

Permit Fact Sheet

General Information

Permit Number	WI-0050016-10-0
Permittee Name and Address	GRANDE CHEESE CO BROWNSVILLE N11689 Dairy Rd, Brownsville, WI 53006
Permitted Facility Name and Address	Grande Cheese Co Brownsville N11689 Dairy Rd
Permit Term	October 01, 2026 to September 30, 2031
Discharge Location	West bank of Kummel Creek, 1,320 ft south of Hwy 49 in Brownsville, Lat 43.61270087 N Long 88.48647995 W NE ¼ Sec 8, T13N, R17E, Town of LeRoy, Dodge County
Receiving Water	Kummel Creek in East Branch Rock River Watershed of Upper Rock River Basin in Dodge County
Stream Flow (Q _{7,10})	LFF: 0.27 cfs WWSF: 0.39 cfs
Stream Classification	Limited Forage Fish Community at the point of discharge. 1.1 mile downstream at Cty Hwy HH, the stream is a Warm Water Sport Fish Community.
Discharge Type	Existing, Continuous

Facility Description

Grande Cheese Company manufactures Italian cheese and processes whey at its facility located near Brownsville, Wisconsin at the corner of Hwy 49 and Dairy Road in the Town of LeRoy. The facility takes in approximately 2.7 million pounds of milk per day to produce cheese, cream, whey powder, lactose powder, and sweet whey powder. Treated process and cleaning wastewaters from this operation is discharged to Kummel Creek, with high strength wastewater, brine, and treatment sludge discharged via land application.

Wastewater generated from the Cheese Plant is treated both anaerobically and aerobically. Low strength wastewater (LSW) from the cheese plant is sent to Cell #1 of the Package Plant and then is pumped to the Equalization Tank (EQ) where it is combined with the effluent from the High Strength Wastewater (HSW) treatment system. Prior to entering the EQ Tank, the HSW is anaerobically treated. The HSW system consists of a Stage 1, acidifying reactor and a Stage 2 methanogenic anaerobic reactor along with all required ancillary equipment such as agitators, pumps, boiler heating system and biogas collection equipment required for complete operation. The combined wastewater from the EQ tank is discharged through a dissolved air flotation (DAF) system, which separates the floatable solids from the liquids. The liquids are discharged to Cell #3 of the Package Plant for additional treatment, and the DAF solids are sent to Cell #4. The treated wastewater from Cell #2 is sent to the Oxidation ditch for aerobic treatment along with the Condensate of Whey water (COW). The WAS and RAS from the oxidation ditch clarifier is returned to the Package Plant. The clarified effluent from the oxidation ditch is further treated in the phosphorus polishing clarifier and post aeration system. The effluent from the post aeration tank is pumped via force main to Kummel Creek (Outfall 003).

Substantial Compliance Determination

Enforcement in Previous Permit Term: Multiple Notice of Noncompliance (NON) letters have been issued in the previous permit term related to effluent limit noncompliance, unauthorized discharges of wastewater, and failure to maintain proper operations and maintenance, as follows:

In March 2024 and December 2025, NONs were issued regarding effluent temperature limit exceedances. January 2024 an NON was issued regarding a discharge of whey product from a tanker truck to ground surface due to a vehicle crash. December 2024 an NON was issued regarding a treatment facility overflow from the digester to ground surface due to a frozen level sensor. October 2025 an NON was issued regarding unauthorized discharges in summer 2025 of milk from a leaking silo on site, and cleaning wastewater from scrubber equipment, both to the ground surface. April 2026 two NONs were issued regarding a large spill of wastewater to ground surface resulting from a controlled diversion around the equalization basins, and an additional large treatment facility overflow from the aeration basins to ground surface due to an equipment power failure. At the time of reissuance, additional enforcement communications are pending regarding unauthorized discharges to the ground surface that occurred on site in summer 2026.

The permittee has completed all previously requested actions to return to compliance.

After a desktop review of all discharge monitoring reports, land application reports, compliance schedule items, and a site visit on 7/10/2023 and 7/15/2026, this facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Jordan Main, Wastewater Compliance Engineer on 7/28/2026.

Sample Point Descriptions

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
002	Land Applied: 1.35 MG Hauled Off-Site: 10.95 MG (2024 – 52/55 Form)	HIGH STRENGTH WASTEWATER LAND APPLICATION: High strength wastewater (HSW) stored in HSW tanks that is not further treated but either hauled away or land applied. Representative grab samples shall be obtained as defined in the approved management plan.
003	0.63 MGD (2020-2025 - DMRs)	EFFLUENT: 24-Hr Flow Proportional Composite samples of the treated effluent shall be taken at the effluent manhole prior to leaving the property. Grab samples shall be taken at Grande's manhole on the Village of Brownsville's property prior to discharge to Kummel Creek.
008	Land Applied: 0 MG Hauled Off-Site: 6.2 MG (2024 – 52/55 Form)	INDUSTRIAL SLUDGE LAND APPLICATION: Combination of anaerobic digester sludge, phosphorus clarifier sludge, DAF and waste activated (WAS) sludge that is stored in cell #4. Representative grab samples shall be obtained as defined in the approved management plan.
009	Land Applied: 0 MG Hauled Off-Site: 0.81 MG (2024 – 52/55 Form)	LIQUID WASTEWATER LAND APPLICATION: Brine from cheese processing, including brine room cleaning wastewaters, and water softener waste are stored in brine tanks on site. Representative grab samples shall be obtained as defined in the approved management plan.

Permit Requirements

1 Surface Water - Monitoring and Limitations

1.1 Sample Point Number: 003- PRIOR TO ENTRY TO KUMMEL CR

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	15 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD5, Total	Daily Max	153.8 lbs/day	3/Week	Calculated	
BOD5, Total	Monthly Avg	61.2 lbs/day	3/Week	Calculated	
Suspended Solids, Total	Daily Max	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Daily Max	140 lbs/day	3/Week	Calculated	Effective annually March through January.
Suspended Solids, Total	Daily Max	160 lbs/day	3/Week	Calculated	Effective annually in February.
Suspended Solids, Total	Monthly Avg	63 lbs/day	3/Week	Calculated	Effective annually March through January.
Suspended Solids, Total	Monthly Avg	69 lbs/day	3/Week	Calculated	Effective annually in February.
pH Field	Daily Min	6.0 su	Daily	Grab	
pH Field	Daily Max	9.0 su	Daily	Grab	
Dissolved Oxygen	Daily Min	4.0 mg/L	Daily	Grab	
Chlorine, Total Residual	Daily Max	22 ug/L	Daily	Grab	
Chlorine, Total Residual	Weekly Avg	8.9 ug/L	Daily	Grab	
Chlorine, Total Residual	Monthly Avg	8.9 ug/L	Daily	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	7.8 mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	6.7 mg/L	3/Week	24-Hr Flow Prop Comp	Effective annually in April.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	2.8 mg/L	3/Week	24-Hr Flow Prop Comp	Effective annually May through September.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.0 mg/L	3/Week	24-Hr Flow Prop Comp	Effective annually in April.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.2 mg/L	3/Week	24-Hr Flow Prop Comp	Effective annually May through September.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.8 mg/L	3/Week	24-Hr Flow Prop Comp	Effective annually October through March.
Phosphorus, Total	Monthly Avg	0.8 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim MDV limit effective until September 30, 2028. See the MDV/Phosphorus subsections and phosphorus schedules.
Phosphorus, Total	Monthly Avg	0.6 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim MDV limit effective on October 1, 2028. See the MDV/Phosphorus subsections and phosphorus schedules.
Phosphorus, Total	Monthly Avg	3.73 lbs/day	3/Week	Calculated	Effective annually in January.
Phosphorus, Total	Monthly Avg	3.98 lbs/day	3/Week	Calculated	Effective annually in February.
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly phosphorus discharged in lbs/month on the last day of the month.
Phosphorus, Total		lbs/yr	Annual	Calculated	Report the sum of the total monthly discharges (for the months that the MDV is in effect) for the calendar year on the Annual DMR.
Temperature Maximum	Weekly Avg	66 deg F	Daily	Continuous	Effective annually in January and February.
Temperature Maximum	Weekly Avg	69 deg F	Daily	Continuous	Effective annually in March.
Temperature Maximum	Weekly Avg	85 deg F	Daily	Continuous	Effective annually in August.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Temperature Maximum	Weekly Avg	84 deg F	Daily	Continuous	Effective annually in September.
Temperature Maximum	Weekly Avg	79 deg F	Daily	Continuous	Effective annually in October.
Temperature Maximum	Weekly Avg	73 deg F	Daily	Continuous	Effective annually in November.
Temperature Maximum	Weekly Avg	70 deg F	Daily	Continuous	Effective annually in December.
Chloride		mg/L	4/Month	24-Hr Flow Prop Comp	Samples shall be completed on four consecutive days in the month.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	Sample annually in rotating quarters. See WET section below.
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	Sample twice annually in rotating quarters. See WET section below.

1.1.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

- Phosphorus, Total (MDV):** The permittee has applied for a multi-discharger variance (MDV) for phosphorus for this permit term and the application has been approved by the Department effective March through December. An MDV interim limit of 0.6 mg/L has been added that goes into effect per a compliance schedule. The permittee is required to report the total amount of phosphorus discharged in lbs/month and lbs/year. By March 1 of each year the permittee shall make a payment(s) to participating county(s) of \$68.40 per pound of phosphorus discharged during the previous year in excess of the target value.

- **Phosphorus, Total (Mass Limits):** Monthly avg mass limits effective upon reissuance were added for January and February
- **Chlorine, Total Residual:** Daily maximum, weekly average, and monthly average limitations have been added.
- **Chloride:** Sampling frequency increased from monthly to 4/month
- **Sample Frequency:** Increased from 2/week to 3/week for BOD, TSS, Ammonia, and Phosphorus

1.1.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo dated June 9, 2026 and prepared by Diane Figiel.

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 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. BOD, TSS, Ammonia, and TP sample frequencies have increased from 2/week to 3/week.

Expression of Limits- In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as daily maximum and monthly average limits whenever practicable.

BOD5 and Total Suspended Solids: Chapter NR 240, Wis. Adm. Code, specifies effluent guidelines for discharges from dairy product categories of point sources and subcategories. Grande Cheese Brownsville discharges a combination of wastewater from the Natural Cheese, Condensed Whey, and Dry Whey subcategories. Technology based effluent limits (TBEL) were recalculated based on levels of production for each subcategory provided by the facility with their permit application, on a conference call on December 10, 2024. A comparison of the updated TBELs with the effective TBELs in the current permit show the TBELs in the current permit are more stringent. Therefore, the current TBELs are recommended to continue during the reissued permit term. Detailed discussions of limits can be found in the attached technology based effluent limit memo. Note that TSS limits from the Rock River TMDL are more restrictive than the TSS TBELs, and therefore the TMDL limits are included.

DO and pH: WQBELs for DO and pH are carried over from the previous permit and are not subject to change at this time because the receiving water characteristics have not changed. DO limits of 4.0 mg/L are for situations for LFF classifications.

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, Wis. Adm. Code establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia. Statistics based upon ammonia data reported from April 2020 to March 2025 were calculated, with those results being compared to the calculated limits to determine the need to include ammonia limits in Grande Cheese Brownsville's permit for the respective month ranges. Current limits were retained.

Phosphorus – Phosphorus rules became effective December 1, 2010 per NR 217, Wis. Adm. Code, that required the permittee to comply with water quality based effluent limits (WQBELs) for total phosphorous. The final phosphorus WQBELs are mass WLAs from the Rock River TMDL as a 6-month average and were to become effective as scheduled unless a variance was granted. For this permit term, the permittee has applied for the Multi-Discharger Variance (MDV) for phosphorus as provided for in s. 283.16, Wis. Stats., and approved by USEPA on September 3, 2025 for a 10-year duration. The permittee qualifies for the MDV because it is an existing source and a major facility upgrade is needed to comply with the applicable phosphorus WQBELs, thereby creating a financial burden. The interim effluent limit for total phosphorus is 0.6 mg/L as an average monthly limit.

Conditions of the MDV require the permittee to optimize phosphorus removal throughout the proposed permit term, comply with interim limits and make annual payments to participating county(s) by March 1 of each year based on the pounds of phosphorus discharged during the previous year in excess of the specified target value.

The “price per pound” value is \$50.00 adjusted for CPI annually as defined by s. 283.16(8)(a)2, Wis. Stats and takes effect for reissued permits with effective dates starting April 1. This may differ from the “price per pound” that is public noticed; however, the “price per pound” is set upon reissuance and is applicable for the entire permit term. The participating county(s) uses these payments to implement nonpoint source phosphorus control strategies at the watershed level.

The MDV is only effective from March through December, as Grande Cheese Brownsville was able to demonstrate compliance with the final TMDL limits in January and February. Therefore, final mass effluent limits are effective upon reissuance for January and February.

Temperature: Grande Cheese – Brownsville submitted a report in November, 20, 2024 requesting an increase from the current thermal alternative effluent limitations (AEL), based on a study conducted in 2024. After review of the available data, the department reapproved the existing AELs, but did not approve the increase. See the attached Reapproval Thermal AEL memo dated August 10, 2026 and prepared by Emma Lorenzen.

Chlorine: Grande Cheese – Brownsville reported using an additive containing chlorine for sanitation, though sodium bisulfite is currently added as a dechlorination chemical prior to the wastewater treatment plant. Since chlorine is added AND dechlorination is present, regardless of effluent quality, daily maximum and weekly average effluent limitations are included. Due to the expression of limits, monthly average limitations are also included.

Chloride: Considering available effluent data from the current permit term (2020-2026), both the 1-day P99 and 4-day P99 values were less than the calculated chloride WQBELs; therefore, effluent limits are not needed. Continued monitoring is included in 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. Quarterly effluent monitoring for Total Nitrogen is included in the permit because of the potential for higher nitrogen loading resulting from higher flows (major facilities), higher concentrations, or both. 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.

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>.

2 Land Application - Sludge/By-Product Solids (industrial only)

2.1 Sample Point Number: 002- High Strength Wastewater and 009- Brine Wastewater

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Daily	Total Daily	
Solids, Total		Percent	Monthly	Grab Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Chloride		mg/L	Monthly	Grab Comp	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	Grab Comp	
Nitrogen, Total Kjeldahl		mg/L	Monthly	Grab Comp	
Phosphorus, Total		mg/L	Monthly	Grab Comp	
Phosphorus, Water Extractable		% of Tot P	Monthly	Grab Comp	
Potassium, Total Recoverable		mg/L	Quarterly	Grab Comp	
BOD5, Total		mg/L	Annual	Grab Comp	
pH Field		su	Quarterly	Grab	

2.1.1 Changes from Previous Permit:

Landspreading limitations and monitoring requirements for industrial liquid wastewater were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

- **Flow Rate:** Sample frequency increased from annual to daily.
- **Solids, Total:** Monitoring added on a monthly basis.
- **Nitrogen, Ammonia:** Monitoring added to replace nitrogen, ammonium on a monthly basis.
- **Potassium, Total Recoverable:** Sample frequency increased from annual to quarterly.
- **BOD5, Total:** Monitoring added on an annual basis.
- **Sample Type:** Updated from grab to grab composite for all parameters except for pH.

2.1.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214 Wis. Adm. Code. Parameters and sampling frequency at a minimum, correspond with the ‘Landspreading of Industrial Sludge’ General Permit WI-0057657-07.

2.2 Sample Point Number: 008- Cell #4, WAS Storage Tank

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Daily	Total Daily	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Monthly	Grab Comp	
Chloride		Percent	Monthly	Grab Comp	
Nitrogen, Ammonia (NH3-N) Total		Percent	Monthly	Grab Comp	
Nitrogen, Total Kjeldahl		Percent	Monthly	Grab Comp	
Nitrogen, Organic Total		Percent	Monthly	Grab Comp	
Phosphorus, Total		Percent	Monthly	Grab Comp	
Phosphorus, Water Extractable		% of Tot P	Monthly	Grab Comp	
Potassium, Total Recoverable		Percent	Quarterly	Grab Comp	
pH Field		su	Monthly	Grab	
Lead Dry Wt		mg/kg	Once	Grab Comp	
Zinc Dry Wt		mg/kg	Once	Grab Comp	
Copper Dry Wt		mg/kg	Once	Grab Comp	
Nickel Dry Wt		mg/kg	Once	Grab Comp	
Cadmium Dry Wt		mg/kg	Once	Grab Comp	
PCB Total Dry Wt		mg/kg	Once	Grab Comp	
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab Comp	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

2.2.1 Changes from Previous Permit:

Landspreading limitations and monitoring requirements for industrial sludge were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

- **Flow Rate:** Monitoring added on a daily basis.
- **Nitrogen, Ammonia:** Monitoring added to replace nitrogen, ammonium on a monthly basis.
- **Nitrogen, Organic Total:** Monitoring added on a monthly basis.
- **Potassium, Total Recoverable:** Sample frequency increased from annual to quarterly.
- **Lead, Zinc, Copper, Nickel, Cadmium, & PCB Dry Wt:** Once during the permit term monitoring added.
- **PFAS:** Monitoring is required annually pursuant to s. NR 214.18(5)(b), Wis. Adm. Code.
- **Sample Type:** Updated from grab to grab composite for all parameters except for pH.

2.2.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214 Wis. Adm. Code. Parameters and sampling frequency at a minimum correspond with the ‘Landspreading of Industrial Sludge’ General Permit WI-0057657-07.

Metals: The cumulative amount of cadmium, copper, lead, nickel, and zinc spread on any site may not exceed the cumulative amounts specified in the permit. The maximum cumulative loading of cadmium, copper, lead, nickel, and zinc are based on Table 4 in s. NR 214.18(4)(g), Wis. Adm. Code. One time monitoring during the permit term will assist Grand Cheese – Brownsville in determining compliance with this requirement.

PCB: PCB landspreading requirements are found in s. NR 214.18(4)(g), Wis. Adm. Code. One time monitoring during the permit term will assist Grand Cheese – Brownsville in determining compliance with this requirement.

PFAS: The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has developed a draft risk assessment to determine future land application rates and released this risk assessment in January of 2025. The department is evaluating this new information. Until a decision is made, the “Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS” should be followed.

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department’s implementation of EPA’s recommendations. To quantitate this risk, PFAS sampling has been included in this WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

3 Schedules

3.1 Phosphorus Multi-Discharger Variance Interim Limit (0.6 mg/L)

This compliance schedule requires the permittee to achieve compliance with the specified MDV interim effluent limit in accordance with s. 283.16(6), Wis. Stats., by the due date.

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent discharges of phosphorus with conclusions regarding compliance.	03/31/2027
Action Plan: Submit an action plan for complying with the specified interim effluent limit. If construction is required, include plans and specifications with the submittal.	09/30/2027
Initiate Actions: Initiate actions identified in the plan.	03/31/2028
Complete Actions: Complete actions identified in the plan and achieve compliance with the specified interim effluent limit.	09/30/2028

3.1.1 Explanation of Schedule

Interim Limit: Subsection 283.16(6), Wis. Stats., establishes required interim phosphorus effluent limits that must be met for multi-discharger variance (MDV) eligibility. The schedule above provides the permittee with two years to comply with that limit.

3.2 Phosphorus Schedule - Optimization and Compliance Planning

The permittee is required to optimize performance and undertake compliance planning to control phosphorus discharges per the following schedule.

Required Action	Due Date
Optimization and Compliance Alternatives: The permittee shall implement a phosphorus discharge optimization plan to control phosphorus discharges to the greatest extent practicable. Submit a progress report that summarizes the approach to phosphorus removal at the facility, the resulting concentration and mass loading for the last 12-month period, and any changes that were or are needed to optimize removal of phosphorus by the due date. The permittee shall also evaluate alternative phosphorus compliance options such as water quality trading and adaptive management. The progress report submitted on the date due shall also detail any outreach activities undertaken to evaluate these options, any communications with credit generators, brokers/clearinghouse, and any potential water quality trading or adaptive management projects that may lead to compliance with phosphorus WQBELs. Financial alternatives evaluation: If the permittee intends to seek a renewed variance at the end of this permit term, the permittee may complete a financial evaluation to support ongoing variance eligibility. The report must evaluate financial mechanisms that have the potential to make compliance with phosphorus WQBELs economically feasible.	09/30/2027
Progress Report #2: Submit a progress report per the above for the prior calendar year.	09/30/2028
Progress Report #3: Submit a progress report per the above for the prior calendar year.	09/30/2029
Progress Report #4: Submit a progress report per the above for the prior calendar year.	09/30/2030
Final MDV Optimization and Compliance Alternatives Report: Submit a progress report per the above for the prior calendar year. If water quality trading or adaptive management will be used to comply with phosphorus limitations during the next permit term, submit a draft water quality trading plan, adaptive management plan, or executed clearinghouse credit purchase agreement. The financial alternatives evaluation as described above must be submitted by the date due if the facility chooses to seek renewal of the variance.	03/31/2031

3.2.1 Explanation of Schedule

Optimization and Compliance Planning: Per s. 283.16(6)(a), Wis. Stats., the Department may include a requirement that the permittee optimize the performance of a point source in controlling phosphorus discharges, which may be necessary to achieve compliance with applicable effluent limits. This compliance schedule requires the permittee to prepare an optimization plan with a schedule for implementation and submit it for Department approval. The schedule also includes a compliance planning element focused on economically feasible solutions to low-level phosphorus effluent limits such as water quality trading or adaptive management. The permittee shall take the steps called for in the optimization plan and submit annual progress reports on optimizing the removal of phosphorus and establishing a water

quality trade or adaptive management project. Should the permittee intend to reapply for a subsequent term of variance coverage, a financial alternatives analysis will need to be completed. Report elements are listed in the schedule, and more information can be found in [EPA's March 2024 Financial Capabilities Assessment Guidance, Appendix C](#).

3.3 Phosphorus Payment per Pound to County

The permittee is required to make annual payments for phosphorus reductions to the participating county or counties in accordance with s. 283.16(8), Wis. Stats, and the following schedule. The price per pound will be set at the time of permit reissuance and will apply for the duration of the permit.

Required Action	Due Date
Annual Verification of Phosphorus Payment to County: The permittee shall make a total payment to the participating county or counties approved by the Department by March 1 of each calendar year. The amount due is equal to the following: [(lbs of phosphorus discharged minus the permittee's target value) times (\$68.40 per pound)] or \$640,000, whichever is less. See the payment calculation steps in the Surface Water section. The permittee shall submit Form 3200-151 to the Department by March 1 of each calendar year indicating total amount remitted to the participating counties to verify that the correct payment was made. The first payment verification form is due by the specified Due Date. Note: The applicable Target Value is the TMDL derived limit as defined by s. 283.16(1)(h), Wis. Stats. The "per pound" value is \$50.00 adjusted for CPI.	03/01/2027
Annual Verification of Payment #2: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2028
Annual Verification of Payment #3: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2029
Annual Verification of Payment #4: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2030
Annual Verification of Payment #5: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2031
Continued Coverage: If the permittee intends to seek a renewed variance, an application for the MDV (Multi Discharger Variance) shall be submitted as part of the application for permit reissuance in accordance with s. 283.16(4)(b), Wis. Stats.	
Annual Verification of Payment After Permit Expiration: In the event that this permit is not reissued prior to the expiration date, the permittee shall continue to submit Form 3200-151 to the Department indicating total amount remitted to the participating counties by March 1 each year.	

3.3.1 Explanation of Schedule

County Payment: Subsection 283.16(6)(b), Wis. Stats., requires permittees that have received approval for the multi-discharger variance (MDV) to implement a watershed project that is designed to reduce nonpoint sources of phosphorus within the HUC 8 watershed in which the permittee is located. The permittee has selected the "Payment to Counties" watershed option described in s. 283.16(8), Wis. Stats. Under this option the permittee shall make annual payment(s) to participating county(s) that are calculated based on the amount of phosphorus actually discharged during a calendar year in pounds per year less the amount of phosphorus that would have been discharged had the permittee discharged phosphorus at a target value of the TMDL limitations. The pounds of phosphorus discharged in excess of the target value

is multiplied by a per pound phosphorus charge that **will equal \$68.40 per pound**. This schedule requires the permittee to submit Form 3200-151 to the Department indicating the total amount remitted to the participating county(s).

3.4 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan: Submit an update to the management plan to optimize the land application system performance and demonstrate compliance with Wisconsin Administrative Code NR 214. If no operational changes have occurred since the most recent management plan approval, the existing plan may be submitted.	12/31/2030

3.4.1 Explanation of Schedule

Land Application Management Plan: An up-to-date Land Application Management plan is a standard requirement in reissued industrial permits per s. NR 214.17(6)(c), Wis. Adm. Code.

3.5 Temperature Limits (Industrial Facilities)

This compliance schedule requires the permittee to achieve compliance by the specified date.

Required Action	Due Date
Action Plan: Submit a report on effluent temperature with conclusions regarding compliance. This submittal must include proposed actions to comply with all effluent temperature limits.	09/30/2027
Initiate Actions: Initiate actions identified in the plan. If the actions identified include construction of additional treatment units or altering existing facilities, plans and specifications and a design report submittal will be submitted by the due date specified.	09/30/2028
Complete Actions: Complete actions necessary to achieve compliance with effluent temperature limits. If construction is required to comply with effluent limits, construction will be substantially complete by the due date.	09/30/2029

3.5.1 Explanation of Schedule

Temperature Compliance: Grande Cheese Brownsville has a history of noncompliance regarding temperature limits. As a result of enforcement actions and to bring the facility back into compliance with thermal limits, this schedule will allow the permittee time to create an action plan, prepare final plans and specifications (if needed), and complete actions to return to compliance.

Other Comments

None

Attachments

Categorical Limits Calculations

Water Quality Based Effluent Limits

Thermal AEL Reapproval

MDV Evaluation Checklist

MDV Approval Letter

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Amy Garbe, P.E.

Wastewater Engineer

Date: July 30, 2026

Date (post fact check): August 14, 2026

Date (post public notice):

Attachment 1: Technology Based Effluent Limits (TBEL)

PART 1 – BACKGROUND INFORMATION

Grande Cheese Company manufactures Italian cheese and processes whey at its facility located near Brownsville, Wisconsin at the corner of Hwy 49 and Dairy Road in the Town of LeRoy. The facility takes in approximately 2.7 million pounds of milk per day to produce cheese, cream, whey powder, lactose powder, and sweet whey powder. Treated wastewater from this operation is discharged to Kummel Creek and the higher strength waste is land applied on approved sites.

Wastewater generated from the Cheese Plant is treated both anaerobically and aerobically. Low strength wastewater (LSW) from the cheese plant is sent to Cell #1 of the Package Plant and then is pumped to the Equalization Tank (EQ) where it is combined with the effluent from the High Strength Wastewater (HSW) treatment system. Prior to entering the EQ Tank, the HSW is anaerobically treated. The HSW system consists of a Stage 1, acidifying reactor and a Stage 2 methanogenic anaerobic reactor along with all required ancillary equipment such as agitators, pumps, boiler heating system and biogas collection equipment required for complete operation. The combined wastewater from the EQ tank is discharged through a dissolved air flotation (DAF) system, which separates the floatable solids from the liquids. The liquids are discharged to Cell #3 of the Package Plant for additional treatment and the DAF solids are sent to Cell #4. The treated wastewater from Cell #2 is sent to the Oxidation ditch for aerobic treatment along with the Condensate of Whey water (COW). The WAS and RAS from the oxidation ditch clarifier is returned to the Package Plant. The clarified effluent from the oxidation ditch is further treated in the phosphorus polishing clarifier and post aeration system. The effluent from the post aeration tank is sent to Kummel Creek (Outfall 003).

The effective compliance date for technology based effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology (BPT) currently available is July 1, 1977.

PART 2 – INDUSTRIAL CATEGORIES

Chapter NR 240, Wis. Adm. Code, specifies effluent guidelines for discharges from dairy product categories of point sources and subcategories. Grande Cheese Brownsville discharges a combination of wastewater from the Natural Cheese, Condensed Whey, and Dry Whey subcategories.

Chapter NR 240, Wis. Adm. Code is based on federal effluent guidelines in 40 CFR Part 405 Subparts F, K, and L. The permittee must meet the applicable effluent limit guidelines as described in this chapter. These effluent limit guidelines include:

- Effluent limitations representing the degree of effluent reduction attainable by the application of the BPT in s. NR 240.10, Wis. Adm. Code.
- Effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT) in s. NR 240.11, Wis. Adm. Code.
- If determined to be a new source, new source performance standards (NSPS) in s. NR 240.12, Wis. Adm. Code.

If the calculated limits are less than or equal to the limits in the current permit, then the limits would be set equal to the recalculated limits. If the recalculated limits are less restrictive than the limits from the current permit, they cannot be increased unless the antidegradation and anti-backsliding provisions of ch. NR 207, Wis. Adm. Code, are met.

Section NR 220.13, Wis. Adm. Code, includes provisions that address cases where federal and state rules differ. Section 283.11, Wis. Stats., addresses compliance with federal standards. In this case, the state rules are consistent with federal rules with a few exceptions. In such cases, the permit will in all cases be based on the state rule notwithstanding the federal regulations. The omissions are described below.

- Neither state nor federal rules specify a date for the definition for a new source. Therefore, it is necessary to review available federal guidance. The Boornazian memo (September 28, 2006) specifies a new source date for 40 CFR Part 405 Subparts A – L of May 28, 1974. The Department relies on the Boornazian memo to establish date of applicability for NSPS.
- State rules incorrectly list BAT standards for BOD, TSS, and pH. BAT applies to priority pollutants and nonconventional pollutants and does not apply to BOD, TSS or pH.
- The federal standard rule lists revised BCT standards requirements. All BCT limitations are set to be the same as the best practicable control technology (BPT) standards. State rules in ch. NR 240, Wis. Adm. Code, do not list standards for BCT.

PART 3 – LEVELS OF CONTROL

One of the mozzarella production lines started prior to May 28, 1974, and is therefore subject to best practicable control technologies (BPT) found in table 2 of ch. NR 240, Wis. Adm. Code. and 40 CFR Part 405 Subparts F, K, and L.

Each of the other facility processes started after May 28, 1974, and are therefore subject to new source performance standards (NSPS) found in table 4 of ch. NR 240, Wis. Adm. Code. and 40 CFR Part 405 Subparts F, K, and L. Since NSPS are more stringent (or equal to) BPT standards, only NSPS categorical limitations need to be calculated for these processes.

PART 4 – APPLICABLE PRODUCTION LEVELS

The levels of production for each subcategory are based on data provided by the facility with their permit application and on a conference call on December 10, 2024. The facility uses 2.7 million lbs/day of milk to make mozzarella; 2,387,268 lbs/day of 6% solids fluid whey is sent to nanofiltration to make condensed whey; and 170,855 lbs/day of 60% solids whey is used to make dried whey.

PART 5 – TBEL CALCULATIONS

The BOD5 input is the 5-day biochemical oxygen demand of raw materials that enter the process. The current production levels are converted to BOD input equivalents by multiplying the amount of raw material by BOD factors specified in s. NR 240.03(1), Wis. Adm. Code, or s. NR 240.07, Wis. Adm. Code and 40 CFR Part 405.

pH

Any discharge subject to BAT, BPT, BCT, or NSPS limitations or standards in this part must remain within the pH range of 6.0 s.u. to 9.0 s.u.

BOD and TSS

For each subcategory, to calculate the adjusted Total BOD Input for each product's raw material, multiply the lbs/day of raw material by the BOD factor and divide by 100. To calculate the Monthly Average limits, divide the Adjusted Total BOD Input by 1,000 and multiply it by the Monthly Average Factor. To calculate the Daily Max limits, divide the Adjusted Total BOD Input by 1,000 and multiply it by the Daily Max Factor.

NATURAL CHEESE SUBCATEGORY

Natural Cheese BOD Input Calculations:

Product	Material Used	lbs/day	BOD Factor (lbs/100 lbs)	Adjusted Total BOD Input (lbs/day)
Natural Cheese-mozzarella (NSPS)	Raw Milk	300,000	10.39	31,170
Natural Cheese-mozzarella (BPT)	Raw Milk	2,400,000	10.39	249,360
Total natural cheese and processed cheese		2,700,000		280,530

Grande Cheese-Brownville has a BOD input greater than 10,390 pounds per day for mozzarella production, it is considered a Class A facility for natural cheese and processed cheese production.

Natural Cheese Limit Calculation:

Adjusted Total BOD Input (lbs/day)	BOD		TSS		BOD		TSS	
	Monthly Average Factor	Daily Max Factor	Monthly Average Factor	Daily Max Factor	Monthly Average Limit (lbs/day)	Daily Max Limit (lbs/day)	Monthly Average Limit (lbs/day)	Daily Max Limit (lbs/day)
31,170 (NSPS)	0.08	0.16	0.1	0.2	2	5	3	6
249,360 (BPT)	0.29	0.73	0.44	1.09	72	182	110	272

CONDENSED WHEY SUBCATEGORY

Condensed Whey BOD input calculations:

Product	Material Used	lbs/day	BOD Factor (lbs/100 lbs) ¹	Adjusted Total BOD Input (lbs/day)
Liquid Condensed Whey	6% (fluid) solids whey	2,387,268	4.72	112,679

Grande Cheese-Brownville has a BOD input greater than 14,160 pounds per day for condensed whey production, it is considered a Class A facility for condensed whey production.

¹BOD Input factor calculated using the process defined in s. NR 240.03(1), Wis. Adm. Code.

Condensed Whey Limit Calculation:

Adjusted Total BOD Input (lbs/day)	BOD		TSS		BOD		TSS	
	Monthly Average Factor	Daily Max Factor	Monthly Average Factor	Daily Max Factor	Monthly Average Limit (lbs/day)	Daily Max Limit (lbs/day)	Monthly Average Limit (lbs/day)	Daily Max Limit (lbs/day)
112,679	0.11	0.22	0.14	0.28	12	25	16	32

DRY WHEY SUBCATEGORY

Dry Whey Powder BOD input calculations:

Product	Material Used	lbs/day	BOD Factor (lbs/100 lbs)	Adjusted Total BOD Input (lbs/day)
Whey Powder	60% solids Whey	170,855	26.71	45,635

Grande Cheese-Brownsville has a BOD input greater than 15,620 pounds per day for dry whey production, it is considered a Class A facility for dry whey production.

Dry Whey Powder Limit Calculation:

Adjusted Total BOD Input (lbs/day)	BOD		TSS		BOD		TSS	
	Monthly Average Factor	Daily Max Factor	Monthly Average Factor	Daily Max Factor ²	Monthly Average Limit (lbs/day)	Daily Max Limit (lbs/day)	Monthly Average Limit (lbs/day)	Daily Max Limit (lbs/day)
45,635	0.11	0.22	0.14	0.23	5	10	6	10

² The federal standards of performance for new sources in the dry whey subcategory, 40 CFR §405.125, has a more stringent TSS maximum limit of 0.23 per 1,000 lb of BOD₅ input than the one contained in s. NR 140.12, Wis. Adm. Code which is 0.28 per 1,000 lb of BOD₅ input. Pursuant ss. NR 220.13, Wis. Adm. Code, federal standards will be used to calculate the maximum TSS limit as it is the more stringent number.

PART 6 – FINAL CALCULATED LIMITS

Per s. NR 240.06(3), Wis. Adm. Code, the total discharge limits shall be the total of the amounts calculated from the BOD input in the final product subcategory and all of the other subcategories with intermediate products in Part 5 of this memo.

Subcategory	Monthly average BOD (lbs/day)	Daily maximum BOD (lbs/day)	Monthly average TSS (lbs/day)	Daily maximum TSS (lbs/day)
Natural Cheese (NSPS)	2	5	3	6
Natural Cheese (BPT)	72	182	110	272
Condensed Whey	12	25	16	32
Dry Whey	5	10	6	10
Total	91	222	135	320

Current Permit TBELs			
Parameter and Units	Daily Maximum	Daily Minimum	Monthly Average
BOD5 (lbs/day)	153.8	N/A	61.2
TSS (lbs/day)	230.2	N/A	92.3
pH s.u.	9.0	6.0	N/A

A comparison of the updated TBELs with the effective TBELs in the current permit show the TBELs in the current permit are more stringent. Therefore, the current TBELs are recommended to continue during the reissued permit term. Any concentration and mass-based limits for BOD5 and TSS recommended in the WQBEL memo (June 2026) are also recommended to be included in the reissued permit along with the mass-based limits recommended in this evaluation. If the calculated WQBELs are more restrictive, those should be included instead of the calculated TBELs.

Final Calculated TBELs			
Parameter and Units	Daily Maximum	Daily Minimum	Monthly Average
BOD5 (lbs/day)	153.8	N/A	61.2
TSS (lbs/day)	230.2	N/A	92.3
pH s.u.	9.0	6.0	N/A

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: June 9, 2026

TO: Amy Garbe – WY/3

FROM: Diane Figiel – WY/3 *Diane Figiel*

SUBJECT: Water Quality-Based Effluent Limitations for the Grande Cheese Co-Brownsville
WPDES Permit No. WI-0050036-10-0

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 the discharge from the Grande Cheese Brownsville in Dodge County. This industrial facility discharges to Kummel Creek, located in the East Branch Rock River Watershed in the Upper Rock River Basin. This discharge is included in the Rock River Total Maximum Daily Load (TMDL) as approved by EPA on 09/28/2011.

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 003:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1
BOD ₅	30 mg/L 153.8 lbs/day			15 mg/L 61.2 lbs/day	2,3
TSS March – January February	30 mg/L 160 lbs/day 140 lbs/day			20 mg/L 69 lbs/day 63 lbs/day	2,7
pH	9.0 s.u.	6.0 s.u.			2
Dissolved Oxygen		4.0 mg/L			2,3
Chlorine	22 µg/L		8.9 µg/L	8.9 µg/L	4
Chloride					5
Copper					6
Arsenic					6
Cadmium					6
Ammonia Nitrogen April May – September October – March	7.8 mg/L 7.8 mg/L 7.8 mg/L		6.7 mg/L 2.8 mg/L	3.0 mg/L 1.2 mg/L 4.8 mg/L	2
Phosphorus LCA Interim Limit HAC Interim Limit Final WQBEL				0.8 mg/L 0.6 mg/L TMDL	7,8
Temperature					9
TKN, Nitrate+Nitrite, and Total Nitrogen					10
Acute WET					11,13
Chronic WET					12,13

Footnotes:

1. Monitoring only.
2. No changes from the current permit.
3. The concentration limits are from ch. NR 104 Wis. Adm. Code for limited forage fish waters. The mass limits are based on categorical standards and are not re-evaluated in this memo. Changes to the categorical limits should be evaluated separately if there have been changes to production rates at the facility.
4. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code, are included in bold.
5. Monitoring at a frequency to ensure that 11 samples are available at the next permit issuance.
6. Monitoring only. The data in the permit application was reported as not detected at a level of detection greater than 1/5th of the calculated limit. Monitoring using a more sensitive method is required per s. NR 200.027(1), Wis. Adm. Code.
7. Additional phosphorus and TSS mass limitations are required in accordance with the waste load allocations specified in the Rock River TMDL

Month	Monthly Average Phosphorus Limit (lbs/day)	Daily Max TSS Limit (lbs/day)	Monthly Average TSS Limit (lbs/day)
January	3.73	140	63
February	3.98	160	69
March	2.95	140	63
April	2.36	140	63
May	2.06	140	63
June	2.85	140	63
July	2.66	140	63
August	2.71	140	63
September	2.50	140	63
October	2.66	140	63
November	3.11	140	63
December	3.40	140	63

8. Under the phosphorus MDV, a level currently achievable (LCA) interim limit of 0.8 mg/L should be effective upon permit reissuance. A compliance schedule may be included in the permit until the highest attainable condition (HAC) limit of 0.6 mg/L can be met.
9. The following limits are included in the current permit and may be adjusted based on the results of an AEL study that is being evaluated outside of this memo. If any updates are needed to the existing AELs that memo/evaluation would address the applicable temperature limits and would replace any recommendations in this memo. Temperature monitoring is recommended year-round.

	Weekly Average Effluent Limit (°F)
JAN	66
FEB	66
MAR	69
AUG	85
SEP	84
OCT	79
NOV	73
DEC	70

10. As recommended in the Department's October 1, 2019, Guidance for Total Nitrogen Monitoring in Wastewater Permits, quarterly total nitrogen monitoring is recommended for facilities with total nitrogen greater than 40 mg/L and class A cheese plants. Sections 283.37(5) and 283.55(1)(e), Wis. Stats, and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the permit term. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total Kjeldahl nitrogen (TKN) (all expressed as N).
11. Annual acute WET tests are required. The primary control water used in acute WET tests conducted on Outfall 003 shall be a grab sample collected from Kummel Creek. 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.
12. Twice a year chronic WET testing is required. The Instream Waste Concentration (IWC) to assess chronic test results is 76%. 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%. The primary control water used in chronic WET tests conducted on Outfall 003 shall be a grab sample collected from Kummel Creek.
13. 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. Chronic WET testing should continue after the permit expiration date (until the permit is reissued).

The recommended limits meet the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, and additional limits are not required.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Diane Figiel at Diane.Figiel@wisconsin.gov.

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

PREPARED BY: Diane Figiel, PE,
Water Resources Engineer

E-cc: Jordan Main, Wastewater Engineer – SER/Waukesha
Lisa Creegan, Regional Wastewater Supervisor – SCR/Fitchburg
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Section Manager – WY/3
Kari Fleming, Environmental Toxicologist – WY/3

**Water Quality-Based Effluent Limitations for
Grande Cheese Brownsville**

WPDES Permit No. WI-0050036-10-0

Prepared by: Diane Figiel – WY/3

PART 1 – BACKGROUND INFORMATION

Facility Description

Grande Cheese Company manufactures Italian cheese and processes whey at its facility located near Brownsville, Wisconsin at the corner of Hwy 49 and Dairy Road in the Town of LeRoy. The facility takes in approximately 2.7 million pounds of milk per day to produce cheese, cream, whey powder, lactose powder and sweet whey powder. Treated wastewater from this operation is discharged to Kummel Creek and the higher strength waste is land applied on approved sites.

Wastewater generated from the Cheese Plant is treated both anaerobically and aerobically. Low strength wastewater (LSW) from the cheese plant is sent to Cell #1 of the Package Plant and then is pumped to the Equalization Tank (EQ) where it is combined with the effluent from the High Strength Wastewater (HSW) treatment system. Prior to entering the EQ Tank, the HSW is anaerobically treated. The HSW system consists of a Stage 1, acidifying reactor and a Stage 2 methanogenic anaerobic reactor along with all required ancillary equipment such as agitators, pumps, boiler heating system and biogas collection equipment required for complete operation. The combined wastewater from the EQ tank is discharged through a dissolved air flotation (DAF) system, which separates the floatable solids from the liquids. The liquids are discharged to Cell #3 of the Package Plant for additional treatment and the DAF solids is sent to Cell #4. The treated wastewater from Cell #2 is sent to the Oxidation ditch for aerobic treatment along with the Condensate of Whey water (COW). The WAS and RAS from the oxidation ditch clarifier is returned to the Package Plant. The clarified effluent from the oxidation ditch is further treated in the phosphorus polishing clarifier and post aeration system. The effluent from the post aeration tank is sent to Kummel Creek (Outfall 003). The phosphorus sludge from the polishing clarifiers is sent to Cell #4 of the inlet/head of the Package Plant where it is comingled with the DAF solids and hauled offsite (Outfall 008). There may also be times when the HSW will not be able to be processed by the anaerobic treatment system. HSW that is not treated, is hauled offsite (Outfall 002 previously land applied in Dodge, Fond du Lac, Columbia, Green Lake, Portage, Sheboygan, Waushara, Marquette, and Adams counties) to Pure Blue Waters for treatment and disposal.

Attachment #2 is a map of the area showing the approximate location of Outfall 003.

Existing Permit Limitations

The current permit, which expired on March 31, 2025, includes the following effluent limitations and monitoring requirements.

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1
BOD ₅	30 mg/L 153.8 lbs/day			15 mg/L 61.2 lbs/day	2,3
TSS March – January February	30 mg/L 160 lbs/day 140 lbs/day			20 mg/L 69 lbs/day 63 lbs/day	2,4
pH	9.0 s.u.	6.0 s.u.			
Dissolved Oxygen		4.0 mg/L			2
Chloride					1
Ammonia Nitrogen April May – September October – March	7.8 mg/L 7.8 mg/L 7.8 mg/L		6.7 mg/L 2.8 mg/L	3.0 mg/L 1.2 mg/L 4.8 mg/L	
Phosphorus LCA Interim Limit HAC Interim Final WQBEL				2.0 mg/L 1.0 mg/L TMDL	4,5
Temperature					6
TKN, Nitrate+Nitrite, and Total Nitrogen					1
Acute WET					7
Chronic WET					7

Footnotes:

1. Monitoring only
2. These limits are based on the Limited Forage Fish (LFF) community of the immediate receiving water as described in s. NR 104.02(3)(a), Wis. Adm. Code.
3. The mass limits are categorical limits based on ch. NR 240, Wis. Adm. Code.
4. Additional phosphorus and TSS mass limitations are required in accordance with the waste load allocations specified in the Rock River TMDL

Month	Monthly Average Phosphorus Limit (lbs/day)	Daily Max TSS Limit (lbs/day)	Monthly Average TSS Limit (lbs/day)
January	3.73	140	63
February	3.98	160	69
March	2.95	140	63
April	2.36	140	63
May	2.06	140	63
June	2.85	140	63
July	2.66	140	63
August	2.71	140	63
September	2.50	140	63
October	2.66	140	63
November	3.11	140	63
December	3.40	140	63

Attachment #1

5. The interim MDV limit of 1.0 mg/L became effective on 07/01/2022.
6. The following limits are included in the current permit and may be adjusted based on the results of an AEL study that is being evaluated outside of this memo. Temperature monitoring is required year-round.

	Weekly Average Effluent Limit (°F)
JAN	66
FEB	66
MAR	69
AUG	85
SEP	84
OCT	79
NOV	73
DEC	70

7. Two acute: July – September 2021; January – March 2024; and Three chronic WET Tests: July – September 2021, April – June 2022 and January – March 2024. IWC for chronic WET was 71%.

Receiving Water Information

- Name: Kummel Creek (aka Kiefer Creek)
- Waterbody Identification Code (WBIC): 863500
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Listed in ch. NR 104 as limited forage fish from the Brownsville STP downstream to CTH “HH” (Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.)
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are from USGS for Station 05423935 (updated 02/07/2013), where Outfall 003 is located.
7-Q₁₀ = 0.27 cubic feet per second (cfs)
7-Q₂ = 0.61 cfs
Harmonic Mean Flow = 2.1 cfs

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7-Q ₁₀ (cfs)	0.47	0.53	0.84	1.4	0.82	0.54	0.40	0.34	0.30	0.37	0.47	0.45
7-Q ₂ (cfs)	1.1	1.2	2.2	2.7	1.6	1.2	0.87	0.76	0.75	0.87	1.1	1.1

About 1.1 mi downstream from the discharge the stream classification changes to warmwater sport fishery (WWSF). The following flows from USGS are for Kummel Creek at County Hwy HH where the classification changes.

7-Q₁₀ = 0.39 cfs
7-Q₂ = 0.88 cfs

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7-Q ₁₀ (cfs)	0.67	0.76	1.2	2.1	1.2	0.78	0.58	0.49	0.43	0.54	0.67	0.65
7-Q ₂ (cfs)	1.6	1.7	3.2	3.9	2.3	1.7	1.3	1.1	1.1	1.3	1.6	1.5

- Hardness = 399 mg/L as CaCO₃. This value represents the geometric mean of data from WET testing conducted from 2015 through 2024.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 100% based on a 2013 mixing zone study approved on February 19, 2014. A mixing zone is not allowed for discharges of bioaccumulating compounds of concern (BCCs) in the Great Lakes system as described in s. NR 106.06(2)(br), Wis. Adm. Code
- Source of background concentration data: Metals data from Parnell Creek near Dundee is used for this evaluation because there is no data available for the Kummel Creek. Parnell Creek is within the same ecological landscape so ambient water quality characteristics are expected to be similar. 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. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: Brownsville Wastewater Treatment Facility (WWTF) is in the same area. Because these discharges are about 15 feet apart, mixing zones from the discharges will overlap. Any limits based on available dilution are calculated using a combined effluent flow rate using the design annual average flow rate of 0.125 MGD for the Brownsville WWTF.
- Impaired water status: Kummel Creek is listed as impaired for sediment and total phosphorus at the point of discharge.

Effluent Information

- Flow rate(s):
 - Annual average = 0.68 million gallons per day (MGD)
 - Peak daily = 0.81 MGD
 - Peak weekly = 0.74 MGD
 - Peak monthly = 0.71 MGD

For reference, the actual average flow from April 2020 through March 2025 was 0.63 MGD.

The design annual average flow rate at the Brownsville Wastewater Treatment Facility (WWTF) is 0.125 MGD. Because these discharges are about 15 ft. apart, mixing zones from the discharges will overlap. Any limits based on available dilution are calculated using a combined effluent flow rate of 0.805 MGD (0.68 MGD + 0.125 MGD).

- Hardness = 170 mg/L as CaCO₃. This value represents the geometric mean of four samples collected in May and June of 2024 which were reported on the permit application.
- 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 supply: private wells
- Additives: Grande Cheese Brownsville has included 8 additives in the permit application that have the potential to be present in Outfall 003. The need for any limits or use restrictions for these additives is evaluated in Part 7 of this evaluation.
- Effluent characterization: This facility is categorized as a secondary industry, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness and phosphorus.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2, in the column titled “MEAN EFFL. CONC.”. Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

Chloride Effluent Data

	Chloride (mg/L)
1-day P ₉₉	376.3
4-day P ₉₉	352.4
30-day P ₉₉	337.8
Mean	329.6
Std	19.04
Sample size	319
Range	265-450

The following table presents the average concentrations and loadings at Outfall 003 from April 2020 and March 2025 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameters with Effluent Limits

	Average Measurement	Average Mass Discharged
BOD ₅	0.08 mg/L*	0.37 lbs/day
TSS	2.4 mg/L	10.4 lbs/day
pH field	7.2 s.u.	
Dissolved Oxygen	mg/L	
Ammonia Nitrogen	0.46 mg/L*	
Phosphorus	0.71 mg/L	3.6 lbs/day

*Results below the limit of detection (LOD) were included as zeroes in calculation of average.

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 P₉₉) 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)

Acute Limits based on 1-Q₁₀

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q₁₀ receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(\text{WQC}) (Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)}{Q_e}$$

Where:

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

Q_s = average minimum 1-day flow which occurs once in 10 years (1-day Q₁₀)
if the 1-day Q₁₀ flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q₁₀).

Q_e = 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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for Grande Brownsville and the limits are set based on the 1-Q₁₀.

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).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0.22 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), 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		22.3	4.47	<30		
Arsenic		340		398.7	79.7	<20		
Cadmium	170	18.9	0.03	22.2	4.4	<2.0		
Chromium	170	2784		3267.4	653	<3.0		
Copper	170	25.6	1.8	29.7	5.9	<8		
Lead	170	179	0.52	209.4	41.9	<20		
Nickel	170	735		862.5	172	11		
Zinc	170	191	10	222.9	44.6	<20		
Chloride (mg/L)		757		888.3			376.3	450

* * Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-Q₁₀ flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)RECEIVING WATER FLOW = 0.27 cfs (100% of the 7-Q₁₀), 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		7.28		8.86	1.77	<30	
Arsenic		152		185	37.0	<20	
Cadmium	175	3.82	0.03	4.64	0.9	<2.0	
Chromium	301	326		396	79.3	<3.0	
Copper	399	32.5	1.8	40.8	8.16	<8	
Lead	356	95.5	0.52	116.1	23.2	<20	
Nickel	268	120		146	29.2	11	
Zinc	333	345	10	417	83.4	<20	
Chloride (mg/L)		395		481			352.4

* 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 Wildlife Criteria (WC)

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 2.1 cfs (100% 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	0.03	994	198.8	<2.0
Chromium (+3)	3818000		10255148	2051030	<3.0
Lead	140	0.52	375	75	<20
Nickel	43000		115498	23100	11

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 2.1 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		35.7	7.14	<20

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for chlorine. Limits and/or monitoring recommendations are made in the paragraphs below:

Total Residual Chlorine – Chlorine was reported in the permit application at a level greater than 1/5th of the calculated effluent limits. At a follow up meeting it was documented that this should have been

reported as less than 30 µg/L. Although chlorine was not detected and was not listed as an additive in the permit application, chlorine based sanitary chemicals are used in production and in the water supply at the private wells. Sodium bisulfite is used for sanitizer neutralization and was included as an additive on the permit application. Because chlorine is used at the facility, effluent limitations are recommended to assure proper operation of the de-chlorination system. **A daily maximum limit of 22 µg/L and a weekly average limit of 8.9 µg/L are required.**

Expression of Limits

Revisions to ch. NR 106, Wis. Adm. Code, align Wisconsin's water quality-based effluent limitations with 40 CFR 122.45(d), which requires WPDES permits for industrial discharges contain daily maximum and monthly average limitations, whenever practicable and necessary to protect water quality.

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:

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.

Therefore, **a monthly average chlorine limit of 8.9 µg/L is also required.**

Copper – The mean effluent concentration is nondetectable at <8 µg/L using the EPA 200.7 analytical method. The limit of detection of this analytical method is higher than 1/5th of the calculated limit (5.9 µg/L, based on ATC) and is not certain if a nondetect sample is actually lower than that value. **A more sensitive approved analytical method is recommended for future copper samples such that the limit of detection is less than or equal to 5.9 µg/L to better determine the need for copper limits at the next permit reissuance per s. NR 200.027(1), Wis. Adm. Code.**

Cadmium – The mean effluent concentration is nondetectable at <2.0 µg/L using the EPA 200.7 analytical method. The limit of detection of this analytical method is higher than 1/5th of the calculated limit (0.9 µg/L, based on CTC) and is not certain if a nondetect sample is actually lower than that value. **A more sensitive approved analytical method is recommended for future cadmium samples such that the limit of detection is less than or equal to 0.9 µg/L to better determine the need for cadmium limits at the next permit reissuance per s. NR 200.027(1), Wis. Adm. Code.**

Arsenic – The mean effluent concentration is nondetectable at <20 µg/L using the EPA 200.7 analytical method. The limit of detection of this analytical method is higher than 1/5th of the calculated limit (7.14 µg/L, based on HCC) and is not certain if a nondetect sample is actually lower than that value. **A more sensitive approved analytical method is recommended for future arsenic samples such that the limit of detection is less than or equal to 7.14 µg/L to better determine the need for arsenic limits at the next permit reissuance per s. NR 200.027(1), Wis. Adm. Code.**

Chloride – Considering available effluent data from the current permit term from April 2020 through March 2025, the 1-day P₉₉ chloride concentration is 376.3 mg/L, and the 4-day P₉₉ of effluent data is 352.4 mg/L. These effluent concentrations are below the calculated WQBELs for chloride; therefore, no effluent limits are needed. **Chloride monitoring is recommended to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.**

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, the effluent flow rate and known levels of PFOS/PFOA in the source water PFOS and PFOA monitoring is not recommended. 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.

PART 3 – 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. The current permit has the following ammonia nitrogen limits.

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
April	7.8	6.7	3.0
May – September	7.8	2.8	1.2
October – March	7.8		4.8

The current daily maximum limit of 7.8 mg/L was based on a maximum expected effluent pH of 8.4 s.u. when limits were calculated and the permit reissued in 2006. At subsequent permit reissuance the effluent pH was lower and the resulting limits higher however the limits remained unchanged due to antidegradation requirements.

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 Limited Forage Fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1826 sample results were reported from April 2020 through March 2025. The maximum reported value was 7.98 s.u. (Standard pH Units). The effluent pH was 7.8 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.69 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.83 s.u. Therefore, a value of 7.98 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.98 s.u. into the equation above yields an ATC = 8.73 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method

In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are calculated using the 1-Q₁₀ receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q₁₀ (estimated as 80 % of 7-Q₁₀) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	17.5
1-Q ₁₀	10.2

The 1-Q₁₀ method yields the most stringent limits for Grande Cheese Brownsville.

This limit is greater than the current daily maximum limit of 7.8 mg/L. If Grande Cheese Brownsville would like to request an increase to the existing permit limits an assessment of their treatment capability with the requirements of s. NR 207.031(2)(a)5, Wis. Adm. Code, must be provided. This evaluation is on a parameter by parameter basis and includes consideration of operations, maintenance and temporary upsets. Without a demonstration of need for a higher limit in accordance with s. NR 207.031(2)(a)5, Wis. Adm. Code, the current limits must be continued in the reissued permit. No changes are recommended in any of the permit limits for ammonia.

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

The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change because there have been no changes in the effluent and receiving water flow rates. The weekly and monthly average limits were calculated in a November 16, 2012 WQBEL memo. After 100% mixing was approved for the discharge and updated monthly low flows were provided by USGS, ammonia nitrogen limits were recalculated in the February 18, 2014 WQBEL Memo. The updated limits were higher but were not incorporate into the permit, because no demonstration of need for a higher limit was provided.

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from April 2020 to March 2025.

Ammonia Nitrogen mg/L	April	May - September	October - March
1-day P ₉₉		0.3	14.8
4-day P ₉₉		0.1	8.8
30-day P ₉₉		0.05	3.81
Mean*	0.03	0.02	0.89
Std		0.08	7.52
Sample size	40 (38 ND)	201 (167 ND)	252 (183 ND)
Range	<0.0125 – 0.09	<0.0125 – 0.38	<0.0125 – 34.2

*Values lower than the limit of detection were substituted with a zero

Reasonable Potential

The need to include ammonia limits in the permit is determined by calculating 99th upper percentile (or P₉₉) values for ammonia and comparing those to the calculated limits. Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits.

However, since the permit currently has weekly and monthly average limits year-round, **the limits must be retained regardless of reasonable potential**, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

(b) If a permittee is subject to an ammonia limitation in an existing permit, the limitation shall be included in any reissued permit. Ammonia limitations shall be included in the permit if the permitted facility will be providing treatment for ammonia discharges.

The permit currently has daily, weekly and monthly limits. Where there are existing ammonia nitrogen limits in the permit, the limits must be retained regardless of reasonable potential, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

(b) If a permittee is subject to an ammonia limitation in an existing permit, the limitation shall be included in any reissued permit. Ammonia limitations shall be included in the permit if the permitted facility will be providing treatment for ammonia discharges.

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	7.8	6.7	3.0
May – September	7.8	2.8	1.2
October – March	7.8		4.8

No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

PART 5 – PHOSPHORUS

Technology-Based Effluent Limit

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industries 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.

Because Grande Cheese Brownsville currently has a limit less than 1.0 mg/L due to the MDV, the need for a technology based effluent limit does not need to be considered further.

Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

The Department has developed a TMDL for the Upper and Lower Rock River Basins. The US EPA approved the Rock River TMDL on September 28, 2011. The document, along with the referenced appendices can be found at: <https://dnr.wisconsin.gov/topic/TMDLs/RockRiver/index.html>

Section NR 217.16, Wis. Adm. Code, states that the Department may include a TMDL-derived water quality based effluent limit (WQBEL) for phosphorus in addition to, or in lieu of, a s. NR 217.13 WQBEL in a WPDES permit. Because the Rock River Basin TMDL was developed to protect and improve the water quality of phosphorus impaired waters within the basin and the discharge from the Grande flows directly into the Kummel Creek, which was listed as phosphorus impaired at the time of TMDL development, the TMDL-based limit can be included in the WPDES permit absent the s. NR 217.13 WQBEL. This limit should be expressed in a manner consistent with the wasteload allocation and assumptions of the TMDL. If after two permit terms, the Department determines the nonpoint source load allocation has not been substantially reduced, the Department may include the s. NR 217.13 WQBEL unless these reductions are likely to occur.

TMDL Limits – Phosphorus

The monthly average total phosphorus (Total P) effluent limits in lbs/day are calculated based on the monthly phosphorus wasteload allocation (WLA) given in pounds per month as suggested in the *TMDL Implementation Guidance for Wastewater Permits*. The WLA for this facility is found in the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Rock River Basin* report dated April 15, 2013. The limits are equivalent to concentrations ranging from 0.40 mg/L to 0.77 mg/L at the facility flow of 0.68 MGD. **Monthly average mass effluent limits in accordance with the following table are recommended for this discharge.**

Total Phosphorus Effluent Limitations

Month	Monthly Total P WLA¹ (lbs/month)	Days Per Month	Monthly Ave Total P Effluent Limit² (lbs/day)
Jan	115.76	31	3.73
Feb	111.48	28	3.98
March	91.43	31	2.95
April	70.93	30	2.36
May	63.79	31	2.06
June	85.38	30	2.85
July	82.31	31	2.66
Aug	84.06	31	2.71
Sept	74.87	30	2.50
Oct	82.6	31	2.66
Nov	93.17	30	3.11
Dec	105.29	31	3.40

Footnotes:

1- Rock River TMDL Appendix P. Monthly Total Phosphorus Allocations by Wastewater Treatment Facility (p. 147)

2- monthly average Total P effluent limit (lbs/day) = monthly Total P WLA (lbs/month) ÷ days per month

Effluent Data

The following table summarizes effluent total phosphorus monitoring data from July 2022, when the current limit became effective, through March 2025.

Total Phosphorus Effluent Data

	Phosphorus mg/L	Phosphorus lbs/day
1-day P ₉₉	1.2	6.9
4-day P ₉₉	0.8	4.7
30-day P ₉₉	0.66	3.6
Mean	0.57	3.1
Std	0.20	1.2
Sample size	261	267
Range	0.12 -1.39	0-7.4

The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion and is currently operating the treatment facility to remove phosphorus and meet the WQBELs. Therefore, **the WQBELs are required to continue in the reissued permit per ss. NR 217.15 and 205.067(5), Wis. Adm. Codes.**

Multi-Discharge Variance Interim Limit

With the permit application, Grande Cheese Brownsville has applied for a second permit term with the phosphorus multi-discharger variance (MDV). Conditions of the phosphorus MDV require the facility to comply with an interim phosphorus limit in lieu of meeting the final WQBEL for this permit term. The recommended interim limit, pursuant to s. 283.16 (6) 1, Wis. Stats., is 0.6 mg/L as a monthly average. A compliance schedule may be appropriate to meet this interim limit, but compliance with 0.6 mg/L shall be no later than the end of the reissued permit.

The effluent data indicates that 4-day P₉₉ value of **0.8 mg/L is a level currently achievable (LCA)** for the discharge. A limit of 0.8 mg/L as a monthly average should not be exceeded during the compliance schedule.

TMDL Limits – TSS

The Rock River TMDL also has wasteload allocations (WLA) for total suspended solids (TSS). For an industrial discharge, the limits for TSS must be expressed as daily maximums and monthly averages. The current permit includes a daily maximum limit of 30 mg/L and a monthly average limit of 20 mg/L as well as mass limits based on the Rock River TMDL.

Monthly average and daily maximum mass effluent limitations should be retained in the permit, along with the current concentration limits of 30 mg/L as a daily maximum and 20 mg/L as a monthly average. For reference, the mass limits shown are equivalent to concentrations ranging from 11 – 12 mg/L as a monthly average and 25 – 28 mg/L as a daily maximum, at the flow rate of 0.68 MGD.

Total Suspended Solids Effluent Limitations

Month	Monthly TSS WLA¹ (tons/month)	Days Per Month	Monthly Ave TSS Effluent Limit² (lbs/day)
Jan	0.97	31	63
Feb	0.96	28	69
March	0.97	31	63
April	0.94	30	63
May	0.97	31	63
June	0.94	30	63
July	0.97	31	63
Aug	0.97	31	63
Sept	0.94	30	63
Oct	0.97	31	63
Nov	0.94	30	63
Dec	0.97	31	63

Month	Daily TSS WLA³ (tons/day)	Daily Max TSS Effluent Limit⁴ (lbs/day)
Jan	0.07	140
Feb	0.08	160
March	0.07	140
April	0.07	140
May	0.07	140
June	0.07	140
July	0.07	140
Aug	0.07	140
Sept	0.07	140
Oct	0.07	140
Nov	0.07	140
Dec	0.07	140

Footnotes:

1- Rock River TMDL Appendix Q. Monthly Total Suspended Solids Allocations by Wastewater Treatment Facility (p. 149)

2- Monthly average TSS effluent limit (lbs/day) = maximum monthly TSS WLA (tons/month) ÷ days per month x 2,000 lbs/ton

3- Rock River TMDL Appendix S. Daily Total Suspended Solids Allocations by Wastewater Treatment Facility (p. 153)

4- Daily maximum TSS effluent limit (lbs/day) = daily TSS WLA (tons/month) x 2,000 lbs/ton

Limits based on a WLA should be given in a permit regardless of reasonable potential. However, for informational purposes, the following table lists the statistics for Total Suspended Solids discharge as both a concentration and a mass, reported in SWAMP from April 2020 – March 2025.

	TSS (mg/L)	TSS (lbs/day)
1-day P ₉₉	6.9	40.6
4-day P ₉₉	4.7	24.5
30-day P ₉₉	3.1	14.7
Mean	2.4	10.4
Std	1.29	8.25
Sample Size	480	558
Range	<0 - 15	<0 – 75.42

**PART 6 – 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.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from April 2020 through March 2025.

The table below summarizes the maximum temperatures reported during monitoring from April 2020 through March 2025.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit		Current Permit AELs
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation	Weekly Average Effluent Limitation
	(°F)	(°F)	(°F)	(°F)	
JAN	68	70	61	94	66
FEB	69	70	61	97	66
MAR	70	73	68	106	69
APR	72	76	79	116	-
MAY	79	81	78	102	-
JUN	81	84	83	94	-
JUL	85	86	85	91	-
AUG	85	85	82	91	85
SEP	82	86	76	90	84
OCT	80	81	66	92	79
NOV	74	76	57	94	73
DEC	70	72	60	94	70

Reasonable Potential

Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
 - (a) The highest recorded representative daily maximum effluent temperature
 - (b) The projected 99th percentile of all representative daily maximum effluent temperatures
- A sub-lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
 - (a) The highest weekly average effluent temperature for the month.
 - (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. The months in which limitations are recommended are shown in bold. Based on this analysis, weekly average temperature maximum limits are necessary for the months of January – March, May, and August – December. Maximum weekly average effluent flow rates have increased since the current permit issuance resulting in the need for additional limits.

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

- Effluent monitoring data: Verification or additional effluent monitoring (flow and/or temperature) may be appropriate if there were questions on the representativeness of the current effluent data.
- 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.
- 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
- 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.

These options are explained in additional detail in the August 15, 2013 Department *Guidance for Implementation of Wisconsin's Thermal Water Quality Standards*
<https://dnr.wisconsin.gov/topic/Wastewater/Thermal.html>

An alternative effluent limits (AEL) study was performed at the previous issuance and approved in November 2018 which resulted in the current permit limits. A new AEL study was conducted and the results of this study are not addressed in this memo. If any updates are needed to the existing AELs that memo/evaluation would address the applicable temperature limits and would replace any recommendations in this memo.

PART 7 – 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 LC₅₀ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.

Attachment #1

- 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 LC₅₀ (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 IC₂₅ (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 76%**, 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:

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

Where:

Q_e = annual average flow = 0.68 MGD = 1.05 cfs

f = fraction of the Q_e withdrawn from the receiving water = 0

Q_s = 100% of the 7-Q₁₀ = 0.39 cfs

Because the discharge is to a limited forage fish water, the full stream flow for the first downstream full fish and aquatic life water is used to calculate the IWC.

- The previous IWC was 71% using an effluent flow rate of 0.617 MGD.
- 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 003 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.
- Shown below is a tabulation of all available WET data for Outfall 003. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

WET Data History

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Pass or Fail?	Use in RP?	
10/24/2006					>100	>100	Pass	Yes	
04/26/2007					>100	>100	Pass	Yes	

Attachment #1

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Pass or Fail?	Use in RP?	
05/15/2008					>100	>100	Pass	Yes	
08/11/2009					>100	>100	Pass	No	1
02/03/2015					>100	>100	Pass	Yes	
09/20/2016	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
11/28/2017					>100	>100	Pass	Yes	
09/07/2021	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
04/24/2022					>100	>100	Pass	Yes	
02/20/2024	>100	>100	Pass	Yes	>100	>100	Pass	Yes	

Footnotes:

1. *Tests done by S-F Analytical, July 2008 – March 2011.* The DNR has reason to believe that WET tests completed by SF Analytical Labs from July 2008 through March 31, 2011 were not performed using proper test methods. Therefore, WET data from this lab during this period has been disqualified and was not included in the analysis.
- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

Acute Reasonable Potential = [(TUa effluent) (B)(AMZ)]

Chronic Reasonable Potential = [(TUC effluent) (B)(IWC)]

According to s. NR 106.08(6)(d), Wis. Adm. Code, TUa and TUC effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC₅₀, IC₂₅ or IC₅₀ ≥ 100%).

Acute Reasonable Potential = 0 < 1.0, reasonable potential is not shown, and a limit is not required.

Chronic Reasonable Potential = 0 < 1.0, reasonable potential is not shown, and a limit is not required.

Therefore, no reasonable potential is shown for acute or chronic WET limits using the procedures in s. NR 106.08(6), Wis. Adm. Code, and representative data from 2006 - 2024.

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 = 76 %. >65% 15 Points
Historical Data	5 tests used to calculate RP. No tests failed. 0 Points	7 tests used to calculate RP. No tests failed. 0 Points
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. 0 Points	Same as Acute. 0 Points
Receiving Water Classification	WWSF or < 4 mi to non-variance 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	Reasonable potential for limits for chlorine based on ATC; Ammonia nitrogen limit carried over from the current permit. No other detected. Additional Compounds of Concern: None 5 Points	Reasonable potential for limits for chlorine based on CTC; Ammonia nitrogen limit carried over from the current permit. No other detected. Additional Compounds of Concern: None 5 Points
Additives	No Biocides and 8 Water Quality Conditioners added. Permittee has proper P chemical SOPs in place Yes 8 Points	Six additives used more than once per 4 days. 6 Points
Discharge Category	Dairy 20 Points	Same as Acute. 20 Points
Wastewater Treatment	Secondary or Better 0 Points	Same as Acute. 0 Points
Downstream Impacts	No impacts known 0 Points	Same as Acute. 0 Points
Total Checklist Points:	38 Points	51 Points
Recommended Monitoring Frequency (from Checklist):	1x yearly	2x 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* (2022) and other information described above, annual acute and twice a year chronic

Attachment #1

WET tests are recommended in the reissued permit. 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. Testing should continue after the permit expiration date (until the permit is reissued).

PART 8 – ADDITIVE REVIEW

Unlike the metals and toxic substances evaluated in Part 2, most additives have not undergone the amount of toxicity testing needed to calculate water quality criteria. Instead, in cases where the minimum data requirements necessary to calculate a WQC are not met, a secondary value can be used to regulate the substance, according to s. NR 105.05, Wis. Adm. Code. Whenever an additive is discharged directly into a surface water without receiving treatment or an additive is used in the treatment process and is not expected to be removed before discharge, a review of the additive is needed. Secondary values should be derived according to s. NR 105.05, Wis. Adm. Code. Guidance related to conducting an additive review can be found in *Water Quality Review Procedures for Additives* (2022)

<https://dnr.wisconsin.gov/topic/Wastewater/Additives.html>

Additive Parameters

Additive Name	Manufacturer	Purpose of Additive including where added	Intermittent or Continuous Feed	Frequency of Use		Estimated Effluent Concentration mg/L	Potential Use Restriction mg/L ¹	Is Additive Authorized in Current Permit?
				Months per/yr.	Days/week			
Ferric Chloride 35%	Hawkins, Inc.	Phosphorus removal and pH adjustment in anaerobic digester to prevent struvite formation	C	12	7	<1 mg/L	Removed with solids	Yes
40% Sodium Bisulfite	Hydrite Chemical	Sanitizer neutralization added to DAF effluent prior to Cell #3	C	12	7	<1 mg/L	Removed with solids	No
Aquachem EM 1875	Aquachem of America	Polymer/ Flocculation, added prior to DAF after EQ tank	C	12	7	<1 mg/L	Removed with solids	Yes
50% Sodium hydroxide	Hawkins, Inc.	pH adjustment in anaerobic digester	I	12	3-4		pH limit ²	Yes

Attachment #1

Additive Name	Manufacturer	Purpose of Additive including where added	Intermittent or Continuous Feed	Frequency of Use		Estimated Effluent Concentration mg/L	Potential Use Restriction mg/L ¹	Is Additive Authorized in Current Permit?
				Months per/yr.	Days/week			
Kurita 8013	Fremont	Microbial Supplement, added to Oxidation Ditch	I	12	<1		Toxicity data in SDS does not meet minimum database ³	No
KEMIRA PIX-312	Kemira Water Solutions	Ferric sulfate coagulant added between Final Clarifier and Phos Clarifier	C	12	7	<1 mg/L	Toxicity data in SDS does not meet minimum database ³	No
GWT-6415	Global Water Technologies	Phosphorus reduction, added between Final Clarifier and Phos Clarifier	I	12	1	<1 mg/L	Toxicity data in SDS does not meet minimum database ³	No
Met-Source Air	Chemtron River Bend	Aerobic micronutrient added to DAF effluent prior to Cell #3	C	12	7	<1 mg/L	Toxicity data in SDS does not meet minimum database ³	No

1. Calculated based on toxicity data provided.
2. Evaluation is not necessary for additives that have active ingredients consisting only of chlorine, caustic soda (sodium hydroxide), hypochlorite, sulfuric acid, hydrochloric acid.
3. The minimum data requirements per s. NR 105.05(4) which indicates that in order to calculate a secondary acute value (SAV), the database shall contain, at a minimum, a genus mean acute value (GMAV) for one of the following 3 genera in the family Daphnidae - *Ceriodaphnia sp.*, *Daphnia sp.*, or *Simocephalus sp.*

The ferric chloride and polymer are used in treatment and are expected to be removed with the solids. A secondary value is not needed for these additives because they are not expected to be present in the effluent following the treatment process. The 50% Caustic is solely made up of sodium hydroxide and is used for pH adjustment. The pH limits in the current permit should be sufficient to regulate the use of this product, and no additive review is needed.

The following additives cannot be approved because the minimum databased requirements in s. NR 105.05(4) are not met:

- Kurita 8013 (Fremont 8013) – SDS indicates no toxicity data is available
- KEMIRA PIX-312 – minimum data requirements available for active ingredient, not full product
- GWT-6415 – toxicity data only available for rainbow trout
- Met-Source Air – minimum data requirements available for active ingredient, not full product

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:	Grande Cheese Brownsville	7-Q₁₀:	0.27	cfs	Temp Dates	Flow Dates
Outfall(s):	001	Dilution:	100%		Start:	04/01/20
Date Prepared:	4/16/2025	f:	0		End:	03/31/25
Design Flow (Q_e):	0.81 MGD	Stream type:	Limited forage fish community			
Storm Sewer Dist.	0 ft	Q_s:Q_e ratio:	0.2 :1			
		Calculation Needed?	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Q _s) (cfs)	Representative Highest Effluent Flow Rate (Q _e)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	T _a (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Q _{esl})	Daily Maximum Flow Rate (Q _{ea})		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)		(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)
JAN	37	54	78	0.47	0.722	0.786	0	68	70	61	94
FEB	39	54	79	0.53	0.704	0.778	0	69	70	61	97
MAR	43	57	80	0.84	0.716	0.771	0	70	73	68	106
APR	50	63	81	1.40	0.728	0.803	0	72	76	79	116
MAY	59	70	84	0.82	0.694	0.753	0	79	81	78	102
JUN	64	77	85	0.54	0.740	0.805	0	81	84	83	94
JUL	69	81	86	0.40	0.719	0.813	0	85	86	85	91
AUG	68	79	86	0.34	0.695	0.777	0	85	85	82	91
SEP	63	73	85	0.30	0.682	0.780	0	82	86	76	90
OCT	55	63	83	0.37	0.695	0.743	0	80	81	66	92
NOV	46	54	80	0.47	0.704	0.763	0	74	76	57	94
DEC	40	54	79	0.45	0.721	0.780	0	70	72	60	94

Attachment #2

Grande Cheese Brownsville Outfall Location



CORRESPONDENCE / MEMORANDUM State of Wisconsin

DATE: August 10, 2026

TO: Permit File

FROM: Emma Lorenzen - CO

SUBJECT: Approval of the alternative effluent temperature limit for Grande Cheese Inc – Juda facility (WI-0063207)

The Grande Cheese Inc - Brownsville facility is an existing facility pursuant to s. NR 106.71(3), Wis. Adm. Code, and discharges heat and other pollutants to Kummel Creek which flows into the East Branch of the Rock River in Brownsville, Wisconsin. In order to protect fish and aquatic life in Kummel Creek, temperature limits were calculated for Grande-Brownville pursuant to ch. NR 106 Subchapter V, Wis. Adm. Code. This evaluation, using the protocols specified in Subchapter V, determined that Grande-Brownville has reasonable potential to contribute to exceedances of both acute and sub-lethal thermal water quality standards in all months of the year, necessitating inclusion of temperature limits in the permit. In accordance with Ch. NR 106 -Subchapter VI, 40 CFR Part 125, and Section 316(a) of the federal Clean Water Act, Grande-Brownville requested alternative effluent limitations (AEL) for the sublethal temperature limits based on a demonstration that the calculated effluent temperature limits are more stringent than necessary to protect fish and aquatic life. This was originally granted on November 13, 2018, with conditions for further demonstration that it was protective of fish and aquatic life.

This demonstration entitled *Thermal Alternative Effluent Limit Renewal Request* was prepared by the Probst Group and submitted to the Department of Natural Resources on November 20, 2024. This report goes through the permit requirements for updating information to uphold the AEL that was granted on November 13, 2018.

In order to demonstrate no appreciable harm to the balanced, indigenous community or to the list of representative important species, this study:

1. Conducted resident fish surveys during the September 2024 at
2. Monitored ambient temperature and Kummel Creek temperature at four locations in order to delineate the thermal discharge's area of influence: one upstream of the discharge and three downstream of the discharge. Temperature of the East Branch of the Rock River was also logged upstream and downstream of its confluence with Kummel Creek.

The department has reviewed the renewal request and agrees that it is appropriate to continue having alternative effluent limits and that the permittee has demonstrated that the calculated water quality based thermal effluent limits are more stringent than necessary to protect a balanced indigenous aquatic community.

Any increase in effective limits would require an antidegradation review according to the provisions of ch. NR 207, Wis. Adm. Code. Thus, while the department agrees that the original calculated water quality effluent limits for temperature are more stringent than necessary, it is unable to increase the limits at this time beyond what is already effective.

A continuation of the existing alternative effluent limits listed in Table 1 below is being approved.

Month	Weekly Average Limit (°F)
January	66
February	66
March	69
April	(No Limit)
May	(No Limit)
June	(No Limit)
July	(No Limit)
August	85
September	84
October	79
November	73
December	70

Table 1: Approved AEL Limits

In conclusion, the department agrees that a discharge of the alternative effluent limits listed in Table 1 is protective of fish and aquatic life in Kummel Creek. This decision will be re-evaluated by the department upon permit reissuance. Additional data should be submitted with the next permit application to continue to justify an alternative effluent limit to the department.

If there are any questions or comments, please contact Emma Lorenzen at (608)-400-2765 or at Emma.Lorenzen@wisconsin.gov.

Multi-Discharger Variance Application Evaluation Checklist

Form 3200-145 (R 5/16)

Page 1 of 4

Notice: This checklist is meant to be a tool to help Department of Natural Resources (DNR) staff review municipal and industrial multi-discharger variance (MDV) applications (Forms 3200-149 and 3200-150). Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31-19.39, Wis. Stats.).

Permittee Name				
Grande Cheese Company - Brownsville				
WPDES Permit Number			County	
WI- 0 0 5 0 0 1 6			Dodge	
1. Did the point source apply for the MDV at the appropriate time?	☒ Yes ☐ No. <i>STOP- facility not eligible at this time.</i>			See Questions 1-3.
2. This operation is (check one):	☐ New or relocated outfall. <i>STOP- facility not eligible.</i> ☒ Existing outfall			See Questions 5-6.
3. Is the point source is located in an MDV eligible area?	☒ Yes ☐ No. <i>STOP- facility not eligible.</i>			Apply County information to Appendix H. Additional information provided in Q7 on municipal form & Q7-8 on industrial form.
4. The secondary indicator score for the county (counties) the discharge is located is:	7			See Appendices A-F. If the score is less than 2, stop; the facility is not eligible. See Q23 on municipal form & Q28 on industrial form.
5. Is a major facility upgrade required to comply with phosphorus limits?	☒ Yes ☐ No. <i>STOP- facility not eligible.</i>			See Q8 on municipal form/Q9 on industrial form.
6. List the months where phosphorus limits cannot be achieved during the permit term:	☐ All ☐ Jan ☒ Apr ☒ Jul ☒ Oct ☐ Feb ☒ May ☒ Aug ☒ Nov ☒ Mar ☒ Jun ☒ Sep ☒ Dec			Consider checking with limit calculator. If this does not match information in application, the application should be updated prior to approval.
7. What is the current effluent level achievable?				
Outfall Number(s)	Conc. (mg/L)	Method for calculation:	Does this concur with application?	DNR staff should verify the effluent concentration value(s) provided. See Q11 on municipal form & Q12 on industrial form.
003	0.68	☒ 30-day P99 ☐ Other, specify: _____	☐ Yes ☒ No, why not: Application used older data subset	
8. What is the appropriate interim limitation(s) for the permit term?				
0.6 mg/L as a monthly average pursuant to s. 283.16(6)(a)2., Wis. Stats.				
Target Value = Rock River TMDL Limits				
Provide Rationale:				
Total phosphorus effluent data from the past three years (6/1/2022 - 4/30/2025, n=284) yield a 30-day P99 value of 0.68 mg/L. This value represents a level currently achievable. Several months in the evaluation period would have exceeded a 0.6 mg/L monthly average interim limit, so a schedule may be warranted.				
Note: See description in Section 2.02 of the MDV implementation guidance. Interim limitations should reflect the "highest attainable condition" for the permittee in question pursuant to s. 283.16(7), Wis. Stat.				

9. <i>For Industries Only</i> - Where does the phosphorus in the effluent come from? (check all that apply)	☐ Process ☐ Additive Usage ☐ Water supply <i>Can intake credits be given or can the facility use an alternative water supply?</i> ☐ Not feasible ☐ Possibly, but further analysis needed ☐ Not evaluated at this time	See Q14-15 & 19 on industrial form. If the answer is "possibly" or "not evaluated", the schedule section of the MDV permit should contain a requirement to perform this analysis.
10. Has this facility optimized?	☐ Yes ☒ In progress ☐ No	See Q14 on municipal form & Q16 & 20 on industrial form. Facility must optimize and operate at an optimize treatment level (s. 283.16(6)(a), Wis. Stat.) If no will need compliance schedule.
11. Has a facility plan/compliance alternative plan been completed for the facility?	☒ Yes ☐ In progress ☐ No	See Q15 on municipal form & Q17 on industrial form.
12. What is the projected cost for complying with phosphorus? Source:	\$ <u>1,640,000.00</u> MDV Application and 2017 Preliminary compliance alternatives plan	Facility must submit site-specific compliance costs. If cost projections are used from EIA, the permittee must certify that these costs are reasonable for the facility in question. See "projected compliance costs" in Section 2.02 of the MDV Implementation Guidance for details.
Comments on planning efforts:		
Symbiont prepared a Preliminary Compliance Alternatives Plan, dated June 2017, which lists a number of possible filtration options that could meet the WQBEL including continuous backwashing sand filters, cloth disc filters, and membrane filters. Site specific costs were provided for sand and membrane filters (cloth filters were omitted due to reliability issues). Adaptive Management and Water Quality Trading were also evaluated. Water Quality Trading was presented as a potentially viable option, though no trading opportunities have come to fruition thus far. The MDV application cites compliance risk as a factor that may make trading not viable. During the current permit term, Grande Cheese Brownsville optimized chemical phosphorus treatment which included developing a SOP and changing chemical type.		
13. Are adaptive management and water quality trading viable?	☐ Yes ☒ Perhaps. Additional analysis required. ☐ No	See Q18-21 on municipal form & Q22-25 on industrial form. If additional analyses required, the applicant may need to complete this analysis during the MDV permit term.
14. Has the point source met the appropriate primary screener?	☒ Yes ☐ No. STOP- facility not eligible.	See Q4 of this form in addition to the "eligibility" guidance in Section 2.01 of the MDV Implementation Guidance.

Comments on economic demonstration:

A summary of compliance costs was included in the PCAP. These included addition of filtration - continuous ballasted sand filtration and membrane filtration.

Dodge County has a secondary indicator value of 7, which means Grande Brownsville only needs to meet one of the primary screeners. For cheese manufacturers, Dodge County is not in the top 75% of counties incurring costs. The second primary indicator is if the cost of tertiary treatment would be greater than \$1.51M.

The capital costs were \$1.64M for both sand filtration and membrane filtration. The DOA determination had estimated the capital cost at \$4.0M. The provided costs appear to be representative based on other cheese manufacturing site specific costs. These values are relatively dated as of 2025, though with recent inflation, are conservatively low.

However, by evaluating capital costs, both site-specific costs were >\$1.51M demonstrating that Grande Brownsville meets one of the primary screeners.

15. What watershed option was selected?

- ☒ County project option. *Complete Section 5.*
- ☐ Binding, written agreement with the DNR to construct a project or implement a watershed plan. *Complete Section 4.*
- ☐ Binding, written agreement with another person that is approved by the DNR to construct a project or implement a watershed plan. *Complete Section 4.*

Section 4. Watershed Plan Review

16. MDV Plan Number:

Note: This is for tracking purposes. Contact Statewide Phosphorus Implementation Coordinator for the plan number.

17. Did the point source complete Form 3200-148?

- ☐ Yes
- ☐ No

18. Is the project area in the same HUC 8 watershed as the point of discharge?

- ☐ Yes
- ☐ No. *STOP- Watershed plan must be updated.*

19. What is the annual offset required?

See Section 2.03 of the MDV implementation guidance. If this value is different from the offset target provided in form 3200-148, the watershed plan should be amended.

20. Does the plan ensure that the annual load is offset annually?

- ☐ Yes
- ☐ No. *STOP- Watershed plan must be updated.*

21. Are projects occurring on land owned/operated by a CAFO or within a permitted MS4 boundary?

- ☐ Yes. *Work with appropriate DNR staff to ensure projects are not working towards other permit compliance.*
- ☐ No.

22. Are other funding sources being used as part of the MDV watershed project?

- ☐ Yes. *Work with appropriate DNR staff to ensure that funding sources can be appropriately used in the plan area.*
- ☐ No.

23. Do you have any concerns about the watershed project?

Note: Coordinate with other DNR staff as appropriate.

- ☐ Yes. *STOP- Watershed plan must be updated.*
- ☐ No.

Comments:

Section 5. Payment to the County(ies)

24. At this time, the appropriate per pound payment is:

\$ 66.62

See "Payment Calculator" document at

[\\centra\\water\\WQWT_PROJECTS\\WY_CW_Phosphorus\\MDV.](#)**Section 6. Determination**

Based on the available information, the MDV application is:

- ☒ Approved
☐ Request for more information
☐ Denied

Additional Justification (if needed):

Grande Cheese Brownsville initially applied for the variance to cover all months of the year. A review of effluent data indicates that Rock River TMDL limits can be met during the months of January and February, so those have been removed from MDV coverage. See updated MDV application dated 7/18/2025.

Certification

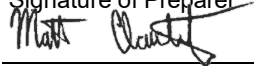
Preparer Name

Matt Claucherty

Title

Water Resources Management Specialist

Signature of Preparer



Date

8/1/2025



8/1/2025

Jenny Drake
250 Camelot Drive
Fond du Lac, WI 54935

Subject: Conditional approval of a multi-discharger phosphorus variance
Receiving Stream: Kummel Creek in Dodge County
Permittee: Grande Cheese Company - Brownsville, WPDES WI-0050016

Dear Ms. Drake:

In accordance with s. 283.16 of the Wisconsin Statutes, you have requested coverage under Wisconsin's multi-discharger phosphorus variance for Grande Cheese Brownsville in an application dated 7/18/2025. Wisconsin's multi-discharger phosphorus variance was approved by EPA on February 6, 2017. Coverage under the multi-discharger phosphorus variance may only be granted to an existing source that demonstrates a major facility upgrade is necessary to achieve phosphorus compliance and the upgrade will result in economic hardship as defined in the federally approved variance. The water quality criterion for which you are seeking a variance is contained in s. NR 102.06, Wis. Adm. Code.

After review of the application materials, the Department is tentatively approving coverage under the phosphorus multi discharger variance because the applicant has demonstrated that a major facility upgrade would be required to comply with the phosphorus water quality based effluent limitation, and the applicant meets the economic hardship eligibility criteria delineated in the federally approved variance. The variance will be granted for months March - December only, with January and February limits effective in the reissued permit. In addition, the permitted facility has agreed to comply with the interim limitations that will be included in the WPDES permit, and has agreed to reduce the amount of phosphorus entering surface waters by making payments to the counties pursuant to s. 283.16(6)(b)1., Wis. Stats.

Public comment on this decision will be solicited at the time of permit reissuance after which a final decision will be made. The Department appreciates your attention and interest in Wisconsin's multi-discharger phosphorus variance. Should you have further questions regarding this matter, please contact me at (608) 400 – 5596 or by email at matthew.claucherty@wisconsin.gov.

Matt Claucherty, MDV Point Source Coordinator
Bureau of Water Quality

e-cc Marty Lehman, Grande Cheese
 Tim Krueger, Grande Cheese
 Jordan Main, WDNR
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