Project will use manure from the existing neighboring Wagner Dairy Farm. Anaerobic digestion is an established method for treating manure to prevent odor production since anaerobically digested manure produces significantly less odor than untreated liquid manure.

18. 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.

Table 22 includes a summary of the potential GHG emissions for the Project. The supporting calculations are in **Appendix G**. The primary GHGs emitted from the Project include CO_2, CH_4, and nitrous oxide (N_2O). A common way to report emissions of these gases is to multiply the emissions of each gas (in tons) by its global warming potential (GWP) and to report the total GHG emissions as total carbon dioxide equivalents (CO_2e).

The GHG analysis for the project includes direct emissions, indirect emissions, and sinks.

Scope 1/Direct emissions

Direct emissions are emissions released directly from the property under the control of the project proposer. Direct emissions from the Project include stationary combustion and non-combustion sources of GHGs associated with operations (e.g., boilers, engines, flare, biogas upgrading system, equipment leaks, and digestate storage). Scope 1 emissions also include emissions associated with permanent land use change. **Table 22** quantifies these emissions. Other sources of Scope 1/direct emissions associated with operation of the source include mobile sources emissions from employee transportation to and from the Project Area. The Project would employ approximately five to seven full time equivalent employees; therefore, emissions from employee traffic were not included in the assessment.

There will also be Scope 1/direct emissions associated with Project construction. This will include tailpipe emissions from mobile on road and offroad vehicles used during construction.

Scope 2/Indirect emissions

Scope 2 emissions from the project include emissions associated with offsite generation of purchased electricity and are included in **Table 23**. The electricity demand for the Project is a conservative preliminary estimate based on equipment capacities for the combined heat and power unit at a similar facility. The facility that these values are based on is the River Falls AD1 in Wisconsin, which has a similar design but slightly larger production capacity. Using a single larger digester, the River Falls AD1 facility is expected to process up to 440 tons of waste per day (including manure & liquid wastes) or approximately 125,840 tons annually over 286 operating days. Actual emissions from the generation of purchased electricity would likely be less than the estimate included with this assessment since River Falls AD1 is a larger facility.

Scope 3/Indirect emissions

According to EPA and the Environmental Quality Board's (EQB) Environmental assessment worksheet guidance: Developing a carbon footprint and incorporating climate adaptation and resilience June 2024 ("EQB Guidance"), "Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly affects in its value chain." Based on this definition, the Project's assessment includes emissions of offsite waste management of food waste packaging materials in Scope 3 as well as vehicle emissions from trucks delivery food wastes to the Project Area.

The emissions from combustion of the renewable natural gas produced by the Project are not included in Scope 3 because RNG is considered a carbon-neutral fuel. Biomethane for pipeline uses is included in the EQB's Guidance as a biogenic source of CO_2 for which carbon neutrality is often assumed in carbon footprint development.

Sinks

A sink is a reduction in atmospheric GHGs by storing carbon in another form. The EQB Guidance indicates that sinks can be included in GHG project accounting. For the purposes of this assessment, the emissions that would have been generated by the manure management practices of Wagner Dairy (absent the anaerobic digester) and the emissions that would have been generated by the landfilling or composting of the food quantity used for anaerobic digestion were subtracted from the CO_2e emissions from the project.

Table 22: Construction emissions

Scope	Type of emission	Emission sub- type	Project-related CO_2e emissions (tons/year)	Calculation method(s)
Scope 1	Combustion	Mobile Equipment	5	Emissions factors from U.S. EPA's Emission Factors for Greenhouse Gas Inventories" (January 2025); estimates of fuel usage associated with construction.
Scope 1	Land Use	Conversion	20.5	Land type carbon flux emission factor calculated from U.S. EPA "Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2022"
Scope 1	Land Use	Carbon Sink	N/A2	
TOTAL			25.5	

Table 23: Operational emissions

Scope	Type of emission	Emission sub-type	Project-related CO_2e emissions (tons/year)	Calculation method(s)
Scope 1	Combustion	Mobile Equipment	833	Emissions factors from U.S. EPA's Emission Factors for Greenhouse Gas Inventories" (January 2025); estimates of vehicles miles traveled associated with routine onsite operations.
Scope 1	Combustion	Stationary Equipment	6,508	Mass balance and U.S. AP-42 emission factors
Scope 1	Non-Combustion	Stationary Equipment	17,779	Mass balance, U.S. AP-42 emission factors, and "Compliance Offset Protocol Livestock Projects" California EPA Air Resources Board (November 2014)
Scope 2	Off-site Electricity	Grid-based	12,174	Emissions factors from U.S. EPA's Emission Factors for Greenhouse Gas Inventories" (January 2025); estimate of electricity demand.
Scope 3	Off-site Waste Management	Area	2,694	EPA Simplified GHG Calculator (May 2023); estimates of food packaging material waste
Scope 3	Diversion of Food from Landfill /Composting	Carbon Sink	44,356	California Air Resources Board Tier 1 Simplified CI Calculator: Biomethane from Anaerobic Digestion of Organic Waste (April 4, 2023) and Methods for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities, California Air Resources Board (May 2017)
Scope 3	Manure Management	Carbon Sink	877	"Compliance Offset Protocol Livestock Projects" California Air Resources Board (November 2014)
TOTAL			-5,246	

[1] Proposed land-use changes are not expected to produce greenhouse gas reductions (sinks).

[2] Insufficient data is available to calculate emissions from vehicle traffic associated with Project operations following construction completion (deliveries, maintenance, etc.); therefore, these emissions have not been quantified.

b. GHG assessment

i. Describe any mitigation considered to reduce the project's GHG emissions.

Since the Project is a renewable energy project and by design, once operational, anaerobic digesters reduce greenhouse gas emissions, particularly methane from organic wastes (food, manure, etc.) additional mitigation measures were not considered.

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

The Project is inherently a renewable energy project and once construction is complete, operation of the anaerobic digesters reduces greenhouse gases from organic wastes generated by other activities or processes (agriculture, food production and distribution).

iii. Quantify the proposed projects predicted net lifetime GHG emissions (total tons/#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 Project supports the goals of the Minnesota Next Generation Energy Act because by nature it is a renewable energy project. Anaerobic digestion reduces methane emissions from manure and landfilled food waste and creates renewable biogas that can lower fossil fuel natural gas usage.

19. Noise:

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including: 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Minnesota's noise pollution rules are based on statistical calculations that quantify noise levels over a one-hour monitoring period. The L_{10} calculation is the noise level that is exceeded for 10 percent, or six minutes, of the hour, and the L_{50} calculation is the noise level exceeded for 50 percent, or 30 minutes, of the hour. There is not a limit on maximum noise. The statutory limits for a residential location are L_{10} = 65 dBA and L_{50} = 60 dBA during the daytime (7 a.m. to 10 p.m.) and L_{10} = 55 dBA and L_{50} = 50 dBA during the nighttime (10 p.m. to 7 a.m.) (Minn. R. 7030.0040). This means that during the one-hour period of monitoring, daytime noise levels cannot exceed 65 dBA for more than 10 percent of the time or 60 dBA more than 50 percent of the time. The basic noise rules for other noise area classifications are:

Table 24: State noise standards

Noise area classification	Daytime		Nighttime	
	L_{10}	L_{50}	L_{10}	L_{50}
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

Current noise varies from multiple sources and land use including but not limited to agricultural equipment and operations, farming implements, residential and rural traffic, and seasonal activities (i.e.- harvest, hunting, and planting).

Due to the distance to the nearest receptor, construction activity and operations noise would need to be accounted for and reduced when practical and feasible. Sound levels within the Project Area will differentiate due to the source, movement, proximity to the boundaries, barriers, wind, vegetation, proximity from the source to the receptor, and receptor noise level in decibel readings. The nearest receptors are the access road to the Project and the residential building to the northeast.

Construction noise would occur outside during daytime hours of 7 a.m. to 7 p.m. during weekdays and 7 a.m. to 7 p.m. on weekends. Construction noise generating equipment and activities may include earthwork/grading equipment and building activities. If blasting were to occur, all applicable noise regulations would be adhered to, including but not limited to notification, daytime hours only, and proper planning and permitting.

Post-construction noise generated from Project operations would occur both in buildings and outside in the Project Area from approximately 5 a.m. to 10 p.m. Mondays through Saturdays. Occasional outdoor activities will continue to generate noises from the start up and shut down of trucks, back-up alarms, and general maintenance activities (snow removal and lawn / landscaping) and building or equipment maintenance. There may be occasional infrequent high frequency, short duration noise levels (nuisance noise) expected during short term non-routine operational activities. Recurring outdoor Project Area, building, and equipment maintenance activities would generally be scheduled during daytime hours.

Vanguard does not expect construction and post-construction operational noise sources to contribute to nonconformance with the Minnesota State Statute 7030.0040, nor are Project operations expected to contribute to excessive noise or nonconformance with the State noise standards for nearby receptors or negatively affect the nearby receptors quality of life. Mitigation measures used could include but would not be limited to back up alarms (squawkers), elevation difference for rooftop units, vegetation and landscaping, noise being reduced by buildings, adjusted operational hours, insulation of units and buildings, and location of truck parking and loading and its proximity to sensitive resources.

20. Transportation:

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

Since the existing landcover is undeveloped greenspace, no traffic currently occurs within the Project Area. Therefore, no disruptions to traffic or established vehicle routes would occur from the Project. Since the Minnesota Department of Transportation (MnDOT) does not maintain 288th Street, no traffic counts are readily available for the road. During Project construction and for use during operations, five employee parking spaces and up to three tractor-trailer unloading/parking spaces would be added.

For construction, parking for the contractors would remain within the Project Area boundaries. Vanguard anticipates equipment such as excavators, bulldozers, off-road hauling equipment, payloaders, telehandlers, concrete hauling trucks, and other earth-moving implements to be hauled to the Project Area by tractor-trailers. Upwards of two mobilizations hauling this equipment is expected, but only temporarily.

Project related traffic (employee commutes and materials delivery/export) would use 288th Street for access post-construction. There is currently no public transportation to the Project Area and since the Project is not residential or commercial development, no other alternative non-motorized modes of transportation to the Project Area were analyzed.

For Project operations, Vanguard anticipates a total of ten trips (five in to and five leaving the Project Area) for employees. Vanguard anticipates up to 30 truck trips to and 30 leaving the Project Area as well. Trucks delivering food waste/organics to the Project Area are expected to be end-dump or tanker trucks dependent on the load content (liquid/slurry vs solids). Expected truck travel distances to and from the Project Area are currently unknown but digester feedstock is expected to come from partner organizations within 100 miles of the Project Area.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system.*If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 (available at: https://www.dot.state.mn.us/accessmanagement/pdf/manualchapters/chapter5.pdf*)* or a similar local guidance.

Traffic estimates, provided by Vanguard, indicate the daily peak traffic to the Project will increase. Traffic for employees and deliveries would utilize 288th Street during operational hours (5 a.m. to 10 p.m. Monday through Saturday with little to no traffic on holidays). As the MnDOT Traffic Mapping Application does not have traffic counts or estimates for 288th Street, it is expected trips to and from the Project would increase traffic for the surrounding area, but not exceed 250 vehicle trips per day or 2,500 daily trips(requirements for a Traffic Impact Study).

From the Meeker County 2024 Seasonal Load Limit Map, gravel surface roads have a seasonal five-ton weight limit (Meeker County). Loads delivered to the Project would follow Meeker County Highway Department restrictions.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

A road access and maintenance agreement with Meeker County for 288th Street would be prepared for the Project as part of the CUP process. Conditions expected within the road agreement would include upgrades to approximately 2.3 miles of 288th Street for use as a Class A road and long-term road maintenance at Vanguard's cost. Vannguard does not propose any additional transportation mitigation strategies for the Project to be implemented. If needed, Vanguard would consider reasonable minimization and mitigation measures to relieve a specific future traffic-related concern. Mitigation measures could potentially include but would not be limited to: additional traffic control infrastructure (turn lane, stop signs etc.) or shifts in material delivery hours to the Project Area.

21. Cumulative potential effects: (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items).

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

The geographic scale considered in the cumulative potential effects analysis would include land adjacent to and within an approximately one-mile radius of the Project. Reasonably foreseeable future projects that are funded or planned to be constructed within the next ten years would be considered for the cumulative potential effects analysis.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

Vanguard conducted a review of current and reasonably foreseeable future projects using the *EQB Monitor* publication of upcoming projects and current/planned projects posted or known by Meeker County and/or the county economic development authority. No projects are proposed (funded or planned) within the general geographic location of the Project. Additional future projects within the general region are reasonable to expect as Meeker County continues to grow.

However, as discussed in **Item 6.e.** construction of an interconnection pipeline from the Project to Center Point Energy's natural gas distribution system will occur in the future. The timeline, environmental impacts, and associated mitigation of these environmental impacts would be determined once an interconnection agreement is enacted between Vanguard and Center Point Energy and construction plans for the pipeline are developed by Center Point. The timeline for the interconnection project will depend on the timing and provisions of the interconnection agreement. At the time of this EAW, the interconnection agreement is still under development and estimated dates for the construction of the interconnection project by Center Point are unknown.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The future natural gas interconnection project addressed in **Item 21.b.** would interact with the Project.

Per-and polyfluoroalkyl substances (PFAS)

PFAS compounds have been used for decades in various industrial processes and commercial products. Not all uses of PFAS in industrial settings are known. New PFAS are being invented, used in industry, incorporated into commercial products, and released into the environment daily. PFAS are extremely stable and do not generally break down in the environment; those that do break down become other, different PFAS. PFAS have been found in air, soil, groundwater, and surface water in Minnesota.

Based on the MPCA's current understanding of PFAS in food waste and the ubiquitous nature of PFAS chemicals, it is possible that some amount of PFAS may be present in the incoming feedstock materials.[3] The processes at the proposed Facility are not expected to add PFAS to end products. Any PFAS present in the proposed Facility's renewable natural gas output and/or digestate waste streams, including any PFAS in the storage basins, would subsequently depend on the amount of PFAS in the feedstock materials received daily.

Minnesota's PFAS Blueprint (p-gen1-22, February 2021) outlines the state's plan to address PFAS pollution. The Blueprint presents approaches to pollution prevention, investigation of PFAS discharges, environmental monitoring, toxicity research, and regulatory development, among other objectives. In keeping with Minnesota's mission to prevent, manage, and mitigate PFAS pollution, MPCA's permitting programs are developing and/or implementing PFAS-specific actions to reduce or eliminate PFAS releases to the environment, while research into the sources and fate of PFAS in the environment are ongoing.

22. **Other potential environmental effects:** If the project may cause any additional environmental effects not addressed by items 1 to 20, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

    No additional effects from the Project other than those discussed above are anticipated.

[3] See section "PFAS at compost sites" on MPCA's PFAS studies and reports website, https://www.pca.state.mn.us/air-water-land-climate/pfas-studies-and-reports.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** EnvironmentalAssessment Worksheets for public notice in the EQB Monitor.)*

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 connected actions or phased actions, as defined at Minn. R. ch. 4410.0200, subp. 9(C) and 60,respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

May 28, 2025
Date signed

Dan R. Card

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

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