

ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

Form 1600-8

Department of Natural Resources (DNR)

Region or Bureau Northeast Region
Type List Designation Type II

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before 4:30 p.m.,

_____ .
(date)

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Applicant: James Ostrom, Rosendale Dairy, Inc.

Mailing Address: N3569 Vanden Bosch Rd, Kaukauna, WI 54130

Location Address: N8997 County Highway M, Pickett, WI 54964

Title of Proposal: Construction of a new dairy

Location: Town of Rosendale, Fond du Lac County, east half of SW ¼ and approx. west 1/3 of SE ¼ Sec. 9, T16N, R15E

PROJECT SUMMARY – DNR Review Information Based on:

1. General Project Description

This environmental analysis is associated with the Department of Natural Resources’ (the Department) issuance of a Wisconsin Pollutant Discharge Elimination System (WPDES) permit and review and approval actions of designed structures for Rosendale Dairy, a large Concentrated Animal Feeding Operation (CAFO) proposed to be constructed in Fond du Lac County. This operation has not held a WPDES permit in the past. Permits are normally issued for up to five years. The Department anticipates issuance of a WPDES permit in November of 2008 with an expiration date in October of 2013.

The applicant, James Ostrom, currently owns and operates two other permitted Concentrated Animal Feeding Operations (CAFO’s) – Tidy View Dairy (Outagamie County) with 7000 dairy cows (9400 animal units) and Omro Dairy (Winnebago County) with 2500 dairy cows (3500 Animal Units). Mr. Ostrom would like to operate a third WPDES-CAFO permitted

dairy (Rosendale Dairy, Inc).

Rosendale Dairy is proposed to occupy approximately 100 acres on land formerly used for agricultural row crops and forage. This new dairy and livestock facility would provide for housing, feeding, and milking of 8000 dairy cows and 300 beef steers which is the equivalent of 11,500 animal units. See attached locational map of the operation and general site layout.



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This project is planned to occur in two phases. It is anticipated the first phase will be completed by the end of 2008 and includes construction of one freestall barn (the South Freestall), one milking parlor containing one 80-cow milking carousel, a sand separator, a sand and solids stacking bunker, a manure handling system, three reinforced concrete manure storage facilities (WSF #1, #2, and #3), a feed storage pad for the corn silage and haylage, a sweet corn storage pad, leachate/runoff collection for the feed storage pads, and two stormwater management basins. Half the dairy cows (3500 milking and 500 dry cows) and half of the steers (150) will be introduced to the site during Phase I for a total of 5,750 AUs. The second phase, which has been proposed to be completed by the Fall of 2010, will include construction of a second freestall barn (the North Freestall) and adding a second 80-cow milking carousel to the milking parlor. The remainder of the milking cows and dry cows, 3500 and 500 respectively, along with another 150 steers, would be brought to the site following completion of Phase II for an additional 5750 AUs. Upon completion of Phase II, the total number of AUs at the site would be 11,500.

At this time, the Department intends to issue a CAFO WPDES permit that will limit the size of the operation to a maximum of 5,750 AUs. The future Phase II expansion intended to raise the total number of animal units at Rosendale Dairy to 11,500 AUs will require that Rosendale Dairy submit a request for a permit modification. At that time, the Department will review the request and issue a decision on whether additional environmental review activities are necessary .

The total project cost for this construction is estimated at \$60,000,000.

The Department has the following authorities regarding this operation:

- Wisconsin Pollutant Discharge Elimination System (WPDES) Permits for Land Disturbing Construction Activities affecting one or more acres (WI-S067831-3), s. 283.31, Wis. Stats. – this permit was issued in February 2008
- High capacity well approval for operations using 70 gallons/minute or more from operator-owned wells, s. 281.34, Wis. Stats. – this was issued for two of the four proposed high capacity wells in May 2008
- Review and approval authority of manure storage facilities, transfer systems, feed storage and runoff control systems s. 281.16, Wis. Stats.
- Nutrient Management Plan review, ch. NR243, Wis. Admin. Code & NCRS technical standard 590
- Wisconsin Pollutant Discharge Elimination System (WPDES) Permits for Concentrated Animal Feeding Operations (CAFO), i.e. those operations with 1,000 animal units or more, s. 283.31, Wis. Stats.
- Emission limitations from s. NR 415.04, Wis. Adm. Code, covering fugitive dust sources
- Emission limitations from ch. NR 445, Wis. Adm. Code, regarding control of hazardous pollutants
- Odor control requirements may be imposed by order of the Department if the Department determines that a violation of s. NR 429.03 – Malodorous Emissions, Wis. Adm. Code, occurs.

2. **List documents, plans, studies or memos referred to and provide a brief overview**

The following documents or reviews have been used in conducting this environmental analysis:

- Wisconsin Pollutant Discharge Elimination System (WPDES) Permit application
- Environmental Analysis Questionnaire for Livestock Operations completed by Todd Willer, Secretary, Rosendale Dairy, Inc., March, June, and July 2008
- Plans and specifications for proposed waste storage facilities, manure transfer systems, sweet corn silage pad, and feed storage leachate collection system completed by Richard Seas, Roach & Associates, LLC, 856 N. Main St. Seymour, WI 54165 , June, July, August and September 2008

- Nutrient Management Plan prepared by Jeff Polenske and Todd Schaumberg, Polenske Agronomic Consulting, Inc., 2121 E. Ridge Haven Lane, Appleton, WI 54913, March, May, June, July and September 2008
- Soil survey maps, topographic maps, wetland maps and aerial photographs – various years
- Natural Heritage Inventory database
- Archaeological and Historical site maps
- Wisconsin Agricultural Statistics Service website (http://www.nass.usda.gov/Statistics_by_State/Wisconsin/index.asp)

DNR EVALUATION OF PROJECT SIGNIFICANCE (complete each item)

1. Environmental Effects and Their Significance

Physical

The CAFO building site has most recently been used for cropland. The fields were planted in corn, soybeans, and other agricultural crops. This project will essentially result in the conversion of the land from one type of agricultural use to another.

Short-term physical impacts will result primarily from construction activities at the site. Storm water runoff from the site during the construction phase could result in environmental impacts such as silt and sediment being transported to area wetlands and surface waters. Since the project will result in the disturbance of one or more acres, the operation has applied for and been issued a Construction Site Erosion Control general permit (WI-S067831-3) from the Department. The construction phase erosion and stormwater control plans and specifications required review and permit issuance by both the Department and the Fond du Lac Land and Water Conservation Department (FDL LWCD).

In addition, Fond du Lac County has issued permits for erosion control, runoff control and manure storage. During Phase I, topsoil and subsoil will be moved around on the site for the clearing and grubbing through finish landscaping as part of the building process. Much of the grading and grubbing at the site has already occurred. Disturbance of former cropland or agricultural related lands, noise and dust from machinery, and traffic from construction equipment are the expected short-term environmental impacts. An on-site concrete plant will reduce construction phase traffic. Two water trucks on site will be used to reduce the amount of airborne dust.

The Department's Construction Site Erosion Control permit requires the operation to implement Best Management Practices (BMP's) to address impacts from storm water runoff. Stormwater runoff controls must be in place to control and manage runoff due to rainfall and snowmelt events. The required BMPs should minimize siltation and sediment delivery from the construction site and prevent silt and sediment from reaching wetlands and surface waters.

The Department's post-construction stormwater management requirements are limited to the prevention of scouring associated with storm water flow at the site. However, Fond du Lac County does require additional post-construction controls. Sections 17.09 and 17.10 of the Fond du Lac County Erosion Control and Stormwater Management code requires submission of an on-site stormwater management plan. This plan must include designs for control structures and practices that meet the minimum requirements of those sections. If properly controlled in accordance with these requirements, impacts associated with construction activities would be relatively short in duration and not expected to be significant.

There are a number of physical effects at the site that do not fall under the regulatory authority of the Department's WPDES permit and plan review authority. A significant long-term physical effect would be visual impacts. Because of the scale of the proposed operation, the physical changes at the site due to converting agricultural fields to animal housing, manure storage and process wastewater storage, and feed storage would represent a significant change from the current landscape. In addition, it is expected that the operation will operate 24 hours a day and lighting associated with the operation could significantly change the visual settings at the site. There would be additional noise and dust associated with the transportation of livestock, milk, feed, and manure. At completion, it is expected there will be ten semi-tanker loads of milk leaving the facility each day, nine loads of protein feed supplements being delivered each day five days per week, 6500 loads of haylage and silage delivered during harvest seasons (approximately 54 loads per day if figured over a variable four months harvest season using 30 days per month), and 13,000 semi-truck loads of manure leaving the facility on an annual basis. Truck traffic will be especially heavy during in the spring as the operation applies most of its

manure and process wastewater prior to planting of crops and during crop harvest. There will also be some applications of manure that occur during the fall. Most truck traffic will occur during daylight hours. However, during crop harvesting, traffic will occur whenever necessary to bring in the crop. Vendors are instructed to follow standards related to truck routes and engine braking. Courtesy to neighbors signs will be installed at property exits to remind drivers. Driveways will be paved in phase II. This will keep dust to a minimum and make turning onto the highway more predictable.

Livestock operations result in ambient air emissions. Sources of air emissions from livestock operations include the livestock themselves, manure handling and storage, land application of manure, as well as vehicles and vehicle traffic, grain and feed handling, grain drying, grain storage, feed milling, feed storage, fertilizer and pesticide handling and application. The most commonly noted form of air pollution associated with livestock operations is odor. In addition, livestock operations result in air emissions of particulate matter and various hazardous air pollutants, especially hydrogen sulfide and ammonia. Since the project that is associated with this Environmental Assessment will result in the introduction of a large number of cattle at a site that previously had none, there is a likely potential that odors and air emissions of ammonia, hydrogen sulfide, and particulate matter will increase at the site.

In 2003, the National Academy of Sciences, National Research Council, published a comprehensive report, "Air Emissions From Animal Feeding Operations: Current Knowledge, Future Needs." The key findings relevant to this assessment include the following: 1) standardized methodologies for odor measurement have not been adopted in the United States, and 2) estimating air emissions from animal feeding operations by multiplying the number of animal units by existing emission factors is not appropriate for most substances. As noted in this report, the existing emission factors for animal feeding operations are generally inadequate because of limited numbers of measurements on which they are based, as well as the limited generality of the models for which the emission factors have been developed. The NAS recommends that the science be strengthened, that a standardized odor measurement methodology be adopted, and that a process-based emissions estimation methodology be developed.

In response to these findings and recommendations, the US EPA initiated a national effort to develop an emissions estimation methodology for animal feeding operations, through the US EPA Animal Feeding Operation Air Quality Compliance Agreement. This agreement includes a monitoring study, expected to end in 2009, that will provide EPA with the data needed to develop emissions estimating methods and tools to assist the industry and EPA in determining the air impact and compliance status of animal feeding operations. Animal feeding operations will then be required to determine their emissions and comply with all applicable regulatory requirements. Pollutants to be monitored include particulate matter (PM) (TSP, PM10 and PM2.5), hydrogen sulfide (H₂S), volatile organic compounds (VOCs), and ammonia (NH₃).

In the interim, a limited number of other states have adopted methodologies to evaluate the potential air impacts of livestock operations. For example, the Minnesota Pollution Control Agency (MPCA) has adopted an air quality impact analysis methodology for livestock operations. The MPCA environmental assessment methodology for livestock operations is established in law and is supported by guidance materials developed by the MPCA as part of their environmental assessment program. The Department has not adopted this methodology and does not typically conduct analysis of air emissions from CAFOs. Instead, the Department has made a conscious decision to coordinate its work in this area with the outcome of the national monitoring effort described above.

Regardless of the Animal Feeding Operation Air Quality Compliance Agreement, Wisconsin Administrative Code requires all sources of air emissions to regulate objectionable odors (s. NR 429.03, Wis. Adm. Code). This rule establishes general limitations on objectionable odor, defines the tests for what constitutes objectionable odor, and sets abatement or control requirements

Wisconsin's fugitive dust rule, s. NR 415.04, Wis. Adm. Code, establishes general limitations on fugitive dust and sets specific precautions for limiting fugitive dust emissions. Fugitive dust is defined as "solid airborne particles emitted from any source other than a flue or stack" (s. NR 415.02(2), Wis. Adm. Code). Some examples of fugitive dust in the agricultural setting include particulate from grain and feed handling, grain drying and dust from increased truck traffic. Specific precautions include: (1) use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, or construction operations; (2) application of asphalt, water, suitable chemicals or plastic covering on dirt roads, material stockpiles and other surfaces which can create airborne dust, provided such application does not create a hydrocarbon, odor or water pollution problem; and (3) paving and maintenance of roadway areas so as not to create air pollution (s. NR 415.04(1), Wis. Adm. Code).

In Wisconsin, hazardous air pollutant emissions are regulated under ch. NR 445, Wis. Adm. Code. This rule establishes ambient air standards for specific hazardous air pollutants, measured at the property line boundary. The criterion for determining which pollutants are regulated, how the standards are established by the Department and the required thresholds are set in s. NR 445.13, Wis. Adm. Code. The criterion include conditions based on determinations by the International Agency for Research on Cancer, the National Toxicology Program, the American Conference of Governmental Industrial Hygienists, and the US EPA.

An updated version of ch. NR 445, Wis. Adm. Code, became effective on August 1, 2008. It requires that after July 31, 2011, new and existing livestock operations will have to comply with the requirements of ch. NR 445 for controlling hazardous air pollutants. A specific compliance option alternative for livestock operations is established allowing for operations to implement best management practices, as approved by the Department, to demonstrate compliance with the ch. 445 requirements. Two common air pollutants associated with livestock operations are ammonia and hydrogen sulfide. As established in ch. NR 445, Wis. Adm. Code, the ambient concentration ammonia and hydrogen sulfide cannot exceed 418 and 335 micrograms per cubic meter, respectively, both on a 24 hour average basis, measured at the property line boundary. Preliminary modeling performed by the Department has concluded that the ammonia ambient air standard for both Phase I and II will be exceeded at the property boundary. The modeling for hydrogen sulfide did not show any exceedances of the ambient air standard.

Over the past several years, in response to complaints about air pollution associated with livestock operations, the Department has conducted a limited amount of ambient air monitoring for hazardous air pollutants near a variety of livestock operations. The monitored concentrations have not exceeded the acceptable ambient concentration standards established in ch. NR 445, Wis. Adm. Code. The Department continues to engage in ambient monitoring for these compounds at livestock operations and to develop best management practice.

Livestock operations also emit particulate matter and volatile organic compounds which, depending on the quantity emitted, may subject the operation to additional requirements under chs. NR 405, 406, 407 and 408, Wis. Adm. Code. In order to qualify for exemptions under these chapters, the operation has to emit less than 5.7 pounds/ hour and less than 250 tons/ year of particulate matter and volatile organic compounds.

Livestock operations may be subject to annual air emission reporting and fee requirements which are established in chs. NR 438 and 410, Wis. Adm. Code. The owner or operator of a stationary source that emits air pollutants above reporting threshold levels is required to report actual air emissions to the Department on an annual basis. Current reporting threshold levels are established in table 1 of NR s. 438.03 by pollutant. For example: 5 tons per year of particulate matter, 3,279 pounds per year of hydrogen sulfide, and 4,097 pounds per year of ammonia. Emission estimates for the operation has annual levels of ammonia that would trigger the reporting requirements. Stationary sources subject to operation permit requirements, are required under ch. NR 410, Wis. Adm. Code to pay an emission fee based on their reported emissions.

Another potential source of air emissions and odor is open burning of materials. Open burning can produce objectionable odors as well as particulate matter and other air pollutants. NR 429.04, Wis. Adm. Code, prohibits open burning with a few exceptions, some of which require Department approval. An exception which does not require prior Department approval is burning of brush or weeds on agricultural lands. Inappropriate burning of materials is subject to Department enforcement.

The depth to groundwater at this site averaged 12 feet from ground level with a range in depth to groundwater of 4 feet up to 18 feet. Bedrock was encountered at depths of 11 to 15 feet in the north central portion of the project area. These factors have impacted how the operation has designed manure storage facilities and other structures to ensure appropriate separation distance to groundwater and bedrock.

Water usage at the operation is estimated at 44 million gallons per year for watering and cleaning for Phase I. Another 8.5 million gallons per year will be required for evaporative cooling of the South Freestall barn which will be constructed as part of Phase I. Therefore, upon completion of Phase I, water usage will be approximately 52.5 million gallons per year. This volume of water usage could have an effect on groundwater levels in the area of this operation.

It is proposed that four wells be drilled on this site as part of Phase I of this project. Each is expected to have an approximate depth of 500 feet and 250 gallons per minute pumping capacity. Since the operation's water usage from wells at this site will be 70 gallons per minute or greater, the operation was required to obtain high capacity well approval for each of the proposed wells. Applications for new high capacity wells are reviewed for impacts to municipal wells, trout streams, water bodies designated as Exceptional Resource Water (ERW) or Outstanding Resource Water (ORW), and certain springs. Conditions to minimize impacts to the groundwater levels and these water resources are addressed through the High Capacity Well permit process. Water quantity Impacts to individual private wells do fall within the Department's review authority under the high capacity well permit process and are addressed as a civil matter, not through Department enforcement action.

Thus far, approval was granted on May 22, 2008 to construct two of the four high capacity wells. Construction of the first well (North Well #1) was completed on June 9, 2008. It is a 10-inch diameter well with a total depth of 567 feet, cased and neat cement grouted to a depth of 315 feet. It was found to have a static water level of 70 feet and, after test pumping for two hours at 250 gallons per minute, it had a pumping water level of 250 feet. The Department reviewed test pumping data and determined it was necessary to more than double the original proposed separation distance for the remaining proposed wells. The Department is recommending additional pumping tests and monitoring to further evaluate the spacing and operation of the wells.

There are several existing private wells within one half mile of the site. A review of available private well logs indicates similar well construction among all of them. In general, the wells are drilled into or through the Galena/Platteville dolomite layer and in some cases tap into the top 20 feet or so of the St Peter sandstone layer for water. The four proposed high capacity wells are to be drilled and cased through the Galena/Platteville and St. Peter (as well as Prairie du Chien) formations into the deeper Cambrian sandstone aquifer. At the very top of the Cambrian sandstone is a layer known as Jordan sandstone. It is a fine-grained, highly cemented sandstone that does not readily allow water to flow through it. There is also a shale layer at the bottom of the St. Peter sandstone that can restrict the flow of water. Though this shale layer is not present in some places where the St. Peter sandstone cuts into the Cambrian system, the construction of the high capacity wells will provide some separation from the dolomite and St. Peter sandstone layers that most of the private wells get their water from. Therefore, it is believed there will be minimal potential for impact to the quality or quantity of water in the nearby private potable wells.

A private on-site domestic sewage system is designed to serve the 50 or so employees. Thus far, no permit has been issued by Fond du Lac County for the private sewage system. It has been determined this site is not suitable for a conventional septic system. The other options are construction of a mound septic system or installation of a holding tank. Fond du Lac County does not allow the construction of mound septic systems on disturbed sites and currently does not issue permits for holding tanks. The owners plan to provide portable toilets for on-site human waste disposal unless Fond du Lac County issues permits for other systems.

The steers at the site would allow the farm to minimize the amount of waste feed. While the cows must be fed a diet consisting of a particular mix of feed and protein additives for optimum milk production, the steers are able to consume the feed left over from the cows. This will eliminate the need to land spread approximately 650,000 pounds of feed per month and reduces fuel usage associated with the land application activities.

Sand is to be used for animal bedding material. The manure handling system will include a sand separator that is expected to allow for 95% reuse of the sand for animal bedding. This will reduce the amount of replacement sand needed along with reducing the amount of energy that would be required to mine and haul the sand. It will also reduce hauling traffic. Crops for feeding the animals will be procured from sources within approximately an eight to ten mile radius of the site which will minimize the use of fossil fuels needed to transport the feed.

Biological

Per a July 21, 2008 review of the Natural Heritage Inventory on-line database, there are no elements of occurrence in the project area. Natural Heritage Inventory records indicate the nearest occurrence records for endangered or threatened species or other sensitive resources/habitats to be beyond the one (1) mile buffer area surrounding the location of the project. The immediate building site and former cropland would be expected to provide habitat for common animal species acclimated to farm operations.

The site is located near four different unnamed tributaries that eventually flow into the West Branch of the Fond du Lac River in the Upper Fox River Basin. The dairy site is located approximately 1000 feet from the tributary to the east, 2000 feet from the tributaries to the north and west, and approximately 4000 feet from the tributary to the south. The West Branch of the Fond du Lac River is a warm water sport fishery that ultimately drains to Lake Winnebago. Lake Winnebago is an impaired waterbody (303(d) listed) due to impacts associated with atmospheric deposition, sediment and total phosphorus loadings. The only impaired waterbody (303(d) listed) within a five mile radius of the proposed operation is Silver Creek. Silver Creek is on the 303(d) list due to atmospheric deposition, discharges from Municipal storm sewers, nonpoint source sediment and other impacts. There are no known outstanding or exceptional resource waters with a five mile radius of the operation.

No waterways or aquatic resources will be re-routed or altered as a result of this project. Short-term impacts on area surface waters, groundwater or wetland resources are not expected during construction of the operation provided Best Management Practices (BMPs) are implemented and maintained for storm water runoff control.

The primary potential impacts to water quality due to the Rosendale Dairy project are associated with the production of manure and process wastewater at the proposed operation. Nitrogen, phosphorous, and pathogens associated with manure and process wastewater produced at livestock operations can have detrimental impacts on groundwater, surface waters and wetlands if not properly stored, handled, and land applied. Phosphorus and nitrogen in manure and other sources of nutrients that are applied to cropland to produce feed for livestock can also be a source of detrimental impacts to groundwater, surface waters and wetlands. Forms of nitrogen are toxic to fish (ammonia) and can impact human health, primarily in fetuses and young children, when present in drinking water (nitrate). Nitrogen in surface waters in Midwestern states has also been implicated in contributing to hypoxia in the Gulf of Mexico. However, most, if not all, applications of manure and process wastewater from the Rosendale Dairy operation would occur in the Lake Michigan Drainage Basin. Phosphorus in surface waters promotes algae growth (known as eutrophication), which can result in decreased oxygen levels, fish kills, and reduced recreational opportunities.

Biochemical oxygen demand (BOD) associated with manure and process wastewater can consume oxygen in surface waters and contribute to fish kills. Soil erosion associated with crop production can result in sedimentation in roadside ditches and wetlands. Soil erosion can also alter streambed elevations which can increase the probability and severity of floods. Sediment can also destroy or degrade aquatic wildlife habitat and damage commercial and recreational fisheries.

The possibility of pathogens from animal manure contaminating water supplies and recreation waters is also of concern. Diseases from bacteria (e.g., certain strains of *E. coli*), protozoans (e.g., *Cryptosporidium*), and viruses in animal manure can be contracted through direct contact with the manure, contact with contaminated water, or consuming contaminated water either in drinking supplies or as a result of recreating in contaminated waters. This may result in gastrointestinal illness and other illnesses that can have significant impacts on human health.

The basis of the WPDES permit program is to require CAFOs such as Rosendale Dairy to implement Best Management Practices (BMPs) to avoid or minimize the potential of the impacts listed above from occurring. This is accomplished through (1) the review of structures and systems associated with manure and process wastewater storage/handling (2) the review of an operation's Nutrient Management Plans that details how, when, where and in what amounts manure and process wastewater from the operation will be landspread, (3) issuance of a WPDES water quality permit that outlines operational requirements for the storage, handling and land application of manure and process wastewater, and (4) review and oversight of the CAFO once it is operating, which includes conducting oversight inspections and pursuing enforcement action when needed to obtain permit compliance and address water quality impacts.

Since all livestock at the proposed Rosendale Dairy would be held in total confinement and would not be able to come into direct contact with waters of the state, impacts to water quality are not expected from animal housing areas. Manure storage and transfer systems at Rosendale Dairy will be required to be constructed, at a minimum, in accordance with USDA Natural Resource Conservation Service standards and s. NR 243.15, Wis. Adm. Code. Design and construction in accordance with these requirements should ensure adequate protection of groundwater and surface waters. The operation has proposed to construct concrete manure storage facilities that the Department and Fond du Lac County will require to be built in accordance with NRCS Standard 313. The standard requires an extensive site assessment to determine area soils and depth to groundwater and bedrock to ensure structures are properly designed and constructed.

NRCS Standard 313 specifies concrete thickness, reinforcement and other design requirements for these structures, as well separation distances between the bottom of the structure and groundwater/bedrock to minimize potential leaching from these structures that could contaminate groundwater. Operations must install permanent markers that are used in the operation of these structures (e.g., maximum operating level, margin of safety) to help avoid potential overflows and discharges. Design requirements also protect against potential catastrophic failures of these structures.

Leachate from feed storage areas can also be a significant source of contaminants. The WPDES permit program requires leachate and runoff from these areas to be handled properly. Rosendale Dairy has proposed concrete feed storage areas that will collect leachate and runoff from feed storage areas for storage and land application. In addition, the feed storage areas are proposed to have tiles embedded below the concrete floor to collect leachate that may work its way below the concrete surface, thus providing additional protection for groundwater.

Conditions of CAFO WPDES permits prohibit discharges of pollutants to navigable waters from the CAFO production area (e.g., manure and process wastewater storage structures, feed storage areas, animal housing areas) except under certain conditions which will provide additional protection for surface waters.

One of the key components of the WPDES permit program is ensuring that an operation creates and implements a nutrient management plan (NMP) in accordance with ch. NR 243, Wis. Adm. Code. It is anticipated that approximately 46 million gallons of liquid waste consisting primarily of liquid manure will need to be stored and land applied every year from the proposed Phase I of Rosendale Dairy. These materials would need to be land applied in accordance with an NMP which would contain a number of requirements above and beyond requirement for other non-permitted livestock operations. Rosendale Dairy, along with all livestock operations in Wisconsin, are subject to the state standard for nutrient management, NRCS Standard 590. NRCS Standard 590 includes the following requirements:

- Manure and process wastewater must be sampled and analyzed to determine nutrient content. Soils receiving nutrients must also be sampled and analyzed. These analyses serve as the basis for determining rates of application of manure and other nutrient sources.
- Applications of nutrients (e.g., phosphorus and nitrogen) from manure and other nutrient sources on cropped fields must be balanced with the nutrient needs of the crops grown on these fields. Only in limited circumstances are field soil test phosphorus levels allowed to increase over a crop rotation (e.g., soil test levels are low or delivery of phosphorus will not exceed certain tolerances).
- Manure and other nutrients may not be applied on fields that exceed tolerable soil loss (T).

In addition, NR 243 and the WPDES permit for Rosendale Dairy would place additional restrictions on applications of manure and process wastewater, including the following:

- Applications may not occur on areas of fields with less than 24 inches to groundwater or bedrock.
- Applications may not occur within 100 feet of a private well or other direct conduits to groundwater (e.g., sinkholes, fractured bedrock at the surface) or within 1,000 feet of a municipal well.
- Applications on fields with soil test levels greater than 100 ppm of phosphorus must meet additional restrictions to limit phosphorus delivery to surface waters.
- Applications near navigable waters and their conduits, called Surface Water Quality Management Areas, are subject to additional BMPs designed to avoid acute runoff events.
- Liquid manure may not be surface applied when ground is frozen or snow-covered, except under very limited circumstances. In conjunction with this requirement, Rosendale Dairy must have 180 days of liquid manure storage to avoid applications during winter months. Solid manure may not be surface applied when ground is frozen or snow-covered during the months of February and March. Where applications of manure are allowed, the applications are subject to limitations on the amount of manure that can be applied, setbacks from streams and direct conduits to groundwater and slope restrictions (maximum 9% for solid manure, 6% for liquid manure).

Fond du Lac County has approximately 56,530 acres of cropped fields, of which approximately 12,400 acres (22%) currently are covered under an NMP. There are roughly 3,500 acres of cropped fields that will be required to be covered under the Phase I NMP for Rosendale Dairy. Depending on the amount of acreage already under an NMP, this could represent up to a 28% increase in the amount of acreage covered under an NMP for the county. Because of the BMPs

required under NR 243, this additional acreage covered under Rosendale Dairy's NMP represents a significant potential reduction in pollutant delivery (e.g., nutrients, sediment) from cropped fields to area surface waters, groundwater and wetlands. In addition, this represents potential decreases in nutrient loadings to downstream impaired waterbodies (e.g., Lake Winnebago). By balancing nutrient applications with crop need and avoiding applications during periods when the potential for runoff is increased (e.g., during winter months), manure, process wastewater and their associated pollutants are kept on the land and in the soil, thus reducing the potential for these pollutants to negatively impact water quality. Should Rosendale Dairy fail to comply with practices outlined above, including avoiding runoff except in the case of a 25-year, 24-hour storm or cause the fecal contamination of a well, it would be a violation of its permit and subject to Department enforcement.

Rosendale Dairy will also be required to develop an emergency response plan to address potential spills from both the CAFO production area and land application areas. The advance planning associated with an emergency response plan can help to minimize or altogether avoid environmental impacts associated with unexpected problems.

It is expected that the feed used for the animals at Rosendale Dairy will be grown using standard agricultural practices which will likely include the use of pesticides and other chemicals. There are a wide variety of EPA approved agricultural chemicals that can be used to control insects and weeds. Certain chemicals can travel far from where they are applied either by attaching to soil particles or being carried through the air. Agricultural chemical residues reaching surface-water systems can harm freshwater organisms and damage recreational and commercial fisheries. Agricultural chemicals in drinking water supplies may pose risks to human health. These impacts are not regulated under WPDES permit authority. Given the extent that raising feed for Rosendale Dairy will either increase or decrease the use of these chemicals is not known, it is not possible to assess this impact. However, the nitrogen, phosphorus, and organic material from Rosendale Dairy's manure will provides nutrients for crop growth and will lower, or in some cases eliminate, the need for chemical fertilizers. In many instances, the net nutrient application will not change, only the type of fertilizer.

The operation will be required to keep records and submit reports to the Department to document that they are properly operating manure handling and storage systems, runoff control systems and are complying with NMP requirements. If the operation conducts landspreading in accordance with its NMP and WPDES CAFO permit, maintains an adequate land base for landspreading, and properly inspects and maintains manure storage facilities and runoff control systems, the threat to groundwater, wetlands and surface water should be minimal under normal operating and climatic conditions.

Cultural

Per a July 21, 2008 review of the archeological and historical data on-line maps, there are no known archaeological or historical resources that will be impacted by this project.

The site will not be significantly changed in terms of type of land use as a result of the proposed operation. The site is zoned for agriculture, which is the predominant land use in the area, and will not need to be changed as a result of this project. However, there may be adverse indirect impacts associated with the proposed operation, primarily related to non-agricultural uses of lands in the area. There may be decreases in land values associated with residential uses within areas zoned as agricultural due to concerns, real or perceived, associated with the operation (increased traffic, odors, etc.). The Department has reviewed literature regarding impacts from livestock operations on property values. The literature deals primarily with impacts from hog operations on property values, which may or may not be relevant to the proposed project. The literature draws a general conclusion of decreasing property values the closer the property is to a given hog operation and the more hogs located on the operation, especially for those parcels of land with a house on it. One of the studies also looked at beneficial impacts of larger-scale hog operations. This literature suggests beneficial impacts to local communities as a result of the operation's expenditures.

The area's economy will change through jobs associated with the operation and an increase in the area's tax base. It is anticipated that the operation will employ about 50 local residents. It is believed that the local economy will benefit as a result of added employment opportunities and business such as the operation's purchase of feed and associated services from local farmers and businesses. It is anticipated that the dairy at full capacity will spend approximately \$28,000,000 per year. Over 80% of that amount is expected to be spent within a 50 mile radius and more than 60% within a 14 mile radius.

In addition, there may be permit conditions affecting the management of the operation that may be beneficial to the

current land use. It is difficult to assess the extent or existence of such impacts on property values and these impacts are beyond the regulatory authority of the Department.

2. Significance of Cumulative Effects

Discuss the significance of reasonably anticipated cumulative effects on the environment (and energy usage, if applicable). Consider cumulative effects from repeated projects of the same type. Would the cumulative effects be more severe or substantially change the quality of the environment? Include other activities planned or proposed in the area that would compound effects on the environment.

There is a trend in the livestock industry towards larger-scale facilities in Wisconsin and the nation as a whole. In some instances, larger-scale dairy operations have rapidly become an economic necessity due to changing pricing structures and the need to reduce capital inputs while maximizing production. Economies of scale associated with CAFOs have allowed producers to increase production without increasing costs.

If numerous projects of this type are proposed in this area, there is a concern that the land base available for landspreading manure could be overwhelmed and would make a number of such projects nonviable. This is due primarily to costs associated with hauling manure and process wastewater long distances for landspreading. The Department is unaware of additional projects of this type in this area that would impact the availability of land for Phase I of the Rosendale Dairy project. According to the National Agricultural Statistics Service, livestock numbers in Fond du Lac county peaked in 1985 at approximately 120,000 head of cattle. From 1986 through 1999, livestock numbers experienced a steady decline, reaching 90,000 head in 1999. Beginning in 2000, livestock numbers in the county began to climb steadily to 100,500 head in 2008. With the addition of animals from Rosendale Dairy, animal numbers will still be below the peak in 1985. There are currently nine other permitted CAFOs in Fond du Lac County, all of which are dairy operations. Rosendale Dairy has submitted information as part of their development of a NMP that indicates that land base for Phase I of the operation is adequate to comply with NR 243 and a WPDES permit.

Should Rosendale Dairy choose to follow through with Phase II, the Department will evaluate the need to conduct further environmental review activities to address cumulative effects from such an expansion.

3. Significance of Risk

3a. Explain the significance of any unknowns which create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analysis would eliminate or reduce these unknowns?

The proposed manure storage and runoff control facilities at this operation are to be built in accordance with currently accepted standards to minimize the risks of groundwater and surface water contamination. Plans and specifications for proposed facilities must be reviewed and approved by Department staff prior to construction. Currently, such plans and specifications are being reviewed by a Department Engineer. The plans and specifications have also undergone extensive review by Fond du Lac County through the requirements of the county's manure storage ordinance. Ensuring the manure storage facilities and runoff control systems meet currently accepted standards is intended to address possible adverse impacts to groundwater, wetlands and surface waters. The operation will need to obtain Department approval of all proposed new manure storage and runoff control facilities prior to construction to ensure that the facilities meet proper standards.

This operation must comply with its WPDES CAFO permit and associated NMP. Consequently, the landspreading of manure and process wastewater should not represent a substantial increase in risk to the environment. The NMP will likely include acres that may not have previously been managed in accordance with a formal written NMP. This means that landspreading of manure and process wastewater under this permit could result in environmental benefits compared to prior manure and fertilizer application practices that may not have been done in accordance with a plan.

The nutrient content of manure temporarily stored in the storage facility may vary. Unidentified variations in nutrient content may result in over-application of nutrients (nitrogen in particular) that could impact groundwater. The WPDES CAFO permit issued to this operation will require periodic manure and soil testing to ensure this does not occur.

Animal housing, roads and other structures will likely increase the amount of impervious area at the site and change infiltration and runoff patterns. It is not known how potential increases in the volume of stormwater runoff from the site and decreases in infiltration will impact groundwater and surface water levels in the area.

3b. Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.

Possible operating problems that could impact the environment include (1) failure of manure handling and storage facilities due to improper maintenance or severe weather conditions, (2) improper operation or maintenance of runoff control systems, or (3) poor manure land application practices. These problems could lead to discharges of pollutants to surface waters, wetlands or groundwater. Some of these problems could be severe and could result in groundwater contamination or fish kills.

The WPDES permit program has a number of provisions that are intended to avoid the likelihood and severity of these problems. Department review of proposed storage facilities and runoff control systems helps to ensure that they are appropriately designed which significantly decreases the probability of failure of designed structures or systems under most conditions. In addition, WPDES permitted operations are required to inspect water lines on a daily basis, manure storage structures and runoff control systems on a weekly basis, outdoor animal areas on a quarterly basis and conduct period inspections of landspreading equipment. If the operation detects a problem as a result of these inspections, they are required to take corrective action. Operations must also conduct visual inspections and take preventative maintenance actions under “Ancillary Service and Storage Area” requirement that address potential runoff from debris piles, tracking of manure on access roads and pesticide and fuel storage.

Massive failure of a manure storage facility at the site would likely be formally defined as a spill under Ch. NR 706, Wis. Admin. Code. Chapter NR 706 describes requirements for immediate notification of the Department in the case of a spill. Inappropriate or inadequate responses (i.e., time frame of response and action taken to eliminate or mitigate environmental impact) to spills and associated environmental impact are subject to Department enforcement. However, Department and permittee action is contingent on a case-by-case evaluation of actual environmental impact and corrective actions taken by the operation.

Department inspections based on complaints or general compliance efforts will help in evaluating whether the operation is properly addressing minor spills and other operational problems.

Manure and process wastewater must be landspread in accordance with a Department approved NMP, which requires certain land application and management practices. While these practices do not eliminate the possibility that impacts will occur, they do significantly reduce the risk of impacts under most conditions. These practices also cannot anticipate all scenarios under which problems can occur. Producers must also exercise their judgment in some instances to avoid water quality impacts. Failure to take appropriate actions to avoid discharges is subject to Department enforcement.

WPDES permitted operations are also required develop an Emergency Response Plan which provides an additional level of protection when malfunction or spills occur under typical and atypical operating and weather conditions (massive rains, flooding, etc.). While an Emergency Response Plan may not allow an operation to predict when a problem will occur, it does facilitate better decision making when problems occur.

4. Significance of Precedent

Would a decision on this proposal influence future decisions or foreclose options that may additionally affect the quality of the environment? Describe any conflicts the proposal has with plans or policy of local, state or federal agencies. Explain the significance of each.

Construction of structures (manure storage, feed storage) for Phase I of Rosendale Dairy may foreclose future options for changes at the site for future expansions. Should operational problems (e.g., permit noncompliance) arise that make

modifications to future expansion plans necessary, these plans may be restricted due to the location and size of already approved structures. However, Department review of potential future expansions at Rosendale Dairy site will need to be evaluated based on their own specific adverse and beneficial impacts. Ultimately, each individual project is considered separately based on its own merits.

The Department primarily considered issues that fall under our regulatory WPDES CAFO authority as part of this analysis. This project is not known to conflict with plans or policy of local, state, or federal agencies. The Town of Rosendale did not adopt a livestock siting ordinance until after this project was already approved to proceed at the town level.

The operation will need to apply for and receive the appropriate approvals from all involved agencies prior to operating. Permitting this operation would not foreclose future options to take necessary actions to protect the environment (i.e., revocation, modification of the permit). In actuality, through enforcement of the WPDES permit, the Department has a means to avoid or address possible environmental impacts associated with the operation.

5. Significance of Controversy Over Environmental Effects

Discuss the effects on the quality of the environment, including socio-economic effects, that are (or are likely to be) highly controversial, and summarize the controversy.

There is the possibility that public controversy may be generated as a result of the permitting of this operation. Citizens may express concerns about the environment such as concerns over levels of odor or air emissions as well as water quantity/quality issues. The size of the operation in Phase I covered under this EA, is also likely to generate controversy. The proposed 5,750 AUs as part of Phase I of Rosendale Dairy, places the operation within the largest 10-15 CAFOs in the state. Additional controversy will be associated with this project because the operation has outlined a proposal to go to 11,500 AUs as part of Phase II of the operation's expansion plans. However, these expansion plans are not covered under this EA nor will they be covered under the operation's WPDES permit.

The Department has limited authority to address odor and other air emissions issues should they arise. The Department and US EPA are in the process of studying air issues associated with livestock operations. The Department's study is expected to develop standards and voluntary best management practices to reduce or minimize potential air problems from CAFOs.

Water quantity issues are addressed to the extent possible by the high capacity well approval process. However, neither odor or water quantity issues are addressed by plan review or permit issuance associated with the WPDES CAFO permit program. The WPDES permit program is strictly a water quality protection based program.

It is expected there will be a positive impact to the economy, tax base, and employment as a result of this project. Farms that currently only market crops as grains will now have that the option to market forage. Also, the farms will have the chance to reduce their expenditures by entering into contracts for acceptance of manure nutrients, potentially in exchange for crops for animal feed.

There may also be socio-economic concerns such as animal confinement issues, the trend towards large-scale farming in the state, impacts larger-scale farming may have on the viability of smaller operations, and concerns of smaller operations and non-farming rural inhabitants regarding changes in the agricultural landscape associated with CAFOs. The socio-economic issues are difficult to quantify and there is significant disagreement as to the validity of these concerns. These socio-economic issues are beyond the scope of the proposed WPDES CAFO permit and the Department's overall regulatory authority. At this point, these issues can be addressed through local zoning and through implementation of comprehensive land use planning by the local unit of government.

ALTERNATIVES

Briefly describe the impacts of no action and of alternatives that would decrease or eliminate adverse environmental effects.

(Refer to any appropriate alternatives from the applicant or anyone else.)

ROSENDALE DAIRY

Rosendale Dairy reviewed three alternatives as part of its decision to build at the proposed Rosendale Dairy site: (1) no build; (2) expand at one of the existing facilities, or (3) choose a location other than the proposed site. The “No build” alternative would not provide for economic development, additional employment opportunities, or tax revenue at the local and state levels. With current manure handling technologies and the need to secure additional cropland, expansion at Tidy View Dairy or Omro Dairy was determined to be not feasible. Rosendale Dairy spent about a year and a half exploring other sites in north central and northeast Wisconsin for this project. Other sites were eliminated due to either the presence of other large dairies in the vicinity, lack of adequate cropland for feed production and/or manure application, topography, or an inadequate infrastructure or agri-business supplies or services.

DEPARTMENT REVIEW OF NEW FACILITIES

The Department’s alternatives for review of plans and specifications for proposed facilities are as follows:

- Deny the plans and specifications for the design of the proposed facilities based on water quality concerns and require resubmittal of plans and specifications.
- Approve the plans and specifications for the design of the proposed facilities without conditions.
- Approve the plans and specifications for the design of the proposed facilities, but with conditions requiring additional components to the facilities’ design or operation based on water quality concerns.

The selected alternative will be based on the information collected as part of this environmental analysis and further Department review.

DEPARTMENT WPDES PERMIT ISSUANCE

Within the constraints of the Department’s existing WPDES permitting authority for CAFOs, the Department has limited alternatives to the issuance of a WPDES permit for the operation. One possible option would be for the Department to issue a WPDES permit for both Phase I and Phase II of the Rosendale Dairy project. However, the Department is proposing to issue a CAFO WPDES permit only for Phase I at this time. This will make future expansion plans as part of Phase II subject to WPDES permit modification, and, potentially, additional review of plans and specifications and environmental review activities.

The Department will use the information collected as part of the environmental analysis as well as part of the public comment period associated with the issuance process of a WPDES permit to make its final determination on issuance of the permit and to determine if additional restrictions in the proposed permit are necessary.

SUMMARY OF ISSUE IDENTIFICATION ACTIVITIES

List agencies, citizen groups and individuals contacted regarding the project (include DNR personnel and title) and summarize public contacts.

- Operation owner: Jim Ostrom
- DNR – Northeast Region: Liz Spaeth-Werner, Agricultural Waste Specialist, DNR – Oshkosh, Matt Hostak, Air Engineer, DNR – Oshkosh
- DNR – Central Office: Gretchen Wheat, Water Resources Engineer; Dave Johnson, Hydrogeologist; John Roth, Air Engineer, Tom Bauman, Wastewater Engineer,
- Department of Agriculture, Trade and Consumer Protection – Stephanie Schneider (Madison)
- Local unit of government: Town of Rosendale
- County Land Conservationist: Lynn Mathias – Fond du Lac County
- Design Engineer: Richard Seas, Roach & Associates, Inc.
- Crop Consultant: Jeff Polenski and Todd Schaumberg, Polenske Agronomic Consulting

The Department is currently reviewing plans and specifications submitted for manure transfer, storage and feed leachate management and runoff control facilities at this operation:

The proposed WPDES permit for this operation will be public noticed for comments as part of the permit issuance process. If necessary, an informational hearing will be held on the proposed WPDES permit to receive additional comments.

DECISION (This decision is not final until certified by the appropriate authority)

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s. 1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required _____

The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department on this project.

B. Major Action Requiring the Full EIS Process _____

The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

	Signature of Evaluator	Date Signed
	Noted: Regional Staff Specialist or Bureau Director	Date Signed

Number of responses to news release or other notice:

CERTIFIED TO BE IN COMPLIANCE WITH WEPA	
Regional Director or Director of BISS (or designee)	Date Signed

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes, administrative codes and case law establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department’s decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. Such a petition shall be filed with the appropriate circuit court and shall be served on the Department. The petition shall name the Department of Natural Resources as the respondent.



Ford du

Siver

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DATE: September 15, 2008

FILE REF:

TO: Tom Bauman – WT/3

FID:

FROM: John Roth – AM/7

SUBJECT: Air Dispersion Analysis for Ammonia and Hydrogen Sulfide Emissions from Rosendale Dairy

A. INTRODUCTION

Rosendale Dairy is proposing to construct an 8,000 head confined animal feeding operation in Rosendale Townshop in Fond du Lac County. The proposal will include up to two large barns and three waste storage ponds on the property. An analysis of the impact to ambient air quality of ammonia (NH₃) and hydrogen sulfide (H₂S) emissions from the facility was performed.

B. MODELING ANALYSIS

- ◆ Emissions from the facility were determined using factors presented in an analysis for Maple Leaf Dairy. That data was derived from a November 25, 2003 report by Ganzer Environmental. Ammonia emissions from the barns were assumed to be 43.1 $\mu\text{g m}^{-2} \text{sec}^{-1}$ while hydrogen sulfide emissions from the barns were assumed to be 0.45 $\mu\text{g m}^{-2} \text{sec}^{-1}$. Ammonia emissions from the waste storage ponds were assumed to be 32.9 $\mu\text{g m}^{-2} \text{sec}^{-1}$ while hydrogen sulfide from the ponds was assumed to be 0.38 $\mu\text{g m}^{-2} \text{sec}^{-1}$. The modeled emission rates were calculated using the dimensions labeled on the plot plans provided by the facility. The total modeled NH₃ emission rate is 28.25 #/hr (123.7 tpy) and the total modeled H₂S rate is 0.32 #/hr (1.40 tpy).
- ◆ It was assumed that the barns will be essentially open to the atmosphere with ridge vents along the roof. Considering this, the emissions from the barns were characterized as a volume source. Based on their rectangular shape, each barn was broken up into three volume sources and the emissions distributed equally over all volume sources from both barns.
- ◆ It was assumed that the waste storage ponds will be flat surfaces open to the air, so these were characterized as area sources. One rectangular area source was assumed for each pond on the property. The total surface area as given on the plot plans was used to calculate the total emission rate, and the identical rate per unit area was modeled for each of the three area sources. Further, a small berm was assumed around each basin.
- ◆ Geographic locations for all sources were assumed based on a review of roadways in the area.
- ◆ The AERMIC Model (AERMOD) model was also used in the analysis. The model used rural dispersion coefficients with the regulatory default options. These allow for calm wind and missing data correction, buoyancy induced dispersion, and building downwash including recirculation cavity effects.
- ◆ Five years (1998-2002) of preprocessed meteorological data was used in this analysis. The surface data was collected in Juneau (UNU), and the upper air meteorological data originated in Green Bay.
- ◆ Receptors were placed around the facility in a 25-meter spaced grid extending 300 meters from any portion of the property. Points on the facility property were removed from the analysis, but the northern and southern boundaries are uncertain. Therefore, two analyses were performed. The first assumed receptors along the field lines shown on aerial photos, while the second only assumed receptors to the west of the property. As per WDNR policy, terrain elevations as derived from AERMAP were included.
- ◆ Two phases were considered in the analysis. Phase One consists of the southern barn and the two waste storage ponds labeled WSF1 and WSF2. Phase Two considered the entire facility.

C. MODEL RESULTS

The results demonstrate that the ambient air quality standards for NH₃ may not be attained assuming the emission rates and stack parameters listed in the attached source table.

Modeling Analysis Results (All Concentrations in µg/m ³) All Receptors – Phase 1				
	NH ₃ - 24 hr	NH ₃ - Annual	H ₂ S - 24 Hr	H ₂ S - Annual
Facility Impact	1,408.7	100.5	16.3	1.06
AAC*	418.0	100.0	335.0	-
% AAC	337.0	100.5	4.9	-

*Acceptable Ambient Concentration from Ch. NR 445, Wis. Adm. Code

Modeling Analysis Results (All Concentrations in µg/m ³) Western Receptors – Phase 1				
	NH ₃ - 24 hr	NH ₃ - Annual	H ₂ S - 24 Hr	H ₂ S - Annual
Facility Impact	836.3	56.3	9.68	0.59
AAC	418.0	100.0	335.0	-
% AAC	200.1	56.3	2.9	-

Modeling Analysis Results (All Concentrations in µg/m ³) All Receptors – Phase 2				
	NH ₃ - 24 hr	NH ₃ - Annual	H ₂ S - 24 Hr	H ₂ S - Annual
Facility Impact	1,509.4	163.0	17.1	1.86
AAC	418.0	100.0	335.0	-
% AAC	361.1	163.0	5.1	-

Modeling Analysis Results (All Concentrations in µg/m ³) Western Receptors – Phase 2				
	NH ₃ - 24 hr	NH ₃ - Annual	H ₂ S - 24 Hr	H ₂ S - Annual
Facility Impact	886.2	91.0	10.0	1.04
AAC	418.0	100.0	335.0	-
% AAC	212.0	91.0	3.0	-

D. CONCLUSION

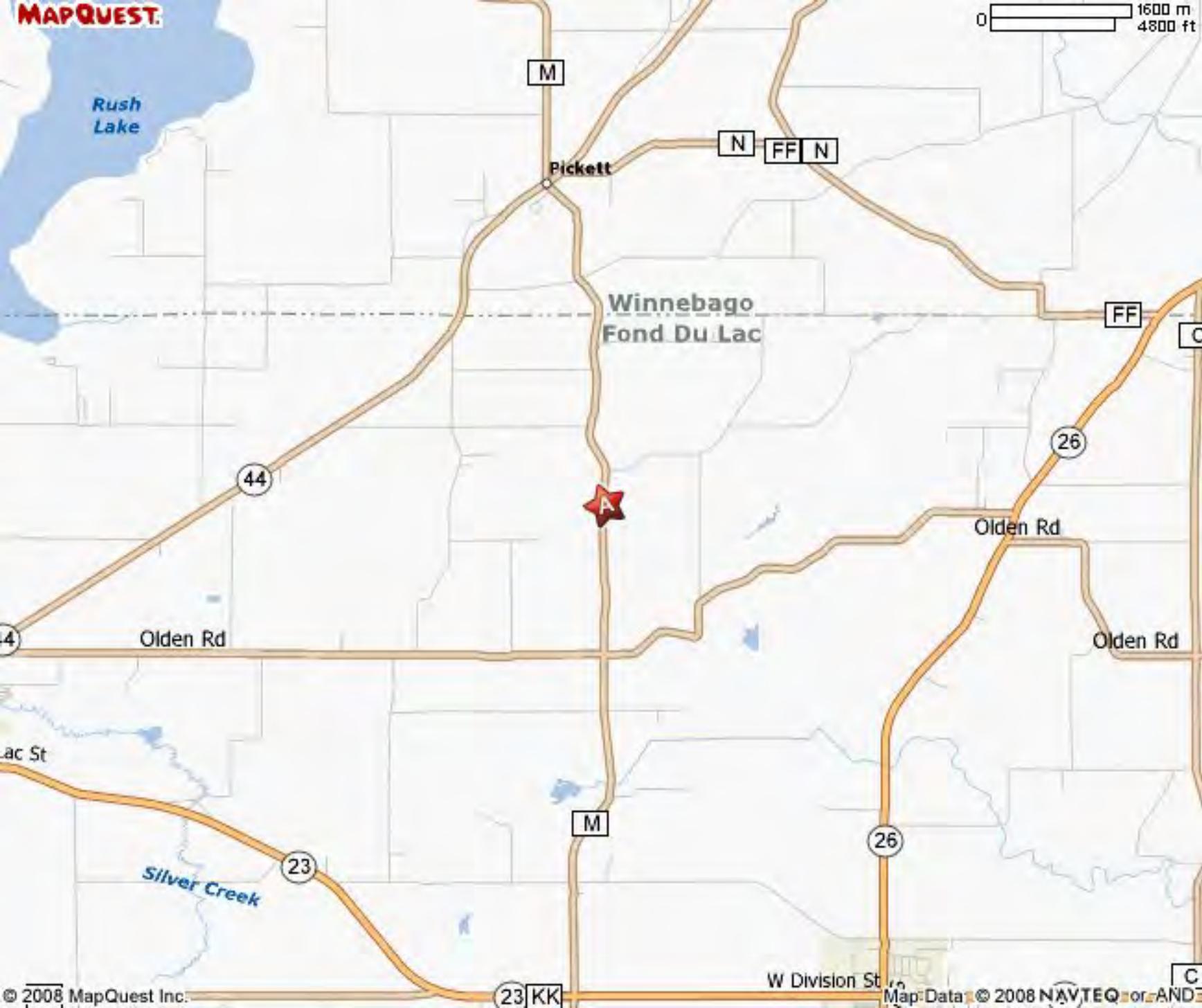
The results of the modeling analysis demonstrate that the applicable air quality standards might not be satisfied assuming the emissions rates and stack parameters listed in the source tables.

ROSENDALE DAIRY – FOND DU LAC COUNTY Barn Emission Rates & Volume Source Parameters						
ID	LOCATION (UTM83)	HEIGHT (M)	Sigma-Y (M)	Sigma-Z (M)	NH ₃ RATE (g/s)	H ₂ S RATE (g/s)
SB1	361865, 4858503	4.57	28.92	4.25	0.6602	0.006893
SB2	361989, 4858503	4.57	28.92	4.25	0.6602	0.006893
SB3	362114, 4858503	4.57	28.92	4.25	0.6602	0.006893
<i>South Barn Total Emission (#/hr)</i>					15.72	0.16
NB1	361865, 4858719	4.57	28.92	4.25	0.6602	0.006893
NB2	361989, 4858719	4.57	28.92	4.25	0.6602	0.006893
NB3	362114, 4858719	4.57	28.92	4.25	0.6602	0.006893
<i>North Barn Total Emission (#/hr)</i>					15.72	0.16

ROSENDALE DAIRY – FOND DU LAC COUNTY Waste Storage Emission Rates & Area Source Parameters						
ID	LOCATION (UTM83)	HEIGHT (M)	X-Dimen (M)	Y-Dimen (M)	NH ₃ RATE (g/s-m ²)	H ₂ S RATE (g/s-m ²)
WSF1	362217, 4858542	0.61	36.58	189.0	3.286E-5	3.795E-7
<i>Waste Storage Basin #1 Total Emission (#/hr)</i>					1.80	0.021
WSF2	362192, 4858857	0.61	99.06	219.2	3.286E-5	3.795E-7
<i>Waste Storage Basin #2 Total Emission (#/hr)</i>					5.66	0.065
WSF3	361966, 4859027	0.61	103.6	187.5	3.286E-5	3.795E-7
<i>Waste Storage Basin #3 Total Emission (#/hr)</i>					5.07	0.059

Phase 1 consists of South Barn (SB1-SB3) with WSF1 and WSF2 only

Phase 2 is entire facility (SB1-SB3, NB1-NB3, WSF1-WSF3)



Rush Lake

M

Pickett

N

FF N

Winnebago
Fond Du Lac

FF

44

26



Olden Rd

Olden Rd

Olden Rd

lac St

M

26

Silver Creek

23

W Division St

23 KK