Permit Fact Sheet

General Information

Permit Number:	WI-0062057-05-0
Permittee Name:	Dairy Dreams LLC
Address:	E3576 Cardinal Rd
City/State/Zip:	Casco WI 54205
Discharge Location:	E3576 Cardinal Rd, Casco, WI; Unnamed tributary upstream of Silver Creek, located in the Ahnapee River Watershed in the Twin-Door-Kewaunee Basin Outfall 014 (treated wastewater effluent discharge) is located at the following approximate coordinates: Lat: 44.65387° N Long: 87.59512° W
Receiving Water:	Unnamed Tributary (WBIC 95400) to Silver Creek (WBIC 94900)
StreamFlow ($Q_{7,10}$):	0.01 cfs (cubic feet per second)
Stream Classification:	Warm Water Sport Fish (WWSF) community, non-public water supply
Discharge Type:	New, continuous

Animal Units					
	Current AU		**Proposed AU** **(Note: If all zeroes, expansions are not expected during permit term)**		
Animal Type	**Mixed**	**Individual**	**Mixed**	**Individual**	**Date of Proposed Expansion**
Milking and Dry Cows	4721	4822	0	0	
Heifers (400 lbs. to 800 lbs.)	643	1072	0	0	
Heifers (800 lbs. to 1200 lbs.)	1676	1524	0	0	
Beef Calves (under 400 lbs.)	190	0	0	0	
Total	7230	4822	0	0	

Facility Description

Dairy Dreams LLC is an existing Concentrated Animal Feeding Operation in Kewaunee County, WI. Dairy Dreams LLC is owned and operated by the Pagel family. As of January of 2023, it has 3,372 milking and dry cows, 1,524 large heifers, 1,072 small heifers, and 950 calves (7,230.4 animal units). Dairy Dreams will annually generate approximately 59,297,560 gallons of manure and process wastewater and 5,593 tons of solid manure in the first year of the permit term. As of January 2024, Dairy Dreams has greater than the required minimum of 180 days of storage. Dairy Dreams has 9,946 acres in its approved nutrient management plan, of which 6,933 acres are rented or in contract agreements and 3,013 acres are owned. Of that, 8,780 acres are able to receive manure applications.

Dairy Dreams LLC submitted a pre-application worksheet (Form 3400-256) in 2022 for a discharge of treated wastewater to surface waters of the state. The proposed system, nutrient concentration system (NCS), will be constructed on the south side and between WSFs #2 and #3. The NCS will be housed in a separate building and is designed to further treat and separate solids from manure that has been processed through the onsite anaerobic digesters. Solid separation in the NCS will occur through both ultrafiltration (UF) and reverse osmosis (RO) units, and will produce three wastewater streams: 1) treated effluent discharged to an unnamed tributary at outfall 014, 2) UF concentrate, and 3) RO concentrate. The UF concentrate will be piped to WSF 2 and the RO concentrate will be piped to WSF 3 for final disposition to cropped acreage in the approved NMP via landspreading.

Substantial Compliance Determination

Enforcement During Last Permit: During the last permit term, Dairy Dreams LLC received a Notice of Violation for failing to adhere to permit compliance schedules revolving around evaluating existing facilities. The facility has completed all previously required actions as part of the enforcement process and has returned to compliance.

After a desk top review of all compliance schedule item, report submittals, and a site visit on April 19, 2022, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by James Salscheider, CAFO Compliance and Enforcement Coordinator on April 4, 2024.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
014	N/A, discharge from this outfall will begin during the -05 issuance of the permit.	Effluent: 24-hr flow proportional composite samples collected after the RO unit prior to discharge to the unnamed tributary upstream of Silver Creek. Grab samples shall be collected after the forced draft aerator (FDA) unit prior to discharge to the unnamed tributary upstream of Silver Creek. This sample point/outfall is for the liquid effluent discharge from the nutrient concentration system (NCS) that is used to mechanically separate the dairy manure.
101	N/A, the NCS that generates the wastewater streams to be monitored will not be in operation under the permit until the -05 issuance.	In Plant: generation of liquid concentrate from the reverse osmosis (RO) and ultrafiltration (UF) units to be diverted to the waste storage facilities at the production areas for ultimate distribution to acreage in the approved NMP as a mixture of the concentrate with animal waste. Flow volume is monitored prior to diversion to the waste storage facilities.

Sample Point Designation For Animal Waste		
Sample Point Number	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**	
001	Sample point 001 is for liquid waste storage facility 001 (WSF 1) located on the south side of Cardinal Road at the Dairy Dreams Site. WSF 1 is a concrete-line sand cell storage that is located east of WSF 2 and WSF 3. The facility has a usable capacity of 1,200,660 gallons and was constructed prior to 2000. WSF 1 was evaluated in 2023 and met permit requirements.	
002	Sample point 002 is for liquid waste storage facility 002 (WSF 2) located on the south side of Cardinal Road at the Dairy Dreams Site. WSF 2 is an earthen storage that is located east of WSF 3 and west of WSF 1. The facility has a capacity of 13,530,143 gallons and was constructed prior to 2000. WSF 2 was last evaluated in 2022 and met permit requirements.	
003	Sample point 003 is for liquid waste storage facility 003 (WSF 3) located on the south side of Cardinal Road at the Dairy Dreams Site. WSF 3 is an earthen storage that is located west of WSF 1 and WSF 2. The facility has a capacity of 17,020,470 gallons and was constructed in 2007. WSF 3 was last evaluated in 2022 and met permit requirements.	
005	Sample point 005 is for solid waste storage facility 005 (WSF 5) located next to sand lane system at the Dairy Dreams Site. WSF 5 is a concrete storage utilized for sand bedding and other solid manure stacking. All runoff and manure stack leachate gravity flows into adjacent reception tank.	
006	Sample point 006 is for solid manure sources that are directly land applied and not stored in a waste storage facility. This includes solid sources such as calf hutch manure, maternity pen bedpack, heifer bedpack, steer manure, etc. Representative samples shall be taken for each manure source type.	
007	Sample point 007 is for digested manure solids. These are typically reused as bedding and stored in a building next to digester. With approval by the department, digested solids may be distributed to another party according to the Distribution of Manure and Process Wastewater section of permit.	
008	Sample point 008 is for any manure solids removed from bottom of liquid waste storage facilities. This includes manure-laden sand solids, manure fiber solids, etc. Representative samples shall be taken from each waste storage facility when solids are hauled out.	
009	Sample point 009 is for visual monitoring and inspection of the feed storage area and associated runoff control system. Proper operation and maintenance is required to ensure discharges meet permit conditions. Weekly inspections are required and shall be recorded according to monitoring program. An engineering evaluation of the feed storage area and runoff control system shall be submitted according to the Schedules section of the permit.	
010	Sample point 010 is for visual monitoring and inspection of the calf super hutch feedlot area and associated runoff control system. Feedlot runoff flows or is manually scraped into adjacent reception tank; manure solids are stacked in WSF 5. Proper operation and maintenance is required to ensure discharges meet permit conditions. Weekly inspections are required and shall be recorded according to monitoring program.	
011	Sample point 011 is for visual monitoring and inspection of all production site storm water conveyance systems. This includes roof gutter and downspout structures, drainage tile systems, grassed waterways and other diversion systems that transport uncontaminated storm water. Proper operation and maintenance is required to keep uncontaminated runoff diverted away from manure and process wastewater handling systems. Weekly inspections are required and shall be recorded according to monitoring program.	
012	Sample point 012 is for liquid waste storage facility 6 (WSF 6) located at the Dairy Dreams site. WSF 6 is	

Sample Point Designation For Animal Waste		
Sample Point Number	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**	
	a liquid-tight, vertical walled, concrete storage located south of the feed storage area at Dairy Dreams. The facility has a usable capacity of 809,350 gallons and was constructed in 2023. This storage accepts process wastewater from the feed storage area at Dairy Dreams. WSF 6 was last evaluated at the time of construct and met permit requirements.	
013	Sample point 013 is for liquid waste storage facility 7 (WSF 7) located at the Heifer Dreams site. WSF 7 is a liquid-tight, vertical walled, concrete storage located on the east side of the production site. The facility has a capacity of 2,283,865 gallons and was constructed in 2003. This storage accepts manure and process wastewater from the barn at Heifer Dreams. WSF 7 was last evaluated in 2022 and met permit requirements.	

1 Livestock Operations - Proposed Operation and Management

Production Area Discharge Limitations

Beginning on the effective date of the permit, the permittee may not discharge pollutants from the operation's production area (e.g., manure storage areas, outdoor animal lots, composting and leachate containment systems, milking center wastewater treatment/containment systems, raw material storage areas) to navigable waters. If an allowable discharge occurs from the production area, state water quality standards may not be exceeded.

Surface Water Discharge

Language has been added to this section to reflect the allowance for a recurring discharge of treated manure and process wastewater from Dairy Dreams. In accordance with state and federal rules allowing a recurring surface water discharge from a CAFO, language has been included prohibiting episodic surface water discharges from Sampling Points 001 through 013 (excluding 004). Except for allowable discharges associated with land application activities or discharges in compliance with the effluent limitations for outfall 014, there may be no other production area discharges to surface waters of untreated or treated manure or process wastewater from Sampling Points 001 through 013 (excluding 004). These sampling points are directed to or are part of the manure treatment system. Manure and process wastewater directed to the operation's treatment system for treatment and discharge to surface waters via outfall 014 are subject to the effluent limitations in Section 2, "Surface Water Requirements". The permittee shall obtain written Department approval prior to directing manure or process wastewater from other sampling points or from new or proposed sources of manure or process wastewater to the operation's treatment system.

Runoff Control

The permit requires control of contaminated runoff from all elements of the production area to prevent a discharge of pollutants to navigable waters in accordance with the Production Area Discharge Limitations and to comply with surface water quality standards and groundwater standards. Beginning on the effective date of this permit, (if needed) interim measures shall be implemented to prevent discharges of pollutants to navigable waters. In addition, permanent runoff control system(s) shall be designed, operated and maintained in accordance with the requirements found in USDA Natural Resources Conservation Service standards and ch. NR 243, Wis. Adm. Code. If any upgrading or modifications to runoff controls are necessary, formal engineering plans and specifications must be submitted to the Department for approval.

Manure and Process Wastewater Storage

The permit requires the operation to have adequate storage for manure and process wastewater and that storage or containment facilities are designed, operated and maintained to prevent overflows and discharges to waters of the state. In

order to prevent overflows, the permittee must maintain levels of materials in liquid storage or containment facilities at or below certain levels including a one foot margin of safety that can never be exceeded. If any upgrading or modifications to the storage facilities are necessary, formal engineering plans and specifications must submitted to the Department for approval.

The permittee currently has approximately 7 months of storage for liquid manure. The permittee must maintain 180 days of storage, unless temporary reductions in required storage are approved by the Department.

Ancillary Service and Storage Areas

The permittee shall take preventative maintenance actions and conduct visual inspections to minimize pollutant discharges from areas of the operation that are not part of the production area or land application areas. These areas are called ancillary service and storage areas and include access roads, shipping and receiving areas, maintenance areas, refuse piles and CAFO outdoor vegetated areas.

Nutrient Management

With 3,372 milking and dry cows, 2,596 heifers, and 951 calves, it is estimated that approximately 59,297,560 gallons and 5,593 tons of manure and process wastewater will be produced per year. The permittee owns *approximately* 3,013 acres of cropland and rents about 6,933 acres. Given the rotation commonly used by the permittee, 8,780 acres are available (or open) to receive manure and process wastewater on an annual basis. The permit requires all landspreading of manure and process wastewater be completed in accordance with an approved nutrient management plan. The permit will require sampling and analysis of manure and process wastewater that will be landspread. Landspreading rates must be adjusted based on sample analysis. The permit requires the permittee to maintain a daily log that documents landspreading activities. The permit also requires the submittal of an annual report that summarizes all landspreading activities. Plans must be updated annually to reflect cropping plans and other operational changes. Among the requirements, the plans must include detailed landspreading information including field by field nutrient budgets.

The permittee is required to implement a number or practices to address potential water quality impacts associated with the land application of manure and process wastewater. Among the permit conditions are restrictions on manure ponding, restrictions on runoff of manure and process wastewater from cropped fields, and setbacks from wells and direct conduits to groundwater (e.g., sinkholes, fractured bedrock at the surface). In addition, the permittee must implement a phosphorus based nutrient management plan that addresses phosphorus delivery to surface waters by basing manure and process wastewater applications on soil test phosphorus levels or the Wisconsin Phosphorus index. Additional phosphorus application restrictions apply to fields that are high in soil test phosphorus (>100 ppm).

The permittee must also implement conservation practices when applying manure near navigable waters and their conduits, referred to as the Surface Water Quality Management Area (SWQMA). These practices include a 100-foot setback from navigable waters and their conduits, a 35-foot vegetated buffer adjacent to the navigable water or conduit, or a practice that provides equivalent pollutant reductions equivalent to or better than the 100-foot setback.

In addition, the permittee must comply with restrictions on land application of manure and process wastewater on frozen or snow-covered ground. Included in these restrictions is a prohibition on surface applications of solid manure ($\geq$12% solids) on frozen or snow-covered ground during February and March. Beginning July 1, 2024, non-emergency surface applications of liquid manure (<12%) on frozen or snow-covered ground are prohibited.

Monitoring and Sampling Requirements

The permittee must submit a monitoring and inspection program that outlines how the permittee will conduct self-inspections to determine compliance with permit conditions. These self-inspections include visual inspections of water lines, diversion devices, storage and containment structures and other parts of the production area. The permit requires periodic inspections and calibrations of landspreading equipment. The permittee must take corrective actions to problems identified inspections or otherwise notify the Department. Samples of manure, process wastewater and soils receiving land applied materials from the operation must also be collected and analyzed.

Sampling Points

The permit identifies the different sources of land applied materials (e.g., manure storage facilities, milking centers, egg-washing facilities) as "Sampling Points." For these Sampling Points, the permittee is required to sample and analyze the different sources for nutrients and other parameters which serve as the basis for determining rates of application for these materials. Other areas are also identified as Sampling Points as a means of identifying them as areas requiring action by the permittee, such as an upgrade or evaluation of a certain system or structure (e.g., runoff control systems), even though sampling is not actually required.

Sample Point Number: 001- WSF 1; 002- WSF 2; 003- WSF 3; 012- WSF 6, and 013- WSF 7

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total		lb/1000gal	2/Month	Grab	
Nitrogen, Available		lb/1000gal	2/Month	Calculated	
Phosphorus, Total		lb/1000gal	2/Month	Grab	
Phosphorus, Available		lb/1000gal	2/Month	Calculated	
Solids, Total		Percent	2/Month	Grab	

1.1.1 Changes from Previous Permit

Sample point 012 was added to the permit to cover the leachate management pond that was constructed to capture runoff from the feed storage area at Dairy Dreams LLC.

Sample point 013 was added to the permit to cover the liquid waste storage facility at the Heifer Dreams site.

1.1.2 Explanation of Operation and Management Requirements

Liquid manure sources must be properly sampled, and land applied according to the permit and nutrient management plan.

Sample Point Number: 005- WSF 5; 006- Solids 006; 007- Solids 007; 008- Solids 008

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total		lbs/ton	Quarterly	Grab	
Nitrogen, Available		lbs/ton	Quarterly	Calculated	
Phosphorus, Total		lbs/ton	Quarterly	Grab	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Available		lbs/ton	Quarterly	Calculated	
Solids, Total		Percent	Quarterly	Grab	

1.1.3 Changes from Previous Permit

No changes from previous permit.

1.1.4 Explanation of Operation and Management Requirements

Solid manure sources must be properly sampled and land applied according to the permit and nutrient management plan.

Sample Point Number: 009- Feed Storage Runoff; 010- Calf Feedlot Area Runoff, and 011- Storm Water Runoff

1.1.5 Changes from Previous Permit

No changes from the previous permit.

1.1.6 Explanation of Operation and Management Requirements

Proper operation and maintenance is required to ensure unlawful discharges to waters of the state do not occur. Weekly or quarterly inspections are required and shall be recorded according to the monitoring plan.

2 In plant - Monitoring and Limitations

Sample Point Number: 101- RO & UF Concentrate

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		gpd	Weekly	Total Daily	
Nitrogen, Total		lb/1000gal	Monthly	Grab	
Nitrogen, Available		lb/1000gal	Monthly	Calculated	
Phosphorus, Total		lb/1000gal	Monthly	Grab	
Phosphorus, Available		lb/1000gal	Monthly	Calculated	

Changes from Previous Permit:

This is a new sample point/outfall beginning with the -05 issuance of the permit; there have been no other in plant sample points for previously issued permits. This sample point is for collection of flow volume and other nutrient characteristic information about the concentrated nutrient wastestreams produced by the UF and RO units. These wastestreams will be

mixed with animal waste in WSFs #2 and #3 and landspread to acres in agricultural production included in the permittee's approved NMP.

Explanation of Limits and Monitoring Requirements

The monitoring required in this table is consistent with monitoring required for other wastewater/CAFO hybrid permits for waste volume tracking and characteristics purposes.

3 Surface Water - Monitoring and Limitations

Sample Point Number: 014- Separated Liquid Wastes

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	8.2 mg/L	Weekly	24-Hr Flow Prop Comp	Limit is effective May through October each year.
BOD5, Total	Daily Max	18 mg/L	Weekly	24-Hr Flow Prop Comp	Limit is effective November through April each year.
BOD5, Total	Weekly Avg	5.0 mg/L	Weekly	24-Hr Flow Prop Comp	Limit is effective May through October each year.
BOD5, Total	Weekly Avg	11 mg/L	Weekly	24-Hr Flow Prop Comp	Limit is effective November through April each year.
BOD5, Total	Monthly Avg	5.0 mg/L	Weekly	24-Hr Flow Prop Comp	Limit is effective May through October each year.
BOD5, Total	Monthly Avg	11 mg/L	Weekly	24-Hr Flow Prop Comp	Limit is effective November through April each year.
BOD5, Total	Weekly Avg	3.1 lbs/day	Weekly	Calculated	Limit is effective May through October each year.
BOD5, Total	Weekly Avg	6.5 lbs/day	Weekly	Calculated	Limit is effective November through April each year.
Suspended Solids, Total	Daily Max	16 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level.
Suspended Solids, Total	Monthly Avg	10 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Suspended Solids, Total		lbs/day	Weekly	Calculated	Report daily mass discharged using Equation 1a. in the Water Quality Trading (WQT) section.
WQT Credits Used (TSS)		lbs/month	Monthly	Calculated	Report WQT TSS Credits used per month using Equation 3b. in the 'Water Quality Trading (WQT)' section. Available TSS Credits are specified in Table 2 and in the approved Water Quality Trading Plan.
WQT Credits Used (TSS)	Annual Total	483 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed values specified in Table 2 and the approved WQT trading plan. Limit effective 2024 only.
WQT Credits Used (TSS)	Annual Total	828 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed values specified in Table 2 and the approved WQT trading plan.
WQT Computed Compliance (TSS)	Monthly Avg	0 lbs/day	Monthly	Calculated	Report the WQT TSS Computed Compliance value using Equation 5a. in the 'Water Quality Trading (WQT)' section. Value entered on the last day of the month.
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	7.0 mg/L	5/Week	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	Weekly	See Table	Daily maximum ammonia limit varies with effluent pH. Look up the variable ammonia limit from the 'Variable Ammonia Limitation' table and report the variable limit in the Ammonia Variable Limit

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					column on the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	Weekly	24-Hr Flow Prop Comp	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH3-N) Total column of the eDMR. See the Variable Daily Maximum Ammonia Limits section.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	7.4 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective April and May each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	4.6 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective June through September each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	8.7 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective October through March each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.2 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective April and May each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	2.1 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective June through September each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.6 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective October through March each year.
Nitrogen, Total Kjeldahl		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Monthly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Nitrogen, Total		lbs/month	Monthly	Calculated	Report the total nitrogen mass discharged per month. Value entered on the last day of the month.
Nitrogen, Total	Annual Total	68,298 lbs/yr	Annual	Calculated	The sum of total monthly mass discharged may not exceed limit.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit is effective May through September each year.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit is effective May through September each year. See the 'E. coli Percent Limit' section. Enter the result in the DMR on the last day of the month.
Phosphorus, Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total		lbs/day	Weekly	Calculated	Report daily mass discharged using Equation 1a. in the Water Quality Trading (WQT) section.
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	Report WQT TP Credits used per month using Equation 2b. in the 'Water Quality Trading (WQT)' section. Available TP Credits are specified in Table 2 and in the approved Water Quality Trading Plan.
WQT Credits Used (TP)	Annual Total	12.8 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed values specified in Table 2 and the approved WQT trading plan.
WQT Credits Used (TP)	Annual Total	21.8 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed values specified in Table 2 and the approved WQT trading plan. Limit effective 2024 only.
WQT Computed Compliance (TP)	Monthly Avg	0 lbs/day	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 4a. in the 'Water Quality Trading (WQT)' section. Value entered on the last day of

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					the month.
Arsenic, Total Recoverable	Daily Max	360 ug/L	Monthly	24-Hr Flow Prop Comp	
Arsenic, Total Recoverable	Weekly Avg	160 ug/L	Monthly	24-Hr Flow Prop Comp	
Arsenic, Total Recoverable	Monthly Avg	18 ug/L	Monthly	24-Hr Flow Prop Comp	
Cadmium, Total Recoverable	Daily Max	5.0 ug/L	Monthly	24-Hr Flow Prop Comp	
Cadmium, Total Recoverable	Weekly Avg	3.9 ug/L	Monthly	24-Hr Flow Prop Comp	
Cadmium, Total Recoverable	Monthly Avg	3.9 ug/L	Monthly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable	Daily Max	1,090 ug/L	Monthly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable	Weekly Avg	330 ug/L	Monthly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable	Monthly Avg	330 ug/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable	Daily Max	8.6 ug/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable	Weekly Avg	8.6 ug/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable	Monthly Avg	8.6 ug/L	Monthly	24-Hr Flow Prop Comp	
Lead, Total Recoverable	Daily Max	59 ug/L	Monthly	24-Hr Flow Prop Comp	
Lead, Total Recoverable	Weekly Avg	59 ug/L	Monthly	24-Hr Flow Prop Comp	
Lead, Total Recoverable	Monthly Avg	59 ug/L	Monthly	24-Hr Flow Prop Comp	
Nickel, Total Recoverable	Daily Max	280 ug/L	Monthly	24-Hr Flow Prop Comp	
Nickel, Total Recoverable	Weekly Avg	120 ug/L	Monthly	24-Hr Flow Prop Comp	
Nickel, Total	Monthly Avg	120 ug/L	Monthly	24-Hr Flow	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Recoverable				Prop Comp	
Zinc, Total Recoverable	Daily Max	70 ug/L	Monthly	24-Hr Flow Prop Comp	
Zinc, Total Recoverable	Weekly Avg	70 ug/L	Monthly	24-Hr Flow Prop Comp	
Zinc, Total Recoverable	Monthly Avg	70 ug/L	Monthly	24-Hr Flow Prop Comp	
Hardness, Total as CaCO3		mg/L	Monthly	24-Hr Flow Prop Comp	
Chlorine, Total Residual	Daily Max	20 ug/L	Daily	Grab	
Chlorine, Total Residual	Weekly Avg	7.4 ug/L	Daily	Grab	
Chlorine, Total Residual	Monthly Avg	7.4 ug/L	Daily	Grab	
Chloride	Daily Max	810 mg/L	4/Month	24-Hr Flow Prop Comp	A sample frequency of 4/month requires that samples be collected on four consecutive days one week each month.
Chloride	Monthly Avg	400 mg/L	4/Month	24-Hr Flow Prop Comp	A sample frequency of 4/month requires that samples be collected on four consecutive days one week each month.
Chloride	Weekly Avg	400 mg/L	4/Month	24-Hr Flow Prop Comp	A sample frequency of 4/month requires that samples be collected on four consecutive days one week each month.
Temperature Maximum	Daily Max	77 deg F	Daily	Grab	Limit is effective January, February, and December each year.
Temperature Maximum	Daily Max	78 deg F	Daily	Grab	Limit is effective March and November each year.
Temperature Maximum	Daily Max	80 deg F	Daily	Grab	Limit is effective April each year.
Temperature Maximum	Daily Max	83 deg F	Daily	Grab	Limit is effective May each year.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Temperature Maximum	Daily Max	84 deg F	Daily	Grab	Limit is effective June and August each year.
Temperature Maximum	Daily Max	85 deg F	Daily	Grab	Limit is effective July each year.
Temperature Maximum	Daily Max	82 deg F	Daily	Grab	Limit is effective September each year.
Temperature Maximum	Daily Max	81 deg F	Daily	Grab	Limit is effective October each year.
Temperature Maximum	Weekly Avg	49 deg F	Daily	Grab	Limit is effective January, November, and December each year.
Temperature Maximum	Weekly Avg	50 deg F	Daily	Grab	Limit is effective February each year.
Temperature Maximum	Weekly Avg	52 deg F	Daily	Grab	Limit is effective March each year.
Temperature Maximum	Weekly Avg	55 deg F	Daily	Grab	Limit is effective April each year.
Temperature Maximum	Weekly Avg	65 deg F	Daily	Grab	Limit is effective May each year.
Temperature Maximum	Weekly Avg	76 deg F	Daily	Grab	Limit is effective June each year.
Temperature Maximum	Weekly Avg	81 deg F	Daily	Grab	Limit is effective July and August each year.
Temperature Maximum	Weekly Avg	73 deg F	Daily	Grab	Limit is effective September each year.
Temperature Maximum	Weekly Avg	61 deg F	Daily	Grab	Limit is effective October each year.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	
WQT Credits Used (TSS)		lbs/month	Monthly	Calculated	

Changes from Previous Permit

This is a new sample point/outfall beginning with the -05 issuance of the permit; there have been no other surface water discharge sample points for previously issued permits. This sample point is for sampling and testing of all required parameters for which there are surface water quality standards and associated limitations. Water quality-based effluent limitations (WQBELs) were reviewed using chapters NR 102, 104, 105, 106, 207, 212, and 217 of the Wisconsin Administrative Code (where applicable) to determine necessary limits. Construction of the NCS that will result in a discharge of treated effluent to surface waters was completed in late 2023. This system did not exist in prior permit issuances and, thus, this outfall was not required until the -05 issuance of the permit, so all parameters listed in the table in this section are new starting in the -05 issuance.

Explanation of Limits and Monitoring Requirements

Refer to the WQBEL memo for the detailed calculations, prepared by the Water Quality Bureau dated March 4, 2024, used for this reissuance.

Categorical Limits

BOD5, Total Suspended Solids (TSS), Dissolved Oxygen (DO) and pH- Established as specified in ss. NR 102.04(4)(a)-(c).

Monitoring Frequencies- The **Monitoring Frequencies for Individual Wastewater Permits** guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

Ammonia- Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia.

Toxics (Metals, Chloride, and Hardness) - Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code. Subchapter VII of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride.

Thermal- Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects.

Phosphorus- Phosphorus requirements are based on the Phosphorus Rules that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. The code categorically limits industrial dischargers of more than 60 pounds of phosphorus per month and municipal dischargers of more than 150 pounds of phosphorus per month to 1.0 mg/L unless an alternative limit is approved. NR 217 also specifies WQBELs (water quality based effluent limits) for discharges of phosphorus to surface waters of the state from publicly and privately owned wastewater facilities, noncontact cooling water discharges which contain phosphorus, concentrated animal feeding operations that discharge through alternative treatment facilities and a facility/site that is regulated under NR 216 where the standards in NR151 and 216 are not sufficient to meet phosphorus criteria. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards.

A Total Maximum Daily Load was developed for the Northeast Lakeshore (NEL). The TMDL addresses phosphorus and TSS. This permittee was not assigned a WLA for phosphorus or TSS, therefore any amount discharged from Outfall 014 would need to be offset with an approved Water Quality Trading Plan. This permit authorizes the use of trading as a tool to demonstrate compliance with the phosphorus WQBELs. This permit includes terms and conditions related to the Water Quality Trading Plan (WQT-2024-005) or approved amendments thereof. The total 'WQT TP Credits' available are

designated in the approved WQT Plan. Additional WQT subsections in the permit provide information on compliance determinations, annual reporting and re-opening of the permit.

Total Nitrogen Monitoring (NO2+NO3, TKN and Total N)- The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019. Nitrogen monitoring is scheduled for monthly throughout the permit term.

Monitoring is required for Total N because a mass limit has been included in the permit. The determination for inclusion of a Total N mass limit was based on the review of a technical analysis submitted in accordance with s. NR 243.13(2)(b), Wis. Adm. Code.

PFOS and PFOA- NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Pursuant to s. NR 106.98(3)(b), Wis. Adm. Code, the department evaluated the need for PFOS and PFOA monitoring. Based on information available at the time the proposed permit was drafted, the department has determined the permittee does not need to sample for PFOS or PFOA as part of this permit reissuance. The department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

Whole Effluent Toxicity- Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). WET tests are scheduled in the following rotating quarters:

Acute WET tests required:

1st Quarter (January to March) 2025

3rd Quarter (July to September) 2027

Chronic WET tests required:

4th Quarter (October to December) 2024

1st Quarter (January to March) 2025

2nd Quarter (April to June) 2026

3rd Quarter (July to September) 2027

4th Quarter (October to December) 2028

4 Schedules

4.1 Emergency Response Plan

Required Action	Due Date
Develop Emergency Response Plan: Develop a written Emergency Response Plan within 30 days of permit coverage, available to the Department upon request.	08/01/2024

4.2 Monitoring & Inspection Program

Use of the department's monitoring and inspection program template is encouraged, but optional.

Required Action	Due Date
Proposed Monitoring and Inspection Program: Consistent with the Monitoring and Sampling Requirements subsection, the permittee shall update and submit a proposed monitoring and inspection program within 60 days of the effective date of this permit.	09/01/2024

4.3 Annual Reports

Submit Annual Reports by January 31st of each year in accordance with the Annual Reports subsection in Standard Requirements.

Required Action	Due Date
Submit Annual Report #1: To include monitoring and inspection results from the previous 12 months, consistent with the requirements of department form 3400-025E.	01/31/2025
Submit Annual Report #2: To include monitoring and inspection results from the previous 12 months, consistent with the requirements of department form 3400-025E.	01/31/2026
Submit Annual Report #3: To include monitoring and inspection results from the previous 12 months, consistent with the requirements of department form 3400-025E.	01/31/2027
Submit Annual Report #4: To include monitoring and inspection results from the previous 12 months, consistent with the requirements of department form 3400-025E.	01/31/2028
Submit Annual Report #5: To include monitoring and inspection results from the previous 12 months, consistent with the requirements of department form 3400-025E.	01/31/2029
Ongoing Annual Reports: Continue to submit Annual Reports until permit reissuance has been completed.	

4.4 Nutrient Management Plan

Required Action	Due Date
Management Plan Submittal: Submit annual nutrient management plan (NMP) updates by March 31 of each year. Note, in addition to annual NMP updates, submit NMP amendments and substantial revisions to the department for written approval prior to implementation of any changes to the NMP.	
Management Plan Annual Update #1: Submit an Annual Update to the Nutrient Management Plan by March 31st of each year. Note: In addition to Annual Updates, submit Management Plan Amendments to the Department for written approval prior to implementation of any changes to nutrient management practices, in accordance with the Nutrient Management requirements in the Livestock Operational and Sampling Requirements section.	03/31/2025
Management Plan Annual Update #2: To include actual cropping, tillage, and nutrient application data from the previous calendar or crop year, consistent with the requirements of department for 3400-025D.	03/31/2026
Management Plan Annual Update #3: To include actual cropping, tillage, and nutrient application data from the previous calendar or crop year, consistent with the requirements of department for	03/31/2027

3400-025D.	
Management Plan Annual Update #4: To include actual cropping, tillage, and nutrient application data from the previous calendar or crop year, consistent with the requirements of department for 3400-025D.	03/31/2028
Management Plan Annual Update #5: To include actual cropping, tillage, and nutrient application data from the previous calendar or crop year, consistent with the requirements of department for 3400-025D.	03/31/2029
Ongoing Management Plan Annual Updates: Continue to submit Annual Updates to the Nutrient Management Plan until permit reissuance has been completed.	

4.5 Permanent Markers - Installation

Installation of permanent markers within WSF 7 at the Heifer Dreams site.

Required Action	Due Date
Plans and Specifications: For liquid storage facilities without permanent markers specified in s. NR 243.14(9), Wis. Adm. Code, submit plans and specifications to install permanent markers for Department review and approval in accordance with Chapter 281.41, Wis. Stats., and Chapter NR 243, Wis. Adm. Code.	08/01/2024
Complete Installation: Complete installation of permanent markers. The facility shall be functional and in operation by the specified Date Due. Post construction documentation shall be submitted within 60 days of completion of the project.	12/31/2024

4.6 Wastewater Operator Certification

In accordance with s. NR 114.56(1)(b) and NR 114.57(1)(c), Wis. Adm. Code, obtain the required certification in the subclass(es) identified in the schedule for proper operation and maintenance of the wastewater treatment system.

Required Action	Due Date
Basic Level Certification: The designated operator-in-charge (OIC) shall complete the required exam for the Unique Treatment System category, subclass U, with a passing score and satisfy the one year of subclass specific experience. The OIC shall submit a summary report by the due date providing a written description of the one year of subclass specific experience.	07/01/2025
Advanced Level Certification: The designated operator-in-charge (OIC) shall complete the required exam for the Unique Treatment System category, subclass U, with a passing score and satisfy the four years of subclass specific experience. The OIC shall submit a summary report by the due date providing a written description of the four years of subclass specific experience required for the advanced level.	07/01/2028

4.7 Annual Water Quality Trading (WQT) Report

Required Action	Due Date
Annual WQT Report: Submit an annual WQT report that shall provide information for the first year of the permit term. The WQT report shall include: The number of pollutant reduction credits (lbs/month) used each month of the previous year to	01/31/2025

demonstrate compliance; The source of each month's pollutant reduction credits by identifying the approved WQT plan that details the source; A summary of the annual inspection of each nonpoint source management practice, including photos, that generated any of the pollutant reduction credits used during the previous year; and Identification of noncompliance or failure to implement any terms or conditions of this permit with respect to WQT that have not been reported in discharge monitoring reports or via any other means of communication.	
Annual WQT Report #2: Submit an annual WQT report in accordance with this schedule section that shall include all required information for the previous calendar year.	01/31/2026
Annual WQT Report #3: Submit an annual WQT report in accordance with this schedule section that shall include all required information for the previous calendar year.	01/31/2027
Annual WQT Report #4: Submit an annual WQT report in accordance with this schedule section that shall include all required information for the previous calendar year.	01/31/2028
Annual WQT Report #5: Submit an annual WQT report in accordance with this schedule section that shall include all required information for the previous calendar year.	01/31/2029
Annual WQT Report Required After Permit Expiration: In the event that this permit is not reissued by the expiration date, the permittee shall continue to submit annual WQT reports by January 31 each year provided details and required information for the total number of pollutant credits used, the source of the pollution reduction credits, a summary of the reports for annual inspections performed (including photos), and identification of noncompliance or failure to implement any terms or conditions of the approved WQT plan for the previous calendar year.	

4.8 Submit Permit Reissuance Application

Required Action	Due Date
Reissuance Application: Submit a complete permit reissuance application 180 days prior to permit expiration.	12/31/2028

4.9 Explanation of Schedules

Wastewater Schedules:

- Wastewater operator certification:
    - This schedule is required to ensure that the wastewater treatment system is properly operated in accordance with chs. NR 114 and 205, Wis. Adm. Code. Proper operation and maintenance of wastewater treatment facilities is critical to meeting permit requirements and effluent limits. The language and due dates of this schedule are consistent with wastewater policies for operation of these types of wastewater treatment and discharge systems.
- Annual WQT report:
    - This schedule is a standard schedule for all permits with approved WQT plans incorporated to meet phosphorus discharge limits. The language and dates in this schedule are consistent with all other WPDES permittees with approved WQT plans included in their permits. Annual reports are required to ensure that the elements of the approved plan are being followed each year to generate a sufficient

quantity of credits that were planned for to offset the phosphorus in the discharge to meet the limits/wasteload allocations (WLAs) in the permit. The WLA for this permit is 0 and the annual reports verify that the permittee is generating adequate credits to account for the phosphorus present in the discharge. Starting in 2020, permittees with approved WQT plans in their permits have been required to submit reports that include the following information:

- Verification that site inspections occurred;
- Brief summary of site inspection findings;
- Identification of noncompliance or failure to implement any terms or conditions of the permit or trading plan that have not been reported in discharge monitoring reports;
- Any applicable notices of termination or management practice registration; and
- A summary of credits used each month over the calendar year.

- Compliance schedules 4.1 through 4.4, and 4.8 are general WPDES permit requirement s
- Compliance schedule 4.5 is included to install permanent markers within the waste storage facility at Heifer Dreams.

Special Reporting Requirements

None.

Other Comments:

None.

Attachments:

April 19, 2022 Permit Reissuance Inspection Report

December 13, 2023 Conditional NMP Approval

January 8, 2024 Days of Storage Review Letter

Water Quality Based Effluent Limits

Site Maps

Expiration Date:

June 30, 2029

Justification Of Any Waivers From Permit Application Requirements

None.

Prepared By: James Salscheider Agricultural Runoff Management Specialist Date: 4/16/2024

Prepared By: Heidi Schmitt Marquez Wastewater Field Supervisor Date: 03/26/2024

Notice of reissuance was published in the Green Bay Press Gazette, 435 E Walnut St, Green Bay, WI .

CAFO Compliance Report (06/07/2022)

Inspection Date: April 19, 2022

Inspection Type: Permit Reissuance Inspection

Operation Name: Dairy Dreams LLC

WPDES Permit No. 0062057-04-0

Operation Address: E3576 Cardinal Rd, Casco, WI 54205

On-Site Representative(s): John J Pagel, Owner, et. Al

DNR Staff / Report Writer: James Salscheider, Agricultural Runoff Specialist

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On Tuesday, April 19, 2022, James Salscheider, Agricultural Runoff Management Specialist with the Wisconsin Department of Natural Resources (Department) met with John J Pagel (Pagel) owner of Dairy Dreams LLC (DD), to conduct an inspection as part of the permit reissuance process. Pagel was joined by Susan LaCrosse (LaCrosse), attorney, Gary Jashinksky, operations, Kevin Srnka, supervisor, Joe Denil, operations, Steve Lambrecht, manager, Jeff LaViolette, engineer (NRP Consultants), and Dan Wierzba, engineer (REA). Salscheider inspected both the Main Site (Dairy Dreams) as well as the proposed satellite site (Heifer Dreams) that will be added to DD's permit through the reissuance. Dairy Dreams is located at E2576 Cardinal Rd, Casco, WI 54205. The legal description is S ½ of the SE ¼ of S4 T25N R24E, Township of Lincoln, Kewaunee County. Heifer Dreams is located at E 2405 County Rd X, Casco, WI 54205. The legal description is N ¼ of the NE ¼ of S1 T25N R23E, Township of Lincoln, Kewaunee County. Dairy Dreams is currently operating under WPDES Permit No. WI-0062057-04-0, which expires on January 31, 2023. The weather during the inspection was partly sunny, dry, and approximately 35° F.

Aerial Map 1. The aerial map above illustrates the production site at Dairy Dreams LLC. The production site includes multiple animal barns, a calf hutch area, an anaerobic digester with natural gas production, solid separation, four liquid waste storage facilities, one solid manure storage area, three permanent manure transfer locations, one feed storage area, two vegetated treatment areas, and a stormwater conveyance system. Buried waste transfer lines are represented by the pink arrows. Surface flow paths are represented by the yellow arrows. The stormwater conveyance system is represented by the blue arrows.

Aerial Map 2. The aerial map above illustrates surface water in relation to Dairy Dreams LLC. The dashed white lines represent intermittent streams. The blue line represents an unnamed perennial stream, WBIC 95400. The aerial photograph was obtained from the DNR Surface Water Data Viewer.

Aerial Map 3. The aerial map above illustrates the production site at Heifer Dreams, the heifer raising facility for Dairy Dreams LLC. The production site is comprised of one liquid waste storage facility, one feed storage area, and one freestall barn. The aerial image was obtained from the Kewaunee County GIS website.

Aerial Map 4. The aerial map above illustrates surface water near the production site at Heifer Dreams, the heifer raising facility for Dairy Dreams LLC. The yellow area represents mapped wetlands. The aerial image was obtained from DNR Surface Water Data Viewer.

SITE OBSERVATIONS

Feedlot Runoff

Dairy Dreams does not utilize feedlots at the Main Site or Heifer Dreams site.

Calf Hutch Areas

Calf hutch areas are managed to not have current or past indicators of discharges. Runoff control systems are well-maintained, in good repair and in compliance with permit requirements.

Dairy Dreams utilizes two calf hutch areas located east of the sand lane and south of the calf barns. Dairy Dreams also houses calves in six calf barns that have a manure and process wastewater transfer system that transfers waste to the main reception basin. All runoff from the outdoor calf hutch areas flows west towards the sand land and manure reception basin. All runoff gravity flows over concrete until it discharges to the manure transfer system (sand lane and reception basin). Curbing is present to direct runoff to the manure transfer system. The calf hutch areas and runoff controls were in good repair with no visible signs of degradation. Other calves are housed in calf barns, located east of the calf hutch areas. Wastewater from these barns is collected and transferred to the manure recirculation tank located west of the calf hutch areas.

Photo 1. One of the calf hutch areas at Dairy Dreams LLC, located east of the recirculation basin. The orange arrow represents the flow path of runoff. This photo was taken facing east.

Photo 2. One of the calf hutch areas at Dairy Dreams LLC, located east of the recirculation basin. The orange arrow represents the flow path of runoff. This photo was taken facing east.

Photo 3. One of the calf hutch areas at Dairy Dreams LLC, located east of the recirculation basin. The orange arrow represents the flow path of runoff. This photo was taken facing east.

Photo 4. The calf hutch area located east of the sand land. Runoff from this area flows to the southwest corner where it enters a concrete channel that gravity flows to the manure reception basin. This photo was taken facing north.

Photo 5. A concrete channel that conveys runoff from the calf hutch area to the manure recirculation basin. The orange arrow represents the flow path of runoff. This photo was taken facing east.

Photo 6. The calf hutch area located east of the sand land. Runoff from this area flows to the southwest corner where it enters a concrete channel that gravity flows to the manure recirculation basin. This photo was taken facing southwest.

Photo 7. The calf hutch area located east of the sand land. Runoff from this area flows to the southwest corner where it enters a concrete channel that gravity flows to the manure recirulation basin. This photo was taken facing west.

Photo 8. The calf hutch area located east of the sand land. Runoff from this area flows to the southwest corner where it enters a concrete channel that gravity flows to the manure recirculation basin. This photo was taken facing west.

Waste Storage Facilities

Solid and liquid waste storage facilities are managed to not have current or past indicators of discharges (includes headland stacking sites).
Solid and liquid waste storage structures are well-maintained, in good repair, and in compliance with permit requirements.
Liquid waste storage facilities do not have permanent markers installed.

At the Main Site, Dairy Dreams utilizes four liquid waste storage facilities (WSF) and one solid manure stacking area to store manure and process wastewater until it can be land applied. WSF 1 is an earthen liquid waste storage facility with a concrete bottom. WSF 1 is the first stage of a three-stage system that is located on the south side of Cardinal Rd. WSF 1 is located east of WSF 2 and has a usable capacity of 2,253,217 gallons. WSF 1 was constructed in 2001. WSF 1 accepts manure and process wastewater that is generated in the freestall barns, calf hutch area, and feed storage area at the Main Site. From WSF 1, manure enters transfer pipes located in the west berm along WSF 1 and gravity flows directly into WSF 2. WSF 2 is an earthen liquid WSF that is the second stage of the three-stage system, located between WSF 1 and WSF 3. WSF 2 was constructed in 2001 and has a usable capacity of 12,918,248 gallons. Manure from WSF 2 enters the transfer pipes located in the west wall along WSF 2 and gravity flows to WSF 3. WSF 3 is an in place earthen storage that was constructed in 2007. WSF 3 has a usable capacity of 16,086,248 gallons. WSF 3 also accepts process wastewater that is collected by WSF 4. Erosion was present along the concrete agitation pad located in the northwest corner of WSF 3, which was created by stormwater runoff that is captured by the agitation pad. Dairy Dreams has a plan in place to repair the erosion and prevent the erosion from happening again, which includes installing a concrete curb along the agitation pad. Permanent markers were present within WSF 1, 2, and 3, but the elevations of the markers were not correct. The elevations of the permanent markers need to be corrected to accurately reflect the Margin of Safety and Maximum Operating Levels.

WSF 4 is a concrete liquid storage facility that is located east of the feed storage area and north of the vegetated treatment areas. The date of construction for WSF 4 is unknown. WSF 4 has a usable capacity of 254,000 gallons. WSF 4 accepts leachate and first flush from the feed storage area at Dairy Dreams. A pump connected to a tractor was present within WSF 4 to pump the process wastewater to permanent storage within WSF 3. Runoff pumped through an overland hose that is connected to the permanent transfer line located southeast of the production area, which flows to an outlet located near WSF 3. There were no permanent markers present within WSF 4. The erosion that was observed in 2021 been repaired.

At the Heifer Dreams site, there is one liquid storage facility. WSF 5 is a rectangular concrete vertical-walled storage facility located at the southeast corner of the production site. WSF 5 accepts manure from the freestall barn and process wastewater from the feed storage area at Heifer Dreams. WSF 5 was constructed in 2003. There are no permanent markers present with WSF 5. An engineering evaluation will be required to be submitted with the permit reissuance application.

Dairy Dreams utilizes an anaerobic digester and two solid separation systems to treat manure that is generated in the freestall barns at the Main Site. Manure generated within the freestall barns is discharged by an outlet at the north end of the sand lane. The manure gravity flows through the sand land and enters the manure recirculation tank located between the calf hutch areas and the solid separation building. From the reception basin, some manure is captured and ran through an initial solid separation system. The separated liquid is then used to flush the flume system in the freestall barns. The thicker manure is returned to the reception basin and then pumped to the anaerobic digester, which is located west of the solid separation building. Dairy Dreams utilizes a plug flow digester to capture gas, which is then turned into renewable natural gas and loaded into pressurized tanks within semi-trailers, which will be taken off-site. After digestion, the liquid manure is processed through the solid separation system, which removes the solid fiber from the manure. Two solid products are created, dry solids and wet solids. The dry solids are used to bed in the freestall barns, while the wet solids are used to bed in the calf hutches and calf barns. The separated solids are stored within storage bays until they are used for bedding. Dairy Dreams transfers separated solids to non-permitted farms to be used as bedding, in accordance with department approval. The remaining liquid manure is returned to the recirculation tank and then pumped to permanent storage until it can be land applied.

Solid manure is stacked in two locations. The first location is adjacent to the sand land on concrete. All runoff flows west into the sand lane where is it captured and comingled with the manure from the freestall barns. The second location is on the concrete ramp leading into the manure recirculation basin, located south of the sand lane. All runoff flows directly into the recirculation basin.

Dairy Dreams will be installing a manure treatment system to treat all manure generated at the Main Site. The system will create three products, an ultrafiltration production, a reverse osmosis product, and a clean water discharge, which is planned to be discharged to the unnamed perennial stream (WBIC 95400). The system will be added to the CAFO WPDES permit during the reissuance process.

Photo 9. The manure basin for the heifer barn at the Main Site, located south of the barn. The basin is part of a continuous flush system.

Photo 10. The outlet that discharges manure generated at the Main Site to the north side of the sand lane.

Photo 11. The sand land that conveys liquid manure to the manure recirculation basin. The red arrow represents the flow path of manure down the sand lane. This photo was taken facing south.

Photo 12. The manure recirculation basin located on the south side of the sand lane. This photo was taken facing northeast.

Photo 13. Solid manure stacked on the concrete ramp that slopes into the manure recirculation basin. This photo was taken facing south.

Photo 14. The solid manure storage area located adjacent to the sand lane. Runoff gravity flows into the sand lane. This photo was taken facing north.

Photo 15. The solid manure storage area located adjacent to the sand lane. Runoff gravity flows into the sand lane. This photo was taken facing northeast.

Photo 16. The solid manure storage area located adjacent to the sand lane. Runoff gravity flows into the sand lane. This photo was taken facing north.

Photo 17. The solid manure storage area located adjacent to the sand lane. Runoff gravity flows into the sand lane. This photo was taken facing west.

Photo 18. WSF 4, located east of the feed storage area. WSF 4 accepts runoff from the feed storage area. This photo was taken facing southwest.

Photo 19. WSF 4, located east of the feed storage area. WSF 4 accepts runoff from the feed storage area. This photo was taken facing south.

Photo 20. The southeast corner of WSF 4, where maintenance was conducted to repair erosion. This photo was taken facing northwest.

Photo 21. The outlet that discharges runoff from the feed storage area to WSF 4.

Photo 22. The overland transfer hose that is used to transfer process wastewater from WSF 4 to WSF 3. This photo was taken facing south.

Photo 23. The overland transfer hose that is used to transfer process wastewater from WSF 4 to WSF 3 connected to a permanent transfer line.

Photo 24. WSF 1, located on the south side of Cardinal Rd. WSF 1 accepts manure from the manure recirculation tank. This photo was taken facing south.

Photo 25. WSF 1, located on the south side of Cardinal Rd. WSF 1 accepts manure from the manure recirculation tank. This photo was taken facing south.

Photo 26. WSF 1, located on the south side of Cardinal Rd. WSF 1 accepts manure from the manure recirculation tank. This photo was taken facing north.

Photo 27. Permanent markers within WSF 1. The MOL marker is not at the appropriate elevation.

Photo 28. The earthen berm that separates WSF 1 and WSF 2. This photo was taken facing north.

Photo 29. WSF 2, located west of WSF 1 and east of WSF 2, on the south side of Cardinal Rd. This photo was taken facing west.

Photo 30. WSF 2, located west of WSF 1 and east of WSF 3, on the south side of Cardinal Rd. This photo was taken facing east.

Photo 31. The earthen berm that separates WSF 2 and WSF 3. This photo was taken facing north.

Photo 32. The transfer hose and permanent transfer line that transfers process wastewater from WSF 4 to WSF 3. This photo was taken facing west.

Photo 33. Animal burrowing present near an agitation pad in WSF 3. Gravel and bentonite that was used to fill the hole was dug out.

Photo 34. WSF 3, located west of WSF 2, on the south side of Cardinal Rd. This photo was taken facing northeast.

Photo 35. WSF 3, located west of WSF 2, on the south side of Cardinal Rd. This photo was taken facing northeast.

Photo 36. Erosion present adjacent to an agitation pad within WSF 3. Rainwater runoff from the pad caused the erosion.

Photo 37. Permanent markers present within WSF 3. The MOL elevation is incorrect.

Photo 38. Permanent markers present within WSF 2. The MOL elevation is incorrect.

Photo 39. The liquid WSF at Heifer Dreams, located south of the FSA on the southeast corner of the production site. This photo was taken facing south.

Photo 40. The concrete ramp that slopes into WSF 5 at the Heifer Dreams site. This photo was taken facing southeast.

Photo 41. The liquid WSF at Heifer Dreams, located south of the FSA on the southeast corner of the production site. This photo was taken facing north.

Photo 42. The liquid WSF at Heifer Dreams, located south of the FSA on the southeast corner of the production site. This photo was taken facing east.

Photo 43. The liquid WSF at Heifer Dreams, located south of the FSA on the southeast corner of the production site. This photo was taken facing north.

Photo 44. The outlet that discharges runoff from the feed storage area at Heifer Dreams into the liquid WSF. This photo was taken facing west.

Photo 45. A breather pipe for the manure transfer system at the Heifer Dreams site. The pipe had failed, causing manure to seep up through the soil.

Photo 46. The flow path of manure from the location of the break in the transfer line. Manure was scraped onto the field and incorporated into the soil. This photo was taken facing south.

Photo 47. The flow path of manure from the location of the break in the transfer line. Manure was scraped onto the field and incorporated into the soil. This photo was taken facing west.

Photo 48. The flow path of manure from the location of the break in the transfer line. Manure was scraped onto the field and incorporated into the soil. This photo was taken facing east.

Photo 49. The anaerobic digester located west of the solid separation building. All manure generated at Main Site is digested prior to being transferred to permanent storage.

Photo 50. The anaerobic digester located west of the solid separation building. All manure generated at Main Site is digested prior to being transferred to permanent storage.

Photo 51. One of the storage bays used to stored manure biosolids. These solids will be used in the calf barns and calf hutch areas. The dry biosolids are stored within the building.

Process Wastewater (other than feed storage area leachate/runoff)

Process wastewater sources (milking center, wash water, etc.) are managed to not have current or past indicators of discharges.

The machine-washing area is located in a building adjacent to the sand lane and north of the first solid stacking area. All process wastewater flows into the sand lane. Process wastewater generated in the milking parlor is captured and comingled with manure in the manure transfer system from the freestall barns.

Photo 52. The shed where machinery is washed. Runoff from this area flows into the sand lane where it is comingled with manure.

Feed Storage Area Runoff

Feed storage areas and associated process wastewater (leachate, runoff) are managed to not have current or past indicators of discharges.

Feed storage areas and runoff control systems are not well-maintained, in good repair and in compliance with permit requirements.

The feed storage area at the Main Site consists of an area of asphalt and concrete pad where feed is stored in piles and covered with plastic. The feed storage pad is approximately 9.4 acres in size. Runoff from the feed storage area flows from northwest to southeast where it enters a concrete channel. A collection tank captures leachate and first flush and pumps the runoff to WSF 4. Excess runoff from the collection tank runoff flows to a concrete spreader bar that distributes runoff to the West Vegetative Treatment Area (VTA). Additionally, there is one manhole along the east side of the FSA that collect leachate and or runoff from the FSA. This manhole and piping discharge to a concrete spreader that distributes runoff to the East VTA.

Dairy Dreams utilizes two VTAs to handle and treat runoff from the feed storage area. The west VTA handles excess runoff collected by the main runoff control system. Runoff is transferred to a concrete spreader bar that is designed to evenly distribute the runoff across the VTA. Many of the holes which allow runoff to leave the spreader were plugged with sediment, which prevents the runoff to be evenly distributed across the VTA. This resulted in concentrated flow channels being created on the east side of the VTA. Burnout was present within the concentrated flow channel. Removing the buildup of sediment will allow the runoff to be evenly distributed and prevent concentrated flow channels from occurring. Approximately 150 feet south of the spreader bar, an earthen berm is present. It appears that the berm was previously a gravel spreader bar. The berm prevents runoff from flowing down the VTA, which created areas of ponding. Burnout was present on the north side of the berm, caused by ponded runoff. Maintaining the berm as a gravel spreader bar will prevent runoff from ponding within the VTA. On the south side of the VTA, a concrete channel is present to collect runoff that would leave the VTA. The channel also collects stormwater from a grassed swale located west of the VTA. The channel is designed to contain runoff, which can be pumped back to the reception basin located by the spreader bar, which will either divert the runoff back to the spreader bar or pump the runoff to WSF 4. The concrete channel has an 18-inch drop from a culvert that allows water to flow east towards another channel, which conveys stormwater off-site. The drop allows for runoff to be contained. The channel was overflowing through the culvert at the time of the inspection.

The east VTA is used to treat runoff that is collected by the surface inlet on the east side of the feed storage area. Similar to the west VTA, there was a build-up of sediment that plugged the holes that allow runoff to be distributed across the VTA. This created a concentrated flow channel on the east side of the VTA. Removing the sediment will allow for runoff to be evenly distributed across the VTA.

Dairy Dreams is planning to construct a leachate management pond that will capture the 25-year, 24-hour storm event.

At Heifer Dreams, there is one feed storage area located at the northeast corner of the production site. The storage area is approximately 1 acre in size. An interim runoff control system was installed in 2021 that captures 100% of the runoff from the feed storage area. The inlet is located in the southeast corner of the feed storage area and a pump was installed to transfer waste to WSF 5 via an above ground transfer line. An engineering evaluation of the feed storage area and runoff control system will be required to be submitted with the permit reissuance application.

Photo 53. The feed storage area at the Main Site. Haylage and corn silage are stored in piles, covered with plastic. Runoff flows to the southeast corner of the feed pad.

Photo 54. The feed storage area at the Main Site. Haylage and corn silage are stored in piles, covered with plastic. Runoff flows to the southeast corner of the feed pad.

Photo 55. The feed storage area at the Main Site. Haylage and corn silage are stored in piles, covered with plastic. Runoff flows to the southeast corner of the feed pad. This photo was taken facing southeast.

Photo 56. The west side of the feed storage area at the Main Site. This photo was taken facing south.

Photo 57. The north side of the feed storage area at the Main Site. The feed pad is pitched to divert runoff south. This photo was taken facing east.

Photo 58. The feed storage area at the Main Site. Haylage and corn silage are stored in piles, covered with plastic. Runoff flows to the southeast corner of the feed pad.

Photo 59. One of two collection inlets associated with the feed storage area. This inlet collects a small percentage of runoff from the feed storage area and transfers the runoff to the east vegetated treatment area.

Photo 60. An area where gravel was placed over broken and missing concrete. This photo was taken facing south.

Photo 61. The feed storage area at the Main Site. Haylage and corn silage are stored in piles, covered with plastic. Runoff flows to the southeast corner of the feed pad. This photo was taken facing west.

Photo 62. The feed storage area at the Main Site. Haylage and corn silage are stored in piles, covered with plastic. Runoff flows to the southeast corner of the feed pad. This photo was taken facing north.

Photo 63. The feed storage area at the Main Site. Haylage and corn silage are stored in piles, covered with plastic. Runoff flows to the southeast corner of the feed pad.

Photo 64. The runoff collection system for the feed storage area at the Main Site. This is located on the southeast corner of the FSA. This photo was taken facing south.

Photo 65. The runoff collection system for the feed storage area at the Main Site. This is located on the southeast corner of the FSA. This photo was taken facing south.

Photo 66. The runoff collection system for the feed storage area at the Main Site. This is located on the southeast corner of the FSA. This photo was taken facing north.

Photo 67. The inlet that captures leachate and first flush. The process wastewater is transferred to WSF 4.

Photo 68. The concrete spreader bar that evenly distributes runoff cross the west vegetated treatment area. This photo was taken facing west.

Photo 69. A concentrated flow channel on the east side of the west vegetated treatment area. This photo was taken facing south.

Photo 70. An outlet in the concrete spreader bar that was plugged by sediment and feed solids. Many of the outlets were similarly plugged.

Photo 71. An earthen berm in the middle of the vegetated treatment area. The berm slows the flow of runoff, causing ponding within the treatment area.

Photo 72. An earthen berm in the middle of the vegetated treatment area. The berm slows the flow of runoff, causing ponding within the treatment area.

Photo 73. The west vegetated treatment area. This photo was taken facing south.

Photo 74. The west vegetated treatment area. This photo was taken facing southeast.

Photo 75. The concrete swale on the south side of the west VTA. The swale conveys stormwater as well as captures runoff that leaves the treatment area. This photo was taken facing east.

Photo 76. The concrete swale on the south side of the west VTA. The swale conveys stormwater as well as captures runoff that leaves the treatment area. This photo was taken facing west.

Photo 77. The collection basin for the concrete swale. Runoff can be manually pumped to either the spreader bar or WSF 4 from this location. Stormwater can also flow through the culvert.

Photo 78. The basin that captures runoff from the concrete swale and pumps the water to either the concrete spreader bar or WSF 4. This photo was taken facing north.

Photo 79. The outlet associated with the surface inlet pictured in Photo 58. Runoff enters the two culverts and gravity flows to the concrete spreader bar for the east VTA.

Photo 80. The culverts that convey runoff to the concrete spreader bar for the east VTA, seen in the background. This photo was taken facing east.

Photo 81. The concrete spreader bar for the east vegetated treatment area.

Photo 82. An outlet in the concrete spreader bar for the east VTA that was plugged by sediment and feed solids. Many of the outlets were similarly plugged.

Photo 83. A concentrated flow channel coming from the east side of the concrete spreader bar for the east VTA. This photo was taken facing south.

Photo 84. A concentrated flow channel coming from the east side of the concrete spreader bar for the east VTA. This photo was taken facing west.

Photo 85. The east side of the east vegetated treatment area. This photo was taken facing south.

Photo 86. The east vegetated treatment area. This photo was taken facing south.

Photo 87. The concrete channel on the south side of the east vegetated treatment area. This channel conveys stormwater off the production site.

Photo 88. The concrete channel on the south side of the east vegetated treatment area. This channel conveys stormwater off the production site.

Photo 89. The feed storage area at the Heifer Dreams site. Feed is stored in piles, covered by plastic. This photo was taken facing north.

Photo 90. The feed storage area at the Heifer Dreams site. Feed is stored in piles, covered by plastic. This photo was taken facing west.

Photo 91. The north side of the feed storage area at the Heifer Dreams site. Feed is stored in piles, covered by plastic. This photo was taken facing west.

Photo 92. The west side of the feed storage area at the Heifer Dreams site. Feed is stored in piles, covered by plastic. This photo was taken facing south.

Photo 93. The west side of the feed storage area at the Heifer Dreams site. Feed is stored in piles, covered by plastic. This photo was taken facing south.

Photo 94. The runoff collection system for the feed storage area at the Heifer Dreams site. The basin is located in the southeast corner of the FSA.

Photo 95. The runoff collection system for the feed storage area at the Heifer Dreams site. The basin is located in the southeast corner of the FSA.

Photo 96. The transfer pipe that conveys runoff from the collection basin to the liquid waste storage facility at the Heifer Dreams site.

Animal Mortality Disposal
Animal mortalities are managed to not have current or past indicators of discharges.

Dairy Dreams utilizes Sandy Bay Mink Ranch to handle animal mortalities.

Ancillary Service Areas
Preventative maintenance actions and visual inspections are occurring to minimize pollutant discharges from ancillary service and storage areas (i.e. storm water conveyance systems, driveways, etc.).

Dairy Dreams utilizes an extensive surface water conveyance system that consists of drainage ditches, culverts, roof gutters, and concrete swales. Several surface inlets are used to accept stormwater from driveways and parking areas. A stormwater inlet is located between abandoned barns north of WSF 4. The inlet accepts stormwater from the barn roofs and conveys that stormwater to WSF 4, adding to the volume of runoff that is collected and transferred to permanent storage. Stormwater from the field located north of the production site is handled by two large culverts, that convey the stormwater under the production site and outfall in the west road ditch along Fir Rd. There was no evidence of discharges of pollutants to the stormwater conveyance systems throughout the production site.

At Heifer Dreams, there is a drainage ditch that conveys stormwater through the production site, between the feed storage area and the waste storage facility. The water within the stream appeared to be clear with no visual signs of impacts.

Photo 97. A stormwater surface inlet located near the milk tank loading area.

Photo 98. A stormwater culvert located on the south side of the heifer barn at the Main Site.

Photo 99. Stormwater culverts that convey stormwater from the north side of the production site under the heifer barn at the Main Site.

Photo 100. A grassed drainage ditch that conveys stormwater south off the production site. This photo was taken facing south.

Photo 101. A stormwater culvert that conveys stormwater from the grassed swale between barns. This photo was taken facing west.

Photo 102. A stormwater surface inlet that accepts conveys stormwater from the grassed swale between barns.

Photo 103. A stormwater culvert that conveys stormwater from the north side of the production site through the site.

Photo 104. A stormwater culvert that conveys clean water from the north side of the production site through the site.

Photo 105. A grassed swale located west of the west VTA that conveys stormwater off the production site.

Photo 106. A grassed swale located west of the west VTA that conveys stormwater off the production site.

Photo 107. A drainage ditch located between the feed storage area and liquid WSF at the Heifer Dreams site.

Photo 108. A drainage ditch located between the feed storage area and liquid WSF at the Heifer Dreams site.

RECORDS REVIEW

The permittee has current WPDES Permit and Nutrient Management Plan onsite.
The permittee provided complete production site inspection records that are required to be retained.
The permittee provided adequate documentation that the facility has a minimum of 180 days of liquid manure storage capacity.
The permittee provided land application records to demonstrate compliance with nutrient management plan requirements.
The permittee has copies of their emergency response and monitoring and inspection plans onsite.
The permittee is not up to date on required reporting and actions as specified in the Schedules section of permit.

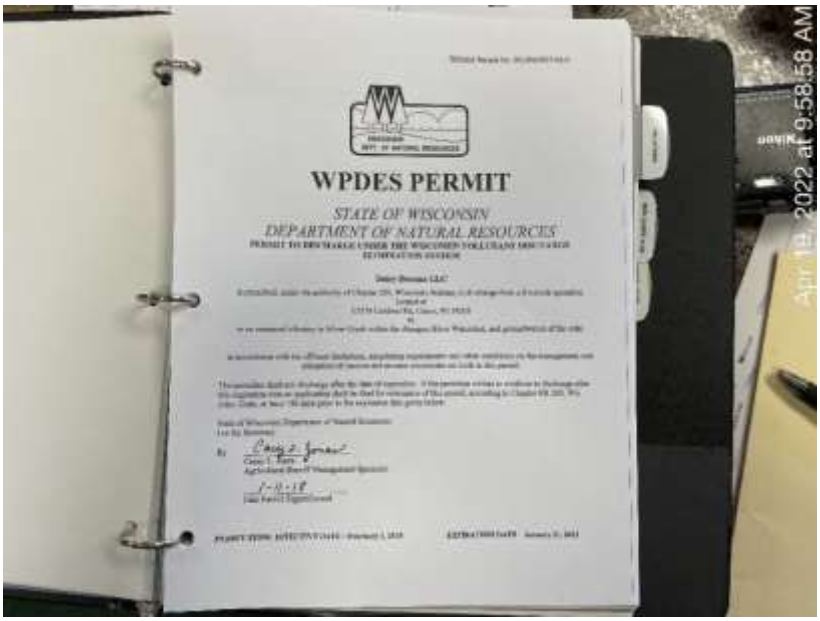


Photo 109. Dairy Dreams' WPDES permit, which was available during the inspection.

Photo 110. Dairy Dreams' 2022 nutrient management plan, which was available during the inspection.

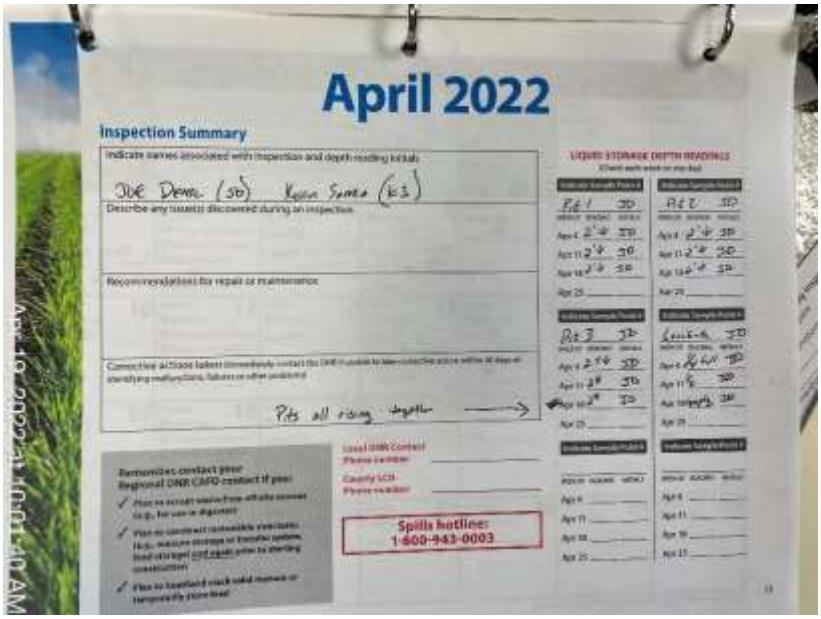
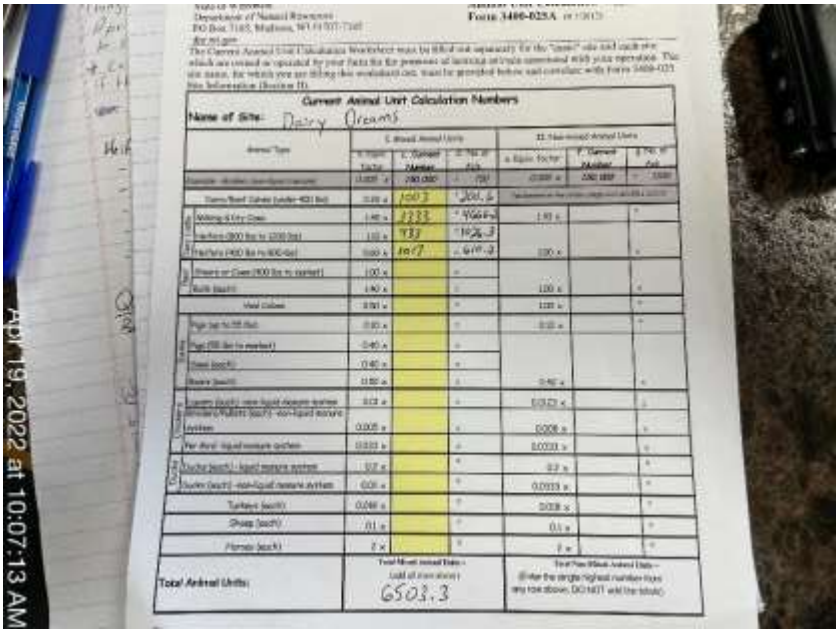


Photo 111. Dairy Dreams' CAFO Calendar, which is used to record inspections and storage measurements.

Photo 112. Dairy Dreams' CAFO Calendar, which is used to record inspections and storage measurements.

Photo 113. An animal unit calculation worksheet documenting animal numbers at the Main Site at Dairy Dreams LLC.



SUMMARY

Substantial Compliance

The permittee is currently not in substantial compliance with the permit.

Areas of Concern

Areas of concentrated flow channels and ponding within the vegetated treatment areas south of the feed storage area

Animal burrowing present along the earthen waste storage facilities at the Main Site

Stormwater collection from the surface inlets north of WSF 4 add to the amount of water that is collected at the Main Site

Permanent marker elevations within the liquid waste storage facilities at the Main Site are either incorrect or not present

Erosion present within WSF 3 along the agitation pad

Broken manure transfer line between the freestall barn and the liquid waste storage facility at the Heifer Dreams site

- This has since been repaired

Permit Violations
Not applicable

Action Items
Conduct maintenance actions to the vegetated treatment areas at the Main Site to prevent erosion and ponding from occurring

- Submit documentation of the maintenance actions to the Department by August 30, 2022

Conduct maintenance actions to WSF 3 to repair erosion within the north berm and prevent erosion from reoccurring

- Submit documentation of the maintenance actions to the Department by August 30, 2022

Install permanent markers at the appropriate elevations within WSF 1, 2, 3, and 4 at the Main Site

- Submit documentation of the permanent markers installed to the Department by August 30, 2022

Items for Next Permit Term
Possible construction timeline for Heifer Dreams upgrades

- If necessary

Installation of Permanent Markers at Heifer Dreams

Materials Required as Part of the Permit Application
Required materials must be submitted together as a complete permit application through the ePermitting System: http://dnr.wi.gov/permits/water/. The system will not allow you to electronically sign and submit your application until all of the following are included:

- 3400-025 form (Livestock/Poultry Operation WPDES Permit Application)
- 3400-025A form (Animal Units Calculation Worksheet)
- 3400-025G form (Evaluated Facilities of Systems Checklist)
- 3400-025C form (Reviewable Facilities of Systems Checklist)
- A soil survey map of the dairy's production area
- A labeled aerial map showing the existing and proposed features and structures of the dairy's production area
- Calculations documenting days liquid manure and process wastewater storage
- Supporting documentation for days storage calculations
- A complete 5-year Nutrient Management Plan (NMP). If necessary, include a description of permanent spray irrigation systems and any other land spreading or treatment systems (proposed or active)
- Plans and specifications for any proposed facilities
- Engineering evaluations of existing facilities at the Heifer Dreams site

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster St., PO Box 7921
Madison, WI 53707

Tony Evers, Governor
Adam N. Payne, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

December 13th, 2023

Kewaunee County
Approval

John J. Pagel
Dairy Dreams, LLC
N4893 Hwy C
Kewaunee, WI 54216

SUBJECT: Conditional Approval of Dairy Dreams, LLC Nutrient Management Plan, WPDES Permit No. 0062057-05

Dear John Pagel,

After completing a review of Dairy Dreams, LLC 2023-2027 Nutrient Management Plan (NMP) the Wisconsin Department of Natural Resources (Department) is providing conditional approval that it is consistent with Nutrient Management Requirements in s. NR 243, Wis. Adm. Code. This part of your WPDES permit application is now ready for the public notice and comment process as required by Ch. 283 Stats.

Before applying manure onto approved fields each season, the Department recommends Dairy Dreams, LLC review the NMP with those individuals involved with manure applications to ensure all remain familiar with the approved manure spreading protocol, spreading maps, field and map verification, record keeping requirements, and all the conditions of this approval. Specifically, some fields in Dairy Dreams, LLC may have:

- Soils that may have bedrock or groundwater within 24 inches of surface,
- Multiple setback areas due to streams, conduits to streams, grassed waterways, wetlands or wells, and
- Evidence of possible soil erosion/flow channels. Note: road ditches or other man-made channels may be considered flow channels or conduits to navigable water and may be subject to a SWQMA and setback.

Reviewing the NMP and checking fields for these features and soil conditions prior to manure applications will help Dairy Dreams, LLC maintain compliance with their WPDES permit and Ch. NR 243 requirements.

FINDINGS OF FACT

The Department confirms that:

1. A current dairy herd size of 7,230 animal units (3,372 milking & dry cows, 2,596 heifers, and 951 calves). Currently there are no planned expansions in the next permit term.
2. Manure generation and spreading records indicate your herd will annually generate approximately 59,297,560 gallons of manure and process wastewater and 5,593 tons of solid manure in the first year of the permit term. In addition to the manure generated by the farm, cooperator manure that is tracked in this NMP amounts to approximately 5,982,332 gallons of liquid manure and 405 tons of solid manure annually.
3. The use of application restriction options 1 and 5 within surface water quality management areas.
4. The use of phosphorus delivery method P Index.
5. That Dairy Dreams, LLC currently has 9,946 acres (3,013 owned and 6,933 controlled through contracts, rental agreements or leases, or under manure agreements) of which 8,780 are spreadable acres.

6. That some fields included in the NMP are directly adjacent to or have high potential to deliver nutrients and sediment to Sugar Creek, Red River, & Silver Creek (listed 303(d) impaired water by 'total phosphorus'), Ahnapee River & Green Bay (GI Shoreline) (listed 303(d) impaired water by PCB's), Stony Creek (listed 303(d) impaired water by 'sediment/total suspended solids').
7. That no fields are directly adjacent to or have high potential to deliver nutrients and sediment to outstanding/exceptional waters.
8. That 43 fields are tiled.
    - Bryerquart B-6
    - Bryerquart B-7
    - Bryerquart B-8
    - Bryerquart S-2
    - Bryerquart S-3
    - CS-1
    - DD-1
    - DD-2
    - DD-3
    - DD-4
    - DD-6
    - DD-7
    - DD-9
    - DD-10
    - DD-11
    - DD-12
    - DD-13
    - DD-14
    - DD-15
    - DD-18
    - DD-19
    - DD-22
    - DD-24
    - DD-25
    - DD-32
    - DD-33
    - DW-1
    - DW-2
    - DW-3
    - DW-4
    - DW-5
    - DW-6
    - DW-7
    - DW-8
    - DW-9
    - E-1B
    - G-1
    - G-2
    - G-3
    - JW-2
    - KR-2
    - KR-3
    - Michael Vandenhouten GH
9. That all fields will be checked for the following features prior to/during manure or process wastewater applications: soil areas with possible shallow groundwater (i.e., within 24 inches of surface) at the time of manure application; required setbacks associated with wells, navigable waters, conduits to navigable waters, grassed waterways, wetlands, possible soil erosion/flow channels.
10. That surface applications of manure will not be completed when precipitation capable of producing runoff is forecasted within 24 hours of the time of planned application.

CONDITIONAL NUTRIENT MANAGEMENT PLAN APPROVAL

The Department hereby approves the 2023-2027 Dairy Dreams, LLC Nutrient Management Plan subject to the following conditions and the applicable requirements of Ch. NR 243, Wis. Adm. Code:

FIELD AND MANURE MANAGEMENT

1. Fields not included in the NMP and new fields shall not receive manure or process wastewater applications until they have been properly soil sampled, entered into Snap Plus, evaluated for their nutrient needs, and approved by the Department.

2. The following fields have also been approved to receive industrial, municipal, or septage waste:

Field Name	Other Permittee Name	Other Permittee Site/ Field Name	DNR #
WDegrave-Den-1W & WDegrave-WD-1	Packerland Whey Products, Inc	DG/F	105919

Prior to any manure applications on these fields Dairy Dreams, LLC shall contact the entities listed above to obtain recent spreading records and make the necessary adjustments to the planned manure application rates.

At the end of each year Dairy Dreams, LLC shall contact each entity listed above to obtain spreading records from the previous year so that they can be properly tracked in the NMP. Please Note: Dairy Dreams, LLC is responsible for obtaining nutrient content values for all other wastes spread on any field in their NMP.

3. The following fields are prohibited from receiving applications of manure or process wastewater due to recent expired soil tests or using default soil test values of 101 ppm Phosphorus:
   - Bryerquart B-7
   - Bryerquart S-1
   - Bryerquart S-2
   - Bryerquart S-3
   - DD-18
   - DD-18B
   - Jason Charles-11
   - Joe Denil H-2
   - Joe Denil H-3
   - Joe Denil J-1
   - Joe Denil J-3
   - Joe Denil J-4
   - Joe Denil MB-2
   - Joe Denil MI-1-2
   - Joe Denil MI-3
   - Joe Denil MI-4
   - Joe Denil H-1
   - Rod Stiener-E-9
   - Rod Stiener-H-1
   - Rod Stiener-H-5
   - Rod Stiener-J-11
   - Rod Stiener-J-12-13
   - Rod Stiener-JN-1
   - T Sorenson Mae-1
   - T Sorenson Mae-2
   - T Sorenson Mae-3
   - T Sorenson Schlise
   - T Sorenson Ullman
   - Bryerquart C-15
   - Bryerquart K-1
   - Bryerquart K-2

   If Dairy Dreams, LLC wishes to use these fields for applications of manure or process wastewater all necessary information shall be submitted to the Department prior to application to demonstrate compliance with NR 243 and other applicable codes. Written Department approval amending this condition approval must be received prior to application.

4. If existing fields yield a soil test results equal to or greater than 200 ppm P, those fields would be prohibited from receiving manure or process wastewater applications, unless you obtain Department approval in accordance with NR 243.14(5)(b)2., Wis. Adm. Code.

5. All liquid manure samples collected may be analyzed, at a minimum, for percent dry matter, total nitrogen, percent NH_4-N, percent NO_3-N, phosphorus, potassium, and sulfur.

6. If manure sample results have a dry matter (DM) content less than 2.0% and the percent ammonium (NH_4^+) is greater than 75% of the total N, Dairy Dreams, LLC may use the following equation to adjust the first year available nitrogen when applications are injected or incorporated within 1 hour:

   $$\text{First-Year Available N} = NH_4\text{-N} + [0.25 \times (\text{Total N} - NH_4\text{-N})]$$

7. Dairy Dreams, LLC shall record daily manure applications by using form 'Manure Application Checklist/Loadsheet'. These forms shall be retained at the farm and provided to the department upon request.

8. Dairy Dreams, LLC shall annually submit a spreading report that summarizes the land application activities listed under NR 243.19(3)(c)5., Wis. Adm. Code by using 'CAFO Annual Spreading Reports' as generated by Snap Plus.

<u>WINTER SPREADING</u>

9. Liquid manure applications during winter conditions, as defined by NR 243.14(7), Wis. Adm. Code, are prohibited with the exception of emergency applications.

10. The following field(s) are approved for winter spreading solid manure, emergency applications of liquid manure and frozen liquid manure:

- CS-1
- DDegrave-MD-1
- Joe Denil-JGB
- Rod Steiner-MD-22
- Rod Steiner-B-20
- DD-32
- Joe Denil-J-1
- KR-3
- Rod Steiner-SH-1
- V-3
- DD-33
- Joe Denil-J-3
- RC-3
- Rod Steiner-H-5
- Van-2

11. Winter spreading of solid and liquid manure may not occur during the "high risk runoff period" pursuant to s. NR 243.14(6)(c) and NR 243.14(7)(c), respectively.

12. Winter applications of liquid manure shall only occur under emergency situations, after notifying the Department and receiving verbal approval.

13. Liquid applications shall be limited to 3,500 gallons per acre or 30 lbs. P per acre, whichever is less, on slopes 2-6% and 7,000 gallons per acre or 60 lbs. P per acre, whichever is less, on slopes 0-2%. Winter applications of solid manure shall be limited to 60 lbs. P per acre.

HEADLAND STACKING

14. No headland stacking sites are approved.

MANURE & PROCESS WASTEWATER IRRIGATION

15. Irrigation of manure or process wastewater is prohibited.

NR243.143/151.075 SILURIAN BEDROCK PERFORMANCE STANDARDS

16. Manure generated by Dairy Dreams, LLC that is mechanically applied to the following approved fields meet planning requirements under NR243.143/151.075, Silurian bedrock performance standards. The following fields are required to meet all requirements under NR243.143/151.075, Silurian bedrock performance:

- See appendix A on page 6 with full listing of all Silurian Fields

SUBMITAL AND RECORDKEEPING REQUIREMENTS/PERMIT COMPLIANCE

17. A copy of this conditional approval shall be included in all future annual Nutrient Management Plan Updates in addition to the NR 243 and NRCS 590 checklists.
18. An updated set of restriction maps is required to be submitted before spring manure applications occur, or by no later than **April 30th, 2024**.
19. Compliance Reminder: all liquid manure sources must have two samples taken per calendar month on each source if hauling occurs, and quarterly samples for any solid manure sources when hauling occurs.
20. All manure and process wastewater that is produced by other entities and spread on fields within the Dairy Dreams NMP must have an associated nutrient content that is submitted by the producing entity. This nutrient content information must be considered when land applying to ensure proper applications rates are followed. Dairy Dreams is responsible for accurately reporting these applications with the associated nutrient content.

21. This plan has been written by Benjamin Koss of Koss Ag, LLC, but the Certified Crop Advisor approving this plan is Diane Ott (reference 590 Checklist-Appendix B). All future submittals must be accompanied by a checklist signed and dated by Diane Ott, CCA or the Certified Crop Advisor who is writing or approving this plan.

This conditional approval does not limit the Department's regulatory authority to require NMP revisions (based upon new information or manure irrigation research findings) or request additional information in order to confirm or ensure your farm operation remains in compliance with NR 243 and your WPDES permit conditions. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the Department may ask you to provide further information relating to this activity.

Please keep in mind that approval by the Department of Natural Resources – Runoff Management Program does not relieve you of obligations to meet all other applicable federal, state or locate permits, zoning and regulatory requirements.

If you have any questions regarding this approval, I can be reached at 608-212-8460 or Ashley.Scheel@Wisconsin.gov.

Sincerely,

Ashley Scheel, CCA
WDNR Nutrient Management Plan Reviewer
Wisconsin Department of Natural Resources

cc: James Salscheider, WDNR Agricultural Runoff Specialist (James.Salscheider@Wisconsin.gov)
Joseph Baeten, WDNR Watershed Field Supervisor (Joseph.Baeten@Wisconsin.gov)
Christopher Clayton, WDNR Runoff Management Section Chief (Christopherr.Clayton@Wisconsin.gov)
Aaron O'Rourke, WDNR Nutrient Management Program Coordinator (Aaron.Orourke@Wisconsin.gov)
Falon French, WDNR Intake Specialist (Falon.French@Wisconsin.gov)
Tony Salituro, WDNR CAFO Engineer (Anthony.Salituro@Wisconsin.gov)
Davina Bonness, Kewaunee County (Bonness.Davina@Kewauneeco.org)
Greg Coulthurst, Door County (Gcoulthurst@Co.Door.Wi.Us)
Benjamin Koss, Koss Ag LLC (btkoss14151@yahoo.com)
Diane Ott, Certified Crop Advisor (Daspeedy3@yahoo.com)
Susan LaCrosse, Attorney-Pagel Family Businesses (Susanl@Pagelsponderosa.com)
File

Appendix A:
Silurian Bedrock Fields/Depth Classification:

Field Name	**0-2 FT**	**2-5 Ft**	**5-20Ft**
Al Guillette A			X
AL Guillette B			X
Al Guillette D		X	X
Al Guillette F.06 GH		X	X
Bryerquart B-6	X	X	X
Bryerquart B-7		X	X
Bryerquart B-8		X	X
Bryerquart C-11		X	
Bryerquart C-15		X	
Bryerquart H-1		X	
Bryerquart K-1			X
Bryerquart K-2			X
Bryerquart KY			X
Bryerquart L-4	X	X	
Bryerquart R-3		X	X
Bryerquart R-5		X	X
Bryerquart S-1	X	X	
Bryerquart S-2	X	X	X
Bryerquart S-3		X	X
Bryerquart SA-1		X	X
Bryerquart SA-1A	X		
Bryerquart W-1			X
DD-1		X	X
DD-2			X
DD-3			X
DD-4		X	X
DD-5	X	X	X
DD-5A	X	X	
DD-6		X	X
DD-6A		X	X
DD-7		X	X
DD-8	X	X	X
DD-9		X	X
DD-9A		X	X
DD-10			X
DD-11	X	X	X
DD-12			X
DD-13			X
DD-14			X
DD-15			X

DD-16		X	X
DD-17	X		X
DD-18		X	X
DD-18-B	X	X	
DD-19			X
DD-20		X	X
DD-21	X	X	X
DD-22		X	X
DD-23		X	X
DD-24			X
DD-25			X
DD-28	X	X	X
DD-28A	X	X	X
DD-29			X
DD-30		X	X
DD-31	X	X	X
DD-34	X	X	X
DD-35		X	X
DD-36	X	X	X
DDegrave-CD-2		X	X
DDegrave-Ron-1	X		X
DG-1		X	X
DG-2	X	X	X
DG-3	X	X	X
DG-4	X	X	X
DG-6		X	X
DG-6A	X		X
DG-6B	X	X	
DG-8	X		X
DG-9			X
DG-10			X
DW-1			X
DW-2			X
DW-3			X
DW-4		X	X
DW-5			X
DW-6			X
DW-7			X
DW-8			X
DW-9	X	X	X
E-1A		X	X
E-1B	X	X	X
E-2	X	X	

EN-1			X
G-1		X	X
G-2	X	X	X
G-3		X	X
G-4			X
G-5			X
Guy Overbeck Elm		X	X
Guy Overbeck Gordon-1A	X	X	X
Guy Overbeck Jadin-1			X
Guy Overbeck Jadin-2			X
Guy Overbeck Jadin-3			X
Guy Overbeck Jadin-4			X
Guy Overbeck Jadin-5			X
Guy Overbeck Jadin-6	X		X
Guy Overbeck Jadin-7			X
Jamie Charles 1		X	X
Jamie Charles 2-3	X	X	X
Jamie Charles 4		X	X
Jason Charles-1		X	
Jason Charles-4		X	X
Jason Charles-11		X	X
Jerry Kroll-JK-1		X	X
Jerry Kroll-JK-2		X	X
Jerry Kroll-Seiler-Marv		X	X
JJ-1	X	X	
JJ-2	X	X	
JJ-3	X	X	
JJ-4	X		
JJ-5	X	X	
JK-1		X	X
JK-2	X	X	X
JM-1	X	X	X
JM-2A	X	X	X
JM-2B	X		
JM-3	X	X	X
JM-3A	X	X	X
JM-4		X	X
JM-4AB		X	
Joe Denil H-2		X	X
Joe Denil H-3			X
Joe Denil J-4			X
Joe Denil MB-1		X	X
Joe Denil MB-2			X

Joe Denil AM-1			X
Joe Denil AM-2			X
Joe Denil BA-1			X
Joe Denil BA-2	X		X
Joe Denil BA-3			X
Joe Denil Bouche			X
Joe Denil DD-1			X
Joe Denil DS-1			X
Joe Denil H-1		X	X
Joe Denil J-5	X	X	X
Joe Denil MN-1	X	X	X
Joe Denil R-6			X
Joe Denil R-10	X	X	X
Joe Denil RD-1			X
Joe Denil RS-1			X
JW-2			X
KR-1			X
KR-2			X
M-1	X	X	X
M-1A		X	X
M-2		X	X
M-4		X	X
M-5	X	X	X
M-6	X	X	X
M-8		X	
M-9		X	
M-10		X	X
MH-1			X
MH-2			X
Michael Vandenhouten DU		X	X
Michael Vandenhouten DW	X	X	X
Michael Vandenhouten GH			X
Michael Vandenhouten J	X		X
Michael Vandenhouten NH		X	X
Michael Vandenhouten R		X	X
Michael Vandenhouten SH		X	X
RC-1			X
RC-2			X
RC-3			X
RM-1	X		X
RM-1A RM-1B	X	X	X
Rod Steiner Buege			X
Rod Steiner GS-3			X

Rod Steiner GS-4			X
Rod Steiner GS-5			X
Rod Steiner GS-6			X
Rod Steiner GS-7			X
Rod Steiner SW-4			X
Rod Steiner SW-5			X
Rod Steiner SW-6			X
Rod Steiner SW-7		X	X
Rod Steiner SW-11			X
Rod Steiner SW12-13			X
Rod Steiner SW14-15			X
Rod Steiner SW-16			X
Rod Steiner SW-17			X
Rod Steiner-AD-1			X
Rod Steiner-CK-1		X	X
Rod Steiner-DH-1		X	
Rod Steiner-EK-1		X	X
Rod Steiner-EK-2			X
Rod Steiner-EK-3			X
Rod Steiner-GW-1			X
Rod Steiner-GW-2-3			X
Rod Steiner-JK-1		X	X
Rod Steiner-L-4			X
Rod Steiner-MF-1			X
Rod Steiner-PS-1		X	X
Rod Steiner-PS-2			X
Rod Steiner-PS-3			X
Rod Steiner-PS-4			X
Rod Steiner-PS-5			X
Rod Steiner-RW-1			X
Rod Steiner-SW-1			X
Rod Steiner-TS-1			
Rod Steiner-TS-2			
Rod Steiner-TS-3			
Rod Steiner-TS-4		X	
Rod Steiner-TS-5		X	X
Rod Steiner-TS-6		X	
Rod Stiener-AK-1			X
Rod Stiener-E-9		X	X
Rod Stiener-H-1		X	X
Rod Stiener-J-11		X	X
Rod Stiener-J-12-13		X	X
Rod Stiener-JB-1			X

RW-1			X
SJ-1	X	X	X
SL-1			X
SpringDale 1			X
SpringDale 1-A			X
SpringDale 2			X
SpringDale A-2			X
SpringDale A-3			X
SpringDale A-7			X
SpringDale AM-10			X
SpringDale AM-12			X
SpringDale M-7		X	X
SpringDale P-1		X	X
SpringDale P-2		X	X
SpringDale P-3			X
SpringDale PD-1		X	X
SpringDale PD-2	X	X	x
SpringDale PD-3			X
V-2	X	X	X
V-2A	X	X	
V-3			X
V-5	X		X
VAN-1	X	X	
VAN-3			X
VAN-4			X
VAN-6	X		X
VK-1			X
W-1	X	X	X
W-2	X	X	X
W-2A	X	X	
W-3			X
W-3A		X	X
W-4	X	X	X
WDegrage-GG-8		X	X
WDegrave-Den-1W		X	X
WDegrave-Den-2	X	X	X
WDegrave-GG-2			X
WDegrave-GG-4		X	X
WDegrave-GG-6	X		X
WDegrave-J-1		X	x
WDegrave-Karas			X
WDegrave-NEA		X	X
WDegrave-SW-1			X

WDegrave-WD-1		X	X
WDegrave-WD-2	X	X	X

Appendix B:

ARM-LWR-480.docx (REV, 06/22/17)

Wisconsin Department of Agriculture, Trade and Consumer Protection
Division of Agricultural Resource Management
Bureau of Land and Water Resources
PO Box 8911, Madison WI 53708-8911, Phone: 608-224-4605

Use this form to check nutrient management (NM) plans for compliance with the WI NRCS 2015-590 Standard.

Nutrient Management Checklist

Wis. Stat. §92.05(3) (k), Wis. Admin. Code §ATCP50.04(3) and Ch. 51

COUNTY Door & Kewaunee	DATE PLAN SUBMITTED **12/13/2023**	GROWING SEASON YEAR PLAN IS WRITTEN FOR **2023** (from harvest to harvest)	
TOWNSHIP: (T. N.) RANGE: (R. E., W).		CHECK ONE: Initial Plan or Updated Plan X	
NAME OF FARM OPERATOR RECEIVING NM PLAN **Steve Lambrecht**	FARM NAME (OPTIONAL) **Dairy Dreams Permit Renewal**		BUSINESS PHONE **920-217-2819**
STREET ADDRESS **Dairy Dreams E3576 Cardinal Rd**	CITY **Casco**	STATE **WI**	ZIP **54205**
REASON THE PLAN WAS DEVELOPED: Permit Renewal		CROPLAND ACRES (OWNED & RENTED) **9,946**	
RENTED FARM(S) LANDOWNER NAME(S) AND ACREAGE: add sheet(s) if needed See Narrative			
WAS THE PLAN WRITTEN IN SNAPPLUS? **YES**	If yes, which software version, if known? **20.4**		
CHECK PLANNER'S QUALIFICATION: (1. NAICC-CPCC, 2. ASA-CCA, 3. SSSA-Soil Scientist, 4. DATCP approved training course, 5. Other approved by DATCP) CCA#06501			
NAME OF QUALIFIED NUTRIENT MANAGEMENT PLANNER **Dian Ott Box 23 Brillion WI 54110** **KOSS AG LLC**			BUSINESS PHONE **920-255-3303**
STREET ADDRESS **E3991 County Rd J**	CITY **Kewaunee**	STATE **WI**	ZIP **54216**

Use header sections to add comments. Mark NA in the shaded sections if no manure is applied.

1. Does the plan include the following nutrient application requirements to protect surface and groundwater?

This section applies to fields and pastures. If no manure is applied, check NA for 1.c., 1.h., 1.i., 1.n., 1.o., 1.q., 1.s.	Yes	No	NA
a. Determine field nutrient levels from soil samples analyzed by a DATCP **certified laboratory**.	X		
b. For fields or pastures with mechanical nutrient applications, determine field nutrient levels from **soil samples** collected within the last **4 years** according to 590 Standard (590) and UWEX Pub. A2809, *Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin* (A2809) typically collecting **1 sample per 5 acres** of 10 cores. Soil tests are not required on **pastures** that do not receive mechanical applications of nutrients if either of the following applies: 1. The pasture average stocking rate is one animal unit per acre or less at all times during the grazing season. 2. The pasture is winter grazed or stocked at an average stocking rate of more than one animal unit per acre during the grazing season, and a nutrient management plan for the pasture complies with 590 using an assumed soil test phosphorus level of 150 PPM and organic matter content of 6%.	X		
c. For **livestock siting permit approval**, collect and analyze soil samples meeting the requirements above in 1. b., excluding pastures, within 12 months of approval and revise the nutrient management plan accordingly. Until then, either option below maybe used: 1. Assume soil test phosphorus levels are greater than 100 ppm soil test P, OR 2. Use preliminary estimates analyzed by a certified DATCP laboratory with soil samples representing > 5 ac/sample.			X
d. **Identify all fields'** name, boundary, acres, and location.	X		
e. Use the field's previous year's legume credit and/or applications, predominant soil series, and realistic yield goals to determine the crop's nutrient **application rates consistent with A2809 for ALL forms of N, P, and K.**	X		
f. Make no **winter applications of N and P** fertilizer, except on grass pastures and winter grains.	X		
g. Document method used to determine **application rates.** Nutrients shall not runoff during or immediately after application.	X		
h. Identify in the plan that **adequate acreage** is available for manure produced and/or applied.	X		
i. Apply a single phosphorus (P) assessment using either the **P Index** or **soil test P** management strategy to all fields within a tract when fields receive manure or organic by-products during the crop rotation.	X		
j. Use **complete crop rotations** and the field's **critical soil** series to determine that sheet and rill erosion estimates will not exceed **tolerable soil loss** (T) rates on fields that receive nutrients.	X		
k. Use contours; reduce tillage; adjust the crop rotation; or implement other practices to **prevent ephemeral erosion**; and maintain perennial vegetative cover to **prevent reoccurring gullies** in areas of concentrated flow.	x		
l. Make no nutrient applications within 8' of **irrigation** wells or where **vegetation is not removed.**	x		
m. Make no nutrient applications within **50' of all direct conduits to groundwater**, unless directly deposited by gleaning/pasturing animals or applied as starter fertilizer to corn.	x		

	Yes	No	NA
n. Make no **untreated manure applications** to areas within 1000' of a **community potable water well** or within 100' of a **non-community potable water well** (ex. church, school, restaurant) unless manure is treated to substantially eliminate pathogens.	x		
o. Make no manure applications to areas **locally delineated** by the Land Conservation Committee or in a conservation plan as areas contributing runoff to direct conduits to groundwater unless manure is substantially buried within 24 hours of application.	x		
p. Make no applications of **late summer or fall commercial N fertilizer** to the following areas UNLESS needed for establishment of fall seeded crops OR to meet A2809 with a blended commercial fertilizer. Commercial fertilizer N applications shall not exceed 36 lbs. N/acre on: • Sites vulnerable to N leaching **PRW Soils** (P=high permeability, R= bedrock < 20 inches, or W= wet < 12 inches to apparent water table); • Soils with depths of 5 feet or less to bedrock; • Area within 1,000 feet of a community potable water well. On **P soils, when commercial N is applied** for full season crops in **spring and summer**, follow A2809 and apply one of the following: 1. A split or delayed N application to apply a majority of crop N requirement after crop establishment. 2. Use a nitrification inhibitor with ammonium forms of N. 3. Use slow and controlled release fertilizers for a majority of the crop N requirement applied near the time of planting.	X		
q. Limit manure applications in late summer or fall using the lesser of A2809 or the following 590 rates on **PRW Soils.** Use ≤ 120 lbs. available N/acre on: **P and R soils** on *all crops, except annual crops*. Additionally, manure with ≤ 4% dry matter (DM) wait until after soil temp. < 50°F or Oct. 1, and use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combo. W soils** on *all crops.* Additionally, manure with ≤ 4% DM on *all crops* use at least one of the following: **1.** Use a nitrification inhibitor; **2.** Apply on an established cover crop, an overwintering annual, or perennial crop; **3.** Establish a cover crop within 14 days of application; **4.** Surface apply & don't incorporate for at least 3 days; **5.** Wait until after soil temp. < 50°F or Oct. 1. Use ≤ 90 lbs. available N/acre on: **P and R soils** on *annual crops* wait until after soil temp. < 50°F or Oct. 1. Additionally, manure with ≤ 4% DM use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combination W soils** receiving manure with ≤ 4% DM on *all crops*.	x		
r. Use at least one of the following practices on **non-frozen soils for all nutrient applications** within **Surface Water Quality Management Area (SWQMA)** = 1000' of lakes/ponds or 300' of rivers: **1.** Maintain > 30% cover after nutrient application; **2.** Effective incorporation within 72 hours of application; **3.** Establish crops prior to, at, or promptly following application; **4.** Install/maintain vegetative buffers or filter strips; **5.** Have at least 3 consecutive years no-till for applications to fields with < 30% residue (silage) and apply nutrients within 7 days of planting.	X		
s. Limit mechanical applications to **12,000 gals/acre of unincorporated liquid manure or organic by-products with 11% or less dry matter where subsurface drainage is present** OR **within SWQMA**. Wait a minimum of 7 days between sequential applications AND use one or more of the practice options on non-frozen soils listed in 1.r.1. through **1.r.5.**	X		

2. When frozen or snow-covered soils prevent effective incorporation, does the plan follow these requirements for winter applications of all mechanically applied manure or organic by-products? *This section doesn't apply to winter gleaning/pasturing meeting 590 N and P requirements.*

If no manure is applied, check NA for 2.a. through 2.g..	Yes	No	NA
a. Identify **manure quantities planned to be spread during the winter**, or the amount of manure generated in 14 days, whichever is greater. *For daily haul systems, assume 1/3 of the manure produced annually will need to be winter applied.*			x
b. Identify **manure storage capacity** for each type applied and stacking capacity for manure ≥ 16% DM if permanent storage does not exist.			x
c. Show on map and make no applications within the **SWQMA**.			X
d. Show on map and make no surface applications of liquid manure during **February and March** where **Silurian dolomite** is within 60 inches of the soils surface OR where **DNR Well Compensation** funds provided replacement water supplies for wells contaminated with livestock manure.			X
e. Show on map and make no applications of manure within **300 feet** of **direct conduits to groundwater**.			X
f. Do not exceed the P removal of the following growing season's crop when applying manure. Liquid manure applications are limited to **7,000 g/acre**. All winter manure applications are not to exceed **60 lbs. of P2O5/acre**.			X
g. Make no applications of manure to fields with **concentrated flow channels** unless using two of the following: **1.** Contour buffer strips or contour strip cropping; **2.** Leave all crop residue and no fall tillage; **3.** Apply manure in intermittent strips on no more than 50% of field; **4.** Apply manure on no more than 25% of the field waiting a minimum of 14 days between applications; **5.** Reduce manure app. rate to 3,500 gal. or 30 lbs. P2O5, whichever is less; **6.** No manure application within 200 feet of all concentrated flow channels; **7.** Fall tillage is on the contour and slopes are lower than 6%. Make no applications to **slopes greater than 6%** (soil map units with C, D, E, and F slopes) unless the plan documents that no other accessible fields are available for winter spreading AND two of the options 2.g.**1.** through 2.g.**5.** are used.			X

I certify that the plan represented by the answers on this checklist complies with Wisconsin's NRCS 2015-590 NM Standard or is otherwise noted.

Diane Ott CCA # 06501	12/13/2023
Qualified NM planner signature NAICC-*Certified Professional Crop Consultant*, ASA-*Certified Crop Adviser*, or SSSA-*Soil Scientist*	Date
Steve Lambrecht 12-13-23	
Qualified NM farmer-planner or Authorized farm operator signature receiving and understanding the plan — Date	Signature if reviewed for quality assurance — Date

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor
Adam N. Payne, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

January 8, 2024

FILE REF: R-2023-0103a
WPDES Permit #: WI-0062057

John Pagel
Dairy Dreams LLC
N4893 Hwy C
Kewaunee, WI 54216

Subject: Evaluation Review for Lot and Waste Storage Facility at Dairy Dreams LLC (Heifer Dreams) in Kewaunee County - FURTHER ACTIONS ARE REQUIRED

Dear Mr. Pagel:

This letter is to inform you that the Wisconsin Department of Natural Resources (Department) received on January 30, 2023 an evaluation certified by Bob Pofahl, P.E., Resource Engineering Associates (Engineer) submitted on behalf of Dairy Dreams LLC in accordance with s. NR 243.16(1), Wis. Adm. Code.

Evaluated Facilities: The evaluation included the following reviewable facilities: Heifer Dreams concrete with waterstop waste storage facility.

The Engineer evaluated the above referenced reviewable facilities based on applicable NRCS Standards and ch. NR 243 Wis. Adm. Code. The engineering report below summarizes the evaluation's findings, lists standards that apply, and provides a compliance analysis.

The Department reviewed the evaluation above and agreed with the Engineer's conclusion that the reviewable facilities will meet ch. NR 243, Wis. Adm. Code requirements following further actions.

Required Actions: The following actions are required in accordance with s. NR 243.16(3), Wis. Adm. Code based on the Department's review of the submitted evaluation:

- Maintenance items for the WSF shall be conducted, including repair to spalled areas of the concrete floor with non-shrink grout and backfilling corners of the WSF to provide frost protection. Photo documentation that maintenance activities were completed can be submitted to the regional CAFO specialist.

Submittal due dates are contained in your WPDES permit Schedules section(s). The DNR CAFO Specialist will contact you to discuss next steps. Questions concerning permit requirements should be directed to the DNR CAFO Specialist. Questions concerning the review may be directed to the review engineer Tony Salituro (contact information is at the end of this letter).

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to WIS. STAT. §§ 227.52 and 227.53, you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition

with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to WIS. STAT. § 227.42, you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with WIS. ADMIN. CODE § NR 2.05(5), and served on the Secretary in accordance with WIS. ADMIN. CODE § NR 2.03. The filing of a request for a contested case hearing does not extend the 30-day period for filing a petition for judicial review.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

Bernie Michaud

Bernie Michaud, P.E.
CAFO Engineer Supervisor
Watershed Management Program

Enclosures:
1. Wisconsin DNR Engineering Report

Email: John Pagel; Dairy Dreams LLC
(920) 388-3920

Bob Pofahl; Resource Engineering Associates, Inc.
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Davina Bonness; Kewaunee County LCD
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Anthony Salituro; DNR-Central Office
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Aaron O'Rourke; DNR, Eau Claire
(715) 839-3775; aaron.orourke@wisconsin.gov

WISCONSIN DEPARTMENT OF NATURAL RESOURCES ENGINEERING REPORT

GENERAL INFORMATION

Farm Name: Dairy Dreams LLC **WPDES Permit#:** WI-0062057

Location Address: E2471 Cty Rd X, Casco, (Heifer Dreams) **DNR Project #:** R-2023-0103a

Engineering Certification by: Bob Pofahl, P.E.

Evaluated Facilities:

Heifer Dreams Concrete Waste Storage Facility: Concrete lined waste storage facility constructed in 2003. The rectangular vertical walled storage is approximately 150 ft x 311 ft x 8 ft deep with a 1 ft deep sump. The storage has an estimated total capacity of 2,757,845 gallons and an MOL volume of 2,270,637 gallons. The concrete liner walls and floor each are 8-inch thick steel reinforced concrete with waterstop joints present at spacings of 115 ft, 99 ft, and 96 ft. Two test excavations were taken that found no saturation but bedrock was encountered in both test pits. The bedrock was found at 2.7 ft and 3.8 ft below the concrete floor, meeting the required separation distance of 2 ft to bedrock in NRCS 313 (12/05). MOL and MOS markers are present.

- Assessment References: NRCS Standard 313 (12/05) and ss. NR 243.15(3), Wis. Adm. Code.
- The evaluation states, "The floor had some hair line cracks that were tight and a small area where the concrete had spalled areas in the north most slab." A proposed action to repair the concrete floor in these areas with non-shrink grout will be done once the storage can be fully emptied again.
- An evaluation stated proposed action is to backfill the southeast corner to provide 4ft of cover for frost protection.

Days of Available Liquid Waste Storage: The submitted information states that Dairy Dreams LLC has 215 days of liquid waste storage based on the volumes listed in the table below with respect to s. NR 243.15(3)(i) to (k), Wis. Adm. Code. The current number of animal units provided for the calculation is 7,040 from the Main Site (DD) and Heifer Dreams (HD) Site. Solid manure from the 951 calves is not included in the liquid manure calculations or animal units value. The liquid waste volumes are based on the NRCS spreadsheet and other estimated or calculated values for a collection period of 365 days. All runoff, up to the 25yr – 24hr storm, from the feed storage area and calf hutch area is captured in WSF1.

Waste Storage	Total Vol. from Settled Top to Bottom	Solids Storage	25-yr, 24-hr Precip. on Storage	25-yr, 24-hr Collected Runoff	Freeboard Vol.	Max. Operating Level (MOL) Vol.
DD WSF1	2,963,464	176,259	120,208	1,145,801	320,536	1,200,660
DD WSF2	16,364,810	1,391,461	384,529	0	1,058,677	13,530,143
DD WSF3	20,146,620	1,473,338	441,140	0	1,211,672	17,020,470
HD WSF1	2,757,845	0	125,038	0	348,942	2,283,865
					Total MOL Vol:	34,035,138
					Days of Storage:	**215**

Liquids Collected/Stored	Annual Gallons
DD Manure, Bedding, and Wastewater	37,625,719
DD Feed Storage Runoff and Leachate	8,697,400
DD Calf Hutch Lot Runoff	2,884,647
DD Net Precipitation on Storage Surfaces	4,836,645
HD Manure, Bedding, Wastewater	3,193,242
HD Net Precip on Storage Surface	593,201
TOTAL:	**57,830,854**

DECISION RECOMMENDATION: Based on my review completed on January 8, 2024, the reviewable facilities identified above require further actions.

Anthony Salituro

Tony Salituro, E.I.T
Water Resources Engineer
Watershed Management Program

Dairy Dreams, LLC Site Map

Heifer Dreams Site Map

Note: This is an old photo pulled from Google Maps. Old facility has been abandoned as well as the feed storage areas. In addition, there are no outside animal confinement areas. All animals are housed within the "Heifer Barn".

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: March 4, 2024

TO: Sarah Donoughe – Green Bay

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Water Quality-Based Effluent Limitations for Dairy Dreams LLC
WPDES Permit No. WI-0062057

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for facility planning for Dairy Dreams LLC in Kewaunee County. This discharge is to an unnamed tributary, upstream of Silver Creek, located in the Ahnapee River Watershed in the Twin-Door-Kewaunee Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Annual Total	Footnotes
Flow Rate						1
BOD_5						2
May – October	**8.2 mg/L**		5.0 mg/L, 3.1 lbs/day	**5.0 mg/L**		
November– April	**18 mg/L**		11 mg/L, 6.5 lbs/day	**11 mg/L**		
TSS						2,3
MCL	**16 mg/L**			10 mg/L		
TMDL Limit				0.00 lbs/day		
pH	9.0 s.u.	6.0 s.u.				
Dissolved Oxygen		7.0 mg/L				
Ammonia Nitrogen						5
April– May	Variable		7.4 mg/L	3.2 mg/L		
June – September	Variable		4.6 mg/L	2.1 mg/L		
October– March	Variable		8.7 mg/L	3.6 mg/L		
TKN						1
Nitrate + Nitrite						1
Total Nitrogen					68,298 lbs/year	4
E. coli				126 #/100 mL geometric mean		6
Phosphorus						3
TMDL Limit				0.00 lbs/day		
Chlorine	20 µg/L		7.4 µg/L	**7.4 µg/L**		2,7
Arsenic	360 µg/L		160 µg/L	18 µg/L		2,7
Cadmium	5.0 µg/L		3.9 µg/L	**3.9 µg/L**		2,7
Chromium	1090 µg/L		330 µg/L	**330 µg/L**		2,7
Copper	8.6 µg/L		**8.6 µg/L**	**8.6 µg/L**		2,7

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Annual Total	Footnotes
Lead	59 µg/L		**59 µg/L**	**59 µg/L**		2,7
Nickel	280 µg/L		120 µg/L	**120 µg/L**		2,7
Zinc	70 µg/L		**70 µg/L**	**70 µg/L**		2,7
Chloride	810 mg/L		400 mg/L	**400 mg/L**		2,7
Hardness		50 mg/L				8
Temperature Maximum						9
Acute WET						10,11
Chronic WET						10,11

Footnotes:

1. Monitoring only.
2. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
3. Mass limits are set to 0.00 lbs/day because phosphorus and TSS waste load allocations (WLA) have not been assigned from reserve capacity for the Northeast Lakeshore TMDL. Without an assigned WLA for each parameter, the requirement will have to be met through WQT computed compliance limits.
4. Additional mass limit based on a technical analysis submitted accordance with s. NR 243.13(2)(b), Wis. Adm. Code.
5. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values. These limits apply year-round.

Effluent pH s.u.	**Limit mg/L**	**Effluent pH s.u.**	**Limit mg/L**	**Effluent pH s.u.**	**Limit mg/L**
$6.0 \leq pH \leq 6.1$	58	$7.0 < pH \leq 7.1$	35	$8.0 < pH \leq 8.1$	7.4
$6.1 < pH \leq 6.2$	57	$7.1 < pH \leq 7.2$	32	$8.1 < pH \leq 8.2$	6.1
$6.2 < pH \leq 6.3$	56	$7.2 < pH \leq 7.3$	28	$8.2 < pH \leq 8.3$	5.0
$6.3 < pH \leq 6.4$	54	$7.3 < pH \leq 7.4$	25	$8.3 < pH \leq 8.4$	4.2
$6.4 < pH \leq 6.5$	52	$7.4 < pH \leq 7.5$	21	$8.4 < pH \leq 8.5$	3.4
$6.5 < pH \leq 6.6$	50	$7.5 < pH \leq 7.6$	18	$8.5 < pH \leq 8.6$	2.8
$6.6 < pH \leq 6.7$	48	$7.6 < pH \leq 7.7$	15	$8.6 < pH \leq 8.7$	2.4
$6.7 < pH \leq 6.8$	45	$7.7 < pH \leq 7.8$	13	$8.7 < pH \leq 8.8$	2.0
$6.8 < pH \leq 6.9$	42	$7.8 < pH \leq 7.9$	11	$8.8 < pH \leq 8.9$	2.7
$6.9 < pH \leq 7.0$	39	$7.9 < pH \leq 8.0$	9.0	$8.9 < pH \leq 9.0$	1.4

6. Bacteria limits apply during the disinfection season of May through September. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
7. A reasonable potential analysis of the effluent may indicate that limits are not needed if effluent concentrations are below 1/5 of calculated value in accordance with ss. NR 106.05 and 106.85, Wis. Adm. Code.
8. A hardness minimum of 50 mg/L may be included to correspond to less restrictive limits for certain metals.

9. Temperature limits according to the following table are recommended. If monitoring data shows no reasonable potential to exceed these limits, they may be removed from the permit.

Month	Calculated Effluent Limit	
	Weekly Avg. Effluent Limit (°F)	Daily Max. Effluent Limit (°F)
JAN	49	77
FEB	50	77
MAR	52	78
APR	55	80
MAY	65	83
JUN	76	84
JUL	81	85
AUG	81	84
SEP	73	82
OCT	61	81
NOV	49	78
DEC	49	77

10. Two acute and annual chronic WET tests are recommended in the permit. The Instream Waste Concentration (IWC) to assess chronic test results is 98%. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5% and the dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water.
11. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Benjamin Hartenbower at (715) 225-4705 or Benjamin.Hartenbower@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (3) – Narrative, Thermal Table, & Map

PREPARED BY: _____ Date: 03/04/2024

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Attachment #1

Water Quality-Based Effluent Limitations for
Dairy Dreams, LLC

WPDES Permit No. WI-0062057

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description

The facility planned is for a nutrient concentration system using mechanical separation of dairy manure resulting in a proposed alternative discharge to surface water.

Attachment #3 is a map of the area with the proposed location for Outfall 001.

Receiving Water Information

- Name: unnamed tributary to Silver Creek
- Waterbody Identification Code (WBIC): 95400
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The 7-Q_{10}, 7-Q_2, and Harmonic Mean are estimated using basin characteristics.
  - 7-Q_{10} = 0.01 cfs (cubic feet per second)
  - 7-Q_2 = 0.03 cfs
  - Harmonic Mean Flow = 0.15 cfs
- Hardness = 372 mg/L as $CaCO_3$. This value represents a single sample result taken from the unnamed tributary to Silver Creek on 05/16/2022.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations.
- Multiple dischargers: None
- Impaired water status: The discharge is located within the Northeast Lakeshore TMDL area for phosphorus and TSS.

Effluent Information

- Flow rates: The facility has predicted an average flow rate of 74,000 gpd
- Hardness = 18 mg/L as $CaCO_3$. Projected effluent hardness from a reverse osmosis system is expected to be very low. This value is the minimum hardness concentration from which valid acute and chronic toxicity criteria for all substances can be calculated.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water Source: RO permeate from manure processing

PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P_{99}) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Daily Maximum Limit Calculation Method

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. In accordance with s. NR 106.06(3)(b), limitations based on acute toxicity are either set equal to two times the acute criteria (the final acute value) or calculated using the mass balance equation below, whichever is more restrictive.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

WQC = Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Qs = average minimum 1-day flow which occurs once in 10 years (1-day Q_{10}) if the 1-day Q_{10} flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q_{10}).

Qe = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

Cs = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

In this case, limits calculated based on the mass balance equation are more restrictive and this method is used to calculate the daily maximum limits shown in the table below.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L).

Attachment #1

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0.0080 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Chlorine		19.0		20.4	4.1			
Arsenic		340		364	73			
Cadmium	18	1.4		1.5	0.3			
Chromium	18	443		474	95			
Copper	18	3.1		3.3	0.7			
Lead	18	20		22	4			
Nickel	18	110	2.11	118	24			
Zinc	18	27		29	6			
Chloride (mg/L)		757	43	807	161			

* * Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-Q_{10} flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.

SUBSTANCE	LIMIT @HARD 18 mg/L	LIMIT @HARD 50 mg/L	LIMIT @HARD 100 mg/L	LIMIT @HARD 150 mg/L	LIMIT @HARD 200 mg/L
Cadmium	1.5	5.0	11.0	17.6	24.4
Chromium	474	1093	1929	2689	3403
Copper	3.3	8.6	16.6	24.3	31.9
Lead	22	59	114	169	223
Nickel	118	279	502	707	902
Zinc	29	70	129	184	236

Daily maximum limits are calculated based on the ATC.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0.0025 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Chlorine		7.3		7.4	1.5		
Arsenic		152		156	31		
Cadmium	175	3.8		3.9	0.8		
Chromium	301	326		333	67		
Copper	372	31.9		32.6	6.5		
Lead	356	96		98	20		
Nickel	268	120	2.11	123	25		
Zinc	333	345		352	70		
Chloride (mg/L)		395	43	403	81		

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 0.0371 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370		490	98	
Chromium (+3)	3818000		5056372	1011274	
Lead	140		185	37.1	
Nickel	43000	2.11	56946	11389	

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 0.0371 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		17.6	3.52	

Conclusions and Recommendations

Similar facilities have included systems to raise effluent hardness prior to discharge. If effluent hardness levels are artificially raised, the corresponding metals limits may be increased to levels that are not likely to be exceeded. Metals and hardness sampling of the effluent will determine if there is reasonable potential to exceed any of the calculated limits.

PFOS and PFOA

The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, it is unlikely that the effluent will contain PFOS or PFOA. Therefore, monitoring is not recommended.

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR CONVENIONAL POLLUTANTS

In establishing Biochemical Oxygen Demand (BOD_5) limitations, the primary intent is to prevent a lowering of dissolved oxygen levels in the receiving water below water quality standards as specified in ss. NR 102.04(4)(a) and (b), Wis. Adm. Codes. The 26-lb method is the most frequently used approach for calculating BOD_5 limits when resources are not available to develop a detailed water quality model. This simplified model was developed in the 1970's by the Wisconsin Committee on Water Pollution on the Fox, Wisconsin, Oconto, and Flambeau Rivers. Further studies throughout the 1970's proved this model to be relatively accurate. The model has since then been used by the Department on many occasions when resources are not available to perform a site-specific model. The "26" value stems from the following equation:

$$\frac{26\,{}^{lbs}/_{day}}{{}^{ft^3}/_{sec}} * \frac{1\,day}{86{,}400\,sec} * \frac{454{,}000\,mg}{lbs} * \frac{1\,ft^3}{28.32\,L} = 4.8 = 2.4 * 2\,{}^{mg}/_{L}$$

The 4.8 has been calculated by taking 2.4 which is the number one receives when converting 26 lbs of BOD/day/cfs into mg/L, multiplied by 2.0 which is the change in the DO level. A typical background DO level for Wisconsin waters is 7 mg/L, so a 2 mg/L decrease is allowed in order to meet the 5 mg/L standard for warm water streams. The above relationship is temperature dependent and an appropriate temperature correction factor is applied. The 26-lb method is based on a typical 24°C summer value for warm water streams. Adjustments for temperature are made using the following equation:

$$k_t = k_{24}\left(0.967^{(T-24)}\right)$$

Where k_{24} = 26 lbs of BOD/day/cfs

Calculations based on 7Q10 Conditions:

$$Limitation(mg/L) = 2.4(DO_{stream} - DO_{std})\left(\frac{{}_7Q_{10} + Q_{eff}(1-f)}{Q_{eff}}\right)\left(0.967^{(T-24)}\right)$$

Where:
Q_{eff} = effluent design flow = 0.074 MGD
DO_{stream} = in stream dissolved oxygen concentration after mixing
DO_{std} = dissolved oxygen criteria from s. NR 102.04(4) = 5.0 mg/L
7-Q_{10} = 0.01 cfs
T = Receiving water temperature from s. NR 102.25

BOD Effluent Limitations (26 LB Method)		May-October	November-April
Background Information:	7-Q_{10} (cfs)	0.01	0.01
	River Temperature (°C)	25	3
Dissolved Oxygen mg/L:	Effluent	7.00	7.00
	Background	7.00	7.00
	Mix DO	7.00	7.00
	Criteria	5.00	5.00
Weekly Ave BOD Effluent Limitations	Concentration Limits (mg/L)	**5.0**	**11**
	Mass (lbs/d)	**3.1**	**6.5**

The recommended effluent limitations are 5.0 mg/L and 3.1 lbs/day from May through October and 11 mg/L and 6.5 lbs/day November through April, expressed as weekly average limits.

As there is little or no dilution available under low flow conditions, **a dissolved oxygen limit of 7.0 mg/L as a daily minimum** is also recommended. This is consistent with the assumed dissolved oxygen effluent concentration in the calculation of the BOD_5 limitations.

Total Suspended Solids (TSS)
The TSS limitations are primarily given to maintain or improve water clarity and are not water quality based. The Department typically sets TSS limits equal to BOD_5 limits, but not at levels lower than 10 mg/L. **Therefore, a year-round monthly average TSS limit of 10 mg/L is recommended.**

Northeast Lakeshore TMDL
A Total Maximum Daily Load (TMDL) was developed for the Northeast Lakeshore. The TMDL addresses TSS water quality impairments within the basins and has provided waste load allocations (WLA) required to meet water quality standards. Without an assigned WLA for TSS, any amount discharged from Outfall 001 would need to be offset with an approved Water Quality Trading Plan (WQT). The WQT computed compliance limit of 0.00 lbs/day also requires a corresponding Minimum Control Level (MCL) to be met at the discharge.

pH
The pH limitations are required under s. NR 102.04(4)(c), Wis. Adm. Code, where the effluent pH cannot change the ambient pH range by 0.5 units or be outside the range of 6.0 - 9.0 s.u. **Therefore, a daily pH range of 6.0 - 9.0 s.u. is recommended.**

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life.

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)
Daily maximum limitations are based on acute toxicity criteria in ch. NR 105, Wis. Adm. Code, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation:

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - \text{pH})})] + [B \div (1 + 10^{(\text{pH} - 7.204)})]$$

Where:
A = 0.411 and B = 58.4 for a Warm Water Sport fishery, and
pH (s.u.) = that characteristic of the effluent.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method
In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are either set equal to two times the acute criteria (the final acute value) or calculated using the mass balance equation in s. NR 106.32(2)(e), Wis. Adm. Code.

In this case, limits calculated based on the mass balance equation are more restrictive.

Because the actual maximum effluent pH value cannot be identified at this time, a variable daily maximum limit should be included in the permit. The table below includes daily maximum limitations corresponding to various effluent pH values. Effluent pH should be measured alongside each effluent ammonia result so that the applicable ammonia limit can be selected from this table.

Attachment #1

Daily Maximum Ammonia Nitrogen Limits – WWSF, WWFF & LFF

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	58	7.0 < pH ≤ 7.1	35	8.0 < pH ≤ 8.1	7.4
6.1 < pH ≤ 6.2	57	7.1 < pH ≤ 7.2	32	8.1 < pH ≤ 8.2	6.1
6.2 < pH ≤ 6.3	56	7.2 < pH ≤ 7.3	28	8.2 < pH ≤ 8.3	5.0
6.3 < pH ≤ 6.4	54	7.3 < pH ≤ 7.4	25	8.3 < pH ≤ 8.4	4.2
6.4 < pH ≤ 6.5	52	7.4 < pH ≤ 7.5	21	8.4 < pH ≤ 8.5	3.4
6.5 < pH ≤ 6.6	50	7.5 < pH ≤ 7.6	18	8.5 < pH ≤ 8.6	2.8
6.6 < pH ≤ 6.7	48	7.6 < pH ≤ 7.7	15	8.6 < pH ≤ 8.7	2.4
6.7 < pH ≤ 6.8	45	7.7 < pH ≤ 7.8	13	8.7 < pH ≤ 8.8	2.0
6.8 < pH ≤ 6.9	42	7.8 < pH ≤ 7.9	11	8.8 < pH ≤ 8.9	2.7
6.9 < pH ≤ 7.0	39	7.9 < pH ≤ 8.0	9.0	8.9 < pH ≤ 9.0	1.4

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warm Water Sport Fish Community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

$$CTC = E \times \{[0.0676 \div (1 + 10^{(7.688 - pH)})] + [2.912 \div (1 + 10^{(pH - 7.688)})]\} \times C$$

Where:

pH = the pH (s.u.) of the receiving water,

E = 0.854,

C = the minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present), or

C = $1.45 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Absent), and

T = the temperature (ºC) of the receiving water – (Early Life Stages Present), or

T = the maximum of the actual temperature (ºC) and 7 - (Early Life Stages Absent)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q_{10} (4-Q_3, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q_5 (estimated as 85% of the 7-Q_2 if the 30-Q_5 is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 ºC, 25% of the flow is used if the Temperature < 11 ºC, and 50% of the flow is used if the Temperature ≥ 11 ºC but < 16 ºC.

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 ºC, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in the receiving water. So "ELS Absent" criteria apply from October through March, and "ELS Present" criteria will apply from April through September for a WWSF classification.

The "default" basin assumed values are used for Temperature because minimum ambient data are available. The values for pH are based on data collected within the Ahnapee River Watershed. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits – WWSF/LFF

		Spring	Summer	Winter
		April & May	June – Sept.	Oct. - March
Effluent Flow	Qe (MGD)	0.074	0.074	0.074
Background Information	7-Q_{10} (cfs)	0.01	0.01	0.01
	7-Q_2 (cfs)	0.03	0.03	0.03
	Ammonia (mg/L)	ND	ND	ND
	Temperature (°C)	14	21	10
	pH (s.u.)	7.89	7.98	7.97
	% of Flow used	50	100	25
	Reference Weekly Flow (cfs)	0.0050	0.0100	0.0025
	Reference Monthly Flow (cfs)	0.0128	0.0255	0.0063
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	**7.09**	**4.24**	6.35
	Early Life Stages Absent	7.12	4.24	**8.50**
	30-day Chronic			
	Early Life Stages Present	**2.84**	**1.70**	2.54
	Early Life Stages Absent	2.85	1.70	**3.40**
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	**7.4**	**4.6**	
	Early Life Stages Absent			**8.7**
	Monthly Average			
	Early Life Stages Present	**3.2**	**2.1**	
	Early Life Stages Absent			**3.6**

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
April & May	Variable	7.4	3.2
June – September	Variable	4.6	2.1
October – March	Variable	8.7	3.6

PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Codes, became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. Section NR 102.04(6), Wis. Adm. Code, includes criteria that must be met for all surface waters in accordance with s. NR 102.04(5)(a), Wis. Adm. Code.

1. The geometric mean of *E. coli* bacteria in effluent samples collected in any calendar month may not exceed 126 counts/100 mL.
2. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 counts/100 mL.

With a weekly monitoring frequency, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit. These limits are required during May through September.

PART 6 – PHOSPHORUS

Technology-Based Effluent Limit
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industrial wastewater treatment facilities that discharge greater than 60 pounds of Total Phosphorus per month to comply with a 12-month rolling average limit of 1.0 mg/L, or an approved alternative concentration limit. Considering the projected effluent flow rate (0.074 MGD) and the expected phosphorus concentration from similar facilities, it is unlikely that the discharge will exceed this threshold. However, this discharge is still subject to a TBEL of 65,902 lbs/year based on a technical analysis submitted in accordance with s. NR 243.13(2)(b), Wis. Adm. Code. In addition, the need for a WQBEL for phosphorus must be considered.

Northeast Lakeshore TMDL
A Total Maximum Daily Load (TMDL) was developed for the Northeast Lakeshore. The TMDL addresses phosphorus water quality impairments within the basin and has provided waste load allocations (WLA) required to meet water quality standards. Without an assigned WLA for phosphorus, any amount discharged from Outfall 001 would need to be offset with an approved Water Quality Trading Plan (WQT). The WQT computed compliance limit should be set equal to a **monthly average of 0.00 lbs/day.**

PART 7 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

Attachment #1

Monthly Temperature Limits

Month	Calculated Effluent Limit	
	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	49	77
FEB	50	77
MAR	52	78
APR	55	80
MAY	65	83
JUN	76	84
JUL	81	85
AUG	81	84
SEP	73	82
OCT	61	81
NOV	49	78
DEC	49	77

In accordance with s. NR 106.56(12), Wis. Adm. Code, when representative effluent temperature data is not available at the time of permit issuance, **the proposed permit shall include effluent temperature monitoring** (for at least one year), **WQBELs for temperature, and a compliance schedule to meet the temperature limits.**

The following general options are available for a facility to explore potential relief from the temperature limits:

- Monthly low receiving water flows: Contract with USGS to generate monthly low flow estimates for the receiving water to be used in place of the annual low flow.
- A variance to the water quality standard: This is typically considered to be the least preferable and most complex option as it requires the evaluation of the other alternatives.

If the USGS low flows are greater than zero:

- Mixing zone studies: A demonstration of rapid and complete mixing may allow for the use of a mixing zone other than the default 25%.
- Collection of site-specific ambient temperature: default background temperatures for streams in Wisconsin, so actual data from the direct receiving water may provide for relaxed thermal limits but only if the site-specific temperatures are lower than the small stream defaults used in the above tables

These options are explained in additional detail in the August 15, 2013 Department *Guidance for Implementation of Wisconsin's Thermal Water Quality Standards*
http://dnr.wi.gov/topic/surfacewater/documents/ThermalGuidance2edition8152013.pdf

PART 8 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022).*

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC_{50} (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.

- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC_{25} (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of 98% shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

$$IWC\ (as\ \%) = Q_e \div \{(1 - f)\ Q_e + Q_s\} \times 100$$

Where:

Q_e = annual average flow = 0.074 MGD = 0.114 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 0.0025 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.

The WET checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other related permit conditions. The checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code. The checklist steps the user through a series of questions, assesses points based on the potential for effluent toxicity, and suggests monitoring frequencies based on points accumulated during the checklist analysis. As toxicity potential increases, more points accumulate, and more monitoring is recommended to ensure that toxicity is not occurring. A summary of the WET checklist analysis completed for this permittee is shown in the table below. Staff recommendations based on best professional judgment are provided below the summary table. For guidance related to reasonable potential and the WET checklist, see Chapter 1.3 of the WET Guidance Document: https://dnr.wisconsin.gov/topic/Wastewater/WET.html.

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 98%. **15 Points**
Historical Data	New discharge, no WET testing results available **5 Points**	New discharge, no WET testing results available **5 Points**
Effluent Variability	No variability issues anticipated **0 Points**	No variability issues anticipated **0 Points**
Receiving Water Classification	WWSF **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	Based on similar facilities: Reasonable potential for limits for chlorine and ammonia based on ATC; (6 pts) Chloride detected. (1pt) Additional Compounds of Concern: none **7 Points**	Based on similar facilities: Reasonable potential for limits for chlorine and ammonia based on CTC; (6 pts) Chloride detected. (1pt) Additional Compounds of Concern: none **7 Points**
Additives	No additives **0 Points**	No additives **0 Points**
Discharge Category	Process Wastewater (5 pts) **5 Points**	Process Wastewater (5 pts) **5 Points**
Wastewater Treatment	Secondary or Better **0 Points**	Same as Acute. **0 Points**
Downstream Impacts	New discharge, no impacts known **0 Points**	Same as Acute. **0 Points**
Total Checklist Points:	**22 Points**	**37 Points**
Recommended Monitoring Frequency (from Checklist):	2 tests during permit term (year 2, 4, 6, etc.)	1x yearly
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2019) and other information described above two acute and annual chronic WET tests are recommended in the permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).

Deficiency Toxicity
Deficiency toxicity is defined as a condition where organisms are unable to survive because the surrounding water is lacking the necessary ions (e.g., sodium, calcium, magnesium, potassium, etc.) that must be available for them to survive. It is the opinion of DNR toxicologists that deficiency toxicity presented in a WET test will not have deleterious effects on receiving water organisms, as long as the necessary ions are introduced as soon as the effluent contacts receiving water, soils, or sediments. If it can be demonstrated that positive WET results are due to deficiency toxicity only, it is reasonable to allow WET monitoring frequencies to be reduced. Alternatively, if hardness levels are artificially raised prior to discharge for the purpose of increasing the corresponding metals limits, deficiency toxicity may not be a concern.

PART 9 – EXPRESSION OF LIMITS

Sections NR 106.07(3), NR 106.07 (4) and NR 205.067(7), Wis. Adm. Code and 40 CFR 122.45(d) require WPDES permits contain the following concentration limits, whenever practicable and necessary to protect water quality:

- Weekly average and monthly average limitations for continuous discharges subject to ch. NR 210.
- Daily maximum and monthly average limitations for all other discharges.

Dairy Dreams LLC is proposing an industrial discharge and is therefore subject to daily maximum and monthly average limitations whenever limitations are determined to be necessary.

This evaluation provides additional limitations necessary to comply with the expression of limits in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code. Pollutants already compliant with these rules or that have an approved impracticability demonstration, are excluded from this evaluation including water-quality based effluent limitations for phosphorus, temperature, pH, and *E. coli* among other parameters. Mass limitations are not subject to the limit expression requirements if concentrations limits are given.

Method for Calculation
The methods for calculating limitations for industrial discharges to conform to 40 CFR 122.45(d) are specified in s. NR 106.07(4), Wis. Adm. Code, as follows:

1. Whenever a daily maximum limitation is determined necessary to protect water quality, a monthly average limitation shall also be included in the permit and set equal to the daily maximum limit unless a more restrictive limit is already determined necessary to protect water quality.

2. Whenever a weekly average limitation is determined necessary to protect water quality:
    - A monthly average limitation shall also be included in the permit and set equal to the weekly average limit unless a more restrictive limit is already determined necessary to protect water quality.
    - A daily maximum limitation shall also be included in the permit and set equal to the daily maximum WQBEL calculated under s. NR 106.06, Wis. Adm. Code, or a daily maximum limitation calculated using the following procedure, whichever is more restrictive:

      Daily Maximum Limitation= WQBELc × DMF

Where:
DMF = Daily Multiplication Factor as defined in Table 2
CV = coefficient of variation (CV) as calculated in s. NR 106.07(5m), Wis. Adm. Code.

s. NR 106.07 (4) (e). Table 2 — Daily Multiplication Factor

CV	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
DMF	1.114	1.235	1.359	1.460	1.557	1.639	1.712	1.764	1.802	1.828

CV	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
DMF	1.842	1.849	1.851	1.843	1.830	1.815	1.801	1.781	1.751	1.744

3. Whenever a monthly average limitation is determined necessary to protect water quality, a daily maximum limit shall be calculated using the following procedure and included in the permit unless a more restrictive limit is already determined necessary to protect water quality:
   Daily Maximum Limit = (Monthly Average Limitation × MF)
   Where:
   MF= Multiplication factor as defined in Table 1
   CV= coefficient of variation (CV) as calculated in s. NR 106.07(5m), Wis. Adm. Code.
   n= the number of samples per month required in the permit

s. NR 106.07(3)(e)4, Table 1, Wis. Adm. Code — Multiplication Factor (for CV = 0.6)

CV	n=1	n=2	n=3	n=4	n=8	n=12	n=16	n=20	n=24	n=30
0.6	1.00	1.31	1.51	1.64	1.95	2.12	2.23	2.30	2.36	2.43

Note: This methodology is based on the *Technical Support Document for Water Quality-based Toxics Control* (March 1991). PB91-127415.

Summary of Additional Limitations:
In conclusion, the following additional limitations are required to comply with ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code.

Expression of Limits Summary

Parameter	Daily Maximum	Weekly Average	Monthly Average	Multiplication Factor (CV)	Assumed Monitoring Frequency (n)
BOD_5					
May – October	**8.2 mg/L**	5.0 mg/L	**5.0 mg/L**	1.64 (0.6)	
November– April	**18 mg/L**	11 mg/L	**11 mg/L**	1.64 (0.6)	
TSS	**16 mg/L**		10 mg/L	1.64 (0.6)	Weekly (4)
Chlorine	20 µg/L	7.4 µg/L	**7.4 µg/L**		
Cadmium	5.0 µg/L	3.9 µg/L	**3.9 µg/L**		
Chromium	1090 µg/L	330 µg/L	**330 µg/L**		
Copper	8.6 µg/L	**8.6 µg/L**	**8.6 µg/L**		
Lead	59 µg/L	**59 µg/L**	**59 µg/L**		
Nickel	280 µg/L	120 µg/L	**120 µg/L**		
Zinc	70 µg/L	**70 µg/L**	**70 µg/L**		
Chloride	810 mg/L	400 mg/L	**400 mg/L**		

Attachment #2

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:	Dairy Dreams, LLC		**7-Q_{10}:**	0.01	cfs	**Temp Dates**	**Flow Dates**
Outfall(s):	001		**Dilution:**	25%		**Start:**	
Date Prepared:	08/05/2022		**f:**	0		**End:**	
Design Flow (Qe):	0.07	MGD	**Stream type:**	Small warm water sport or forage fis			
Storm Sewer Dist.	0	ft	**Qs:Qe ratio:**	0.0	:1		
			Calculation Needed?	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	33	49	76	0.0025	0.074	0.074	0			49	77
FEB	34	50	76	0.0025	0.074	0.074	0			50	77
MAR	38	52	77	0.0025	0.074	0.074	0			52	78
APR	48	55	79	0.0025	0.074	0.074	0			55	80
MAY	58	65	82	0.0025	0.074	0.074	0			65	83
JUN	66	76	84	0.0025	0.074	0.074	0			76	84
JUL	69	81	85	0.0025	0.074	0.074	0			81	85
AUG	67	81	84	0.0025	0.074	0.074	0			81	84
SEP	60	73	82	0.0025	0.074	0.074	0			73	82
OCT	50	61	80	0.0025	0.074	0.074	0			61	81
NOV	40	49	77	0.0025	0.074	0.074	0			49	78
DEC	35	49	76	0.0025	0.074	0.074	0			49	77

Attachment #3