Permit Fact Sheet

General Information

Permit Number:	WI-0065579-02-0
Permittee Name:	BelGioioso Cheese Inc – Chase
Address:	7700 N Brown County Line Rd
City/State/Zip:	Pulaski, WI 54162
Discharge Location:	South side of the ditch between Oconto County Parcels 012353502142B and 012353502443C which drains into an unnamed waterway (WBIC 5014649) in the Town of Chase near the Village of Pulaski
Receiving Water:	Unnamed tributary (WBIC 5014649) to the North Branch of the Suamico River
Stream Flow ($Q_{7,10}$):	0 cfs
Stream Classification:	Warm Water Sport Fish (WWSF) community, non-public water supply
Discharge Type:	Existing

Facility Description

BelGioioso Cheese Inc – Chase (BelGioioso) currently receives around 1,500,000 pounds of milk per day to produce Italian style cheeses. Treated process wastewater is discharged to absorption ponds and eventually to groundwater. Noncontact cooling water (NCCW) discharges to an unnamed tributary to the North Branch of the Suamico River and is currently covered under the NCCW General Permit. The NCCW discharge is being incorporated into the reissued individual permit due to long term operation.

The wastewater treatment plant at the Chase facility consists of an influent lift station to collect wastewater from the Chase and Pulaski production facilities. Wastewater is then treated through the following units: equalization tank, primary DAF, anoxic selector tank, aeration basin, and ultrafiltration membranes. Treated wastewater effluent combined with NCCW will be discharged through Outfall 006 to the absorption ponds for further treatment via the land treatment system and ultimate discharge to groundwaters of the State in Oconto County. A groundwater monitoring well network consisting of four monitoring wells has been installed and is associated with the absorption ponds. NCCW may also pass through cooling towers, as needed, and discharge to surface water via Outfall 007. Sludge, or occasionally sludge mixed with raw wastewater, is stored in on-site storage tanks prior to being hauled off-site for disposal.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Violation (NOV) was sent on 8/2/21. An additional NOV was sent on 6/6/22. The NOV Close-Out Letter for these enforcement actions was sent on 11/22/23. A Notice of Noncompliance (NON) was sent on 11/21/23 for violations of effluent limits for Total Nitrogen, Total Dissolved Solids, and Chloride, ranging from August 2022 to September 2023.

After a desk top review of all discharge monitoring reports, land treatment reports, groundwater reports, land application reports, compliance schedule items, and a site visit on **8/17/23**, this facility has been found to be not in substantial compliance with their current permit. As identified in the inspection report, there have been several violations of effluent limits, exceedances of PAL and ES groundwater limits, the industrial land application management plan does not meet Department standards, and there are questions on ch. NR 214, Wis. Adm. Code, requirements for landspreading. The proposed permit contains actions to bring the facility back into compliance.

Compliance determination made by Laura Gerold, Wastewater Engineer.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
004	509,625 gal land applied in 2023; 1,226,341 gal hauled to another facility for disposal in 2023	Wash water from manual, clean-in-place cleaning of equipment and buildings, and sludge from the WWTP to approved landspreading sites by a commercial hauler. Grab samples of the mixed waste shall be taken from the holding tanks on-site.
006	48.78 MG total in 2023 (avg. of 0.134 MGD in 2023)	Representative samples of the combination of treated process wastewater, whey permeate, and noncontact cooling water shall be obtained prior to discharge to the absorption ponds.
007	N/A – new sample point	Representative samples of the noncontact cooling water shall be obtained prior to discharge to surface water.

Sample Point Designation For Groundwater Monitoring Systems			
System	**Sample Pt Number**	**Well Name**	**Comments**
Absorption Ponds	801	MW-1	Non-Point of Standard; down/side-gradient
	802	MW-2	Non-Point of Standard; down/side-gradient
	803	MW-3	Background; up-gradient
	804	MW-4	Point of Standard; down-gradient

1 Surface Water - Monitoring and Limitations

Sample Point Number: 007- Noncontact Cooling Water to SW

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	8.2 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May-October, each year.
BOD5, Total	Daily Max	16 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies November-April, each year.
BOD5, Total	Weekly Avg	5.0 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies May-October, each year.
BOD5, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies November-April, each year.
BOD5, Total	Monthly Avg	5.0 mg/L	3/Week	24-Hr Flow	Limit applies May-October,

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
				Prop Comp	each year.
BOD5, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	Limit applies November-April, each year.
Suspended Solids, Total	Daily Max	16 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Dissolved Oxygen	Daily Min	7.0 mg/L	Daily	Grab	
Oil & Grease (Hexane)	Daily Max	15 mg/L	Weekly	24-Hr Flow Prop Comp	
Oil & Grease (Hexane)	Monthly Avg	15 mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Temperature Maximum	Daily Max	86 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies in August, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Daily Max	84 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies in September, each year following the limit effective date. See also the Temperature Monitoring

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					and Limits sections of the permit.
Temperature Maximum	Daily Max	79 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies in November & March, each year following the limit effective date. See also the Temperature Monitoring and Limits section of the permit.
Temperature Maximum	Daily Max	78 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies December-February, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	57 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies April, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	67 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies May, each year following the limit effective date. See also the

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	83 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies July, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	75 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies September, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	63 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies October, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	51 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies November-January, each year following the limit effective date. See

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	52 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies February, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.
Temperature Maximum	Weekly Avg	54 deg F	Daily	Continuous	Monitoring only upon permit effective date. Final limits go into effect per the Temperature Limits compliance schedule. Limit applies March, each year following the limit effective date. See also the Temperature Monitoring and Limits sections of the permit.

Changes from Previous Permit:

- This surface water discharge is currently covered under the NCCW General Permit. Appropriate limits and monitoring have been incorporated from the general permit into the individual permit.

Explanation of Limits and Monitoring Requirements

Water Quality-Based Effluent Limits

Refer to the WQBEL memo, Water Quality-Based Effluent Limitations for the Belgioioso Cheese Inc. Chase WPDES Permit No. WI-0065579-02, for detailed calculations, prepared by the Water Quality Bureau, Nicole Krueger, Water Resources Engineer, dated 12/13/2023, updated 02/08/2024, used for this reissuance.

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

Thermal – Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. Temperature limits become effective April 1, 2027, following the Temperature Limits (Industrial Facilities) compliance schedule.

Phosphorus – Phosphorus requirements are based on the Phosphorus Rules that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. The code categorically limits industrial dischargers of more than 60 pounds of phosphorus per month to 1.0 mg/L unless an alternative limit is approved. The data demonstrates that the annual monthly average phosphorus loading is less than 60 lbs/month, therefore, no technology-based limit is required.

NR 217 also specifies WQBELs (water quality-based effluent limits) for discharges of phosphorus to surface waters of the state from publicly and privately owned wastewater facilities, noncontact cooling water discharges which contain phosphorus, concentrated animal feeding operations that discharge through alternative treatment facilities and a facility/site that is regulated under NR 216 where the standards in NR151 and 216 are not sufficient to meet phosphorus criteria. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards. Phosphorus monitoring is included in the permit to determine reasonable potential to cause or contribute to an exceedance of the water quality criteria. Additionally, previous sampling data had a LOD of 0.5 mg/L which is greater than the WQBEL of 0.075 mg/L. A more stringent LOD (0.075 mg/L) should be used going forward so that it can be determined if water quality is being met or not.

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

Expression of Limits – In accordance with the federal regulation 40 CFR 122.45(d) and ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code, limits in this permit are to be expressed as daily maximum and monthly average limits whenever practicable. Minor changes have been made to BOD_5 and TSS.

2 Land Treatment – Monitoring and Limitations

Sample Point Number: 006- ABSORPTION PONDS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Total Daily	
BOD5, Total	Monthly Avg	50 mg/L	3/Week	24-Hr Flow Prop Comp	
Chloride	Monthly Avg	250 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field		mg/L	3/Week	Grab	
Solids, Total Dissolved	Monthly Avg	900 mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	3/Week	24-Hr Flow	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Kjeldahl				Prop Comp	
Nitrogen, Ammonia (NH3-N) Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Organic Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Total	Monthly Avg	10 mg/L	3/Week	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.

Changes from Previous Permit:

- No changes from the previous permit.

Explanation of Limits and Monitoring Requirements

Requirements for land treatment of industrial wastewater are determined in accordance with ch. NR 214, Wis. Adm. Code.

3 Groundwater – Monitoring and Limitations

3.1 Groundwater Monitoring System for Absorption Ponds

Location of Monitoring system: SE 1/4 of the SE 1/4 of Section 35, T26N, R19E, Town of Chase

Wells to be Monitored: MW-1 (801), MW-2 (802), MW-3 (803), MW-4 (804)

Well Used to Calculate PALs: MW-3 (803)

Point of Standards Application Well(s): MW-4 (804)

Parameter	**Units**	**Preventive Action Limit**	**Enforcement Standard**	**Frequency**
Depth To Groundwater	feet	*****	N/A	Quarterly
Groundwater Elevation	feet MSL	*****	N/A	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	Quarterly
Chloride Dissolved	mg/L	125	250	Quarterly
Nitrogen, Total Kjeldahl Dissolved	mg/L	*****	N/A	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Quarterly

Nitrogen, Organic Dissolved	mg/L	2.4	N/A	Quarterly
Solids, Total Dissolved	mg/L	820	N/A	Quarterly

Changes from Previous Permit:

- Removed monitoring and limits for pH and Manganese.
- Added a new Point of Standards Application Well 804 (MW-4), including monitoring and limits.

Explanation of Limits and Monitoring Requirements

Refer to the Groundwater Evaluation, BelGioioso Cheese, Inc. - Land Disposal System Evaluation Report, WPDES Permit # WI-0065579, dated April 21, 2022, modified February 6, 2024, by Woody Myers, Hydrogeologist, used for this reissuance. Groundwater limits and requirements are determined in accordance with ch. NR 140, Wis. Adm. Code. Indicator parameter Preventive Action Limit (PAL) values are established per s. NR 140.20, Wis. Adm. Code.

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

Sample Point Number: 004- Process WW & Sludge Land Apply

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Monthly	Grab	
Chloride		mg/L	Monthly	Grab	
pH Field		su	Monthly	Grab	
Nitrogen, Total Kjeldahl		mg/L	Monthly	Grab	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	Grab	
Nitrogen, Organic Total		mg/L	Monthly	Calculated	
Phosphorus, Total		mg/L	Monthly	Grab	
Phosphorus, Water Extractable		% of Tot P	Monthly	Grab	
Potassium, Total Recoverable		mg/L	Monthly	Grab	
Lead Dry Wt		mg/kg	Annual	Grab	
Zinc Dry Wt		mg/kg	Annual	Grab	
Copper Dry Wt		mg/kg	Annual	Grab	
Cadmium Dry Wt		mg/kg	Annual	Grab	
Nickel Dry Wt		mg/kg	Annual	Grab	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.

Changes from Previous Permit:

- PFAS annual monitoring is included in the permit pursuant to s. NR 214.18(5)(b), Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214, Wis. Adm. Code.

PFAS – The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA is currently developing a risk assessment to determine future land application rates and expects to release this risk assessment by the end of 2024. In the interim, the Department has developed the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS".

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 the proposed WPDES permit pursuant to ss. NR 214.18(5)(b), Wis. Adm. Code.

Water Extractable Phosphorus (WEP) – WEP is the coefficient for determining plant available phosphorus from measured total phosphorus. In Wisconsin, the Penn State Method is utilized and is expressed in percent. While a total P may be significant, the WEP may show that only a small percentage of the P is available to plants because of factors such as treatment processes and chemical addition that "tie-up" phosphorus limiting the amount of phosphorus that is plant available. As part of the Wisconsin's nutrient management plan (NMP) requirements, the accounting of all fertilizers must be included over the NMP cycle. The fertilizer value of the waste needs to be communicated to the farmer and accounted for in the NMP.

5 Schedules

5.1 Temperature Limits (Industrial Facilities)

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

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent temperature with conclusions regarding compliance. If the Department determines that because of data variability, 24 months of monitoring data is required to determine the need for temperature limits, the Department will so notify the permittee in writing and all dates in the permit schedule will be extended by 12 months. Informational Note - Refer to the Surface Water subsection regarding 'Determination of Need for Effluent Limits' for information concerning a Department determination on the need for limits and pursuing re-evaluation of limits per NR 106 Subchapters V & VI or NR 102.26, Wis. Adm. Code.	03/31/2025
Action Plan: Submit an action plan for complying with all effluent temperature limits that remain following the Department's review for necessity.	09/30/2025

Construction Plans: Submit construction plans (if construction is required for complying with effluent temperature limits) and include plans and specifications with the submittal.	12/31/2025
Initiate Actions: Initiate actions identified in the plan.	03/31/2026
Complete Actions: Complete actions necessary to achieve compliance with effluent temperature limits.	03/31/2027

5.2 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.	09/30/2024

5.3 Land Treatment Management Plan

A management plan is required for the land treatment system.

Required Action	Due Date
Land Treatment Management Plan: Submit an update to the management plan to optimize the land treatment system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	03/31/2028

5.4 Pollutant Minimization Program - Land Treatment

Required Action	Due Date
Annual Total Nitrogen Progress Report: Submit an annual progress report that shall discuss which total nitrogen pollutant minimization measures have been implemented during the prior calendar year. The report shall provide an update on the permittee's progress in implementing pollutant minimization measures, operational improvements, and minor facility modifications to optimize reductions in total nitrogen discharges. The report shall include an analysis of trends based on total nitrogen sampling and flow data. The first annual total nitrogen progress report is to be submitted by the Date Due.	01/31/2025
Annual Total Nitrogen Progress Report #2: Submit a total nitrogen progress report as defined above for the previous calendar year.	01/31/2026
Annual Total Nitrogen Progress Report #3: Submit a total nitrogen progress report as defined above for the previous calendar year.	01/31/2027
Annual Total Nitrogen Progress Report #4: Submit a total nitrogen progress report as defined above for the previous calendar year.	01/31/2028
Annual Total Nitrogen Progress Report #5: Submit a total nitrogen progress report as defined above for the previous calendar year.	01/31/2029
Annual Total Nitrogen Progress Reports After Permit Expiration: In the event that this permit is not reissued by the date the permit expires, the permittee shall continue to submit reports for the previous calendar year following the due date of annual total nitrogen progress reports listed above.	

Explanation of Schedules

Temperature Limits (Industrial Facilities) – This schedule allows time for the permittee to investigate thermal compliance, create an action plan, and implement actions to come into compliance with the effluent temperature limits.

Land Application Management Plan – The permittee is required to submit an updated Land Application Management Plan to demonstrate compliance with Wisconsin Administrative Code ch. NR 214. Since an approvable plan does not currently exist, the due date is 180 days following permit reissuance.

Land Treatment Management Plan – The permittee is required to submit an updated Land Treatment Management Plan to demonstrate compliance with Wisconsin Administrative Code ch. NR 214. Since an approvable plan currently exists, the due date is year 4 of the permit to ensure the plan is updated at least once per permit term.

Pollutant Minimization Program - Land Treatment – The permittee has continued to exceed the monthly average limit for Total Nitrogen at Outfall 006 throughout the previous permit term. This schedule is included so that the permittee must investigate and annually report on any pollutant minimization measures to optimize reductions in total nitrogen discharges.

Attachments:

WQBEL Memo: Water Quality-Based Effluent Limitations for the Belgioioso Cheese Inc. Chase WPDES Permit No. WI-0065579-02, dated 12/13/2023, updated 02/08/2024, by Nicole Krueger, Water Resources Engineer

GW Eval: BelGioioso Cheese, Inc. - Land Disposal System Evaluation Report, WPDES Permit # WI-0065579, dated April 21, 2022, modified February 6, 2024, by Woody Myers, Hydrogeologist

Expiration Date:

March 31, 2029

Justification Of Any Waivers From Permit Application Requirements

No waivers from permit application requirements were granted.

Notice of reissuance is published in the Green Bay Press Gazette, PO Box 23430, Green Bay, WI 54305-3430.

Prepared By: Sarah Donoughe, Wastewater Specialist-Adv **Date:** February 8, 2024

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 12/13/2023 – updated 02/08/2024 for BOD_5 limits typo

TO: Sarah Donoughe – NER

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for the Belgioioso Cheese Inc. Chase WPDES Permit No. WI-0065579-02

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 Belgioioso Cheese Inc – Chase in Oconto County. This industrial facility discharges to the unnamed tributary to the North Branch of the Suamico River, located in the Suamico River Watershed in the Green Bay Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 007:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1,2
BOD_5 May – October November – April	 **8.2 mg/L** **16 mg/L**		 5.0 mg/L 10 mg/L	 **5.0 mg/L** **10 mg/L**	3
TSS	**16 mg/L**		10 mg/L	**10 mg/L**	3
pH	9.0 s.u.	6.0 s.u.			1
Dissolved Oxygen		7.0 mg/L			
Oil & Grease	15 mg/L			15 mg/L	1
Ammonia Nitrogen					1,2
Phosphorus					1,2
Temperature					4

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. 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.
4. The following temperature limits are recommended to become effective after a compliance schedule:

	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	51	78
FEB	52	78
MAR	54	79
APR	57	
MAY	67	
JUL	83	

	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
AUG		86
SEP	75	84
OCT	63	
NOV	51	79
DEC	51	78

No WET testing is required because information related to the discharge indicates low to no risk for toxicity.

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

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

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Laura Gerold, Wastewater Engineer – NER
Heidi Schmitt Marquez, Regional Wastewater Supervisor – NER
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Belgioioso Cheese Inc Chase

WPDES Permit No. WI-0065579-02

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Belgioioso Cheese Chase ("Belgioioso" hereafter) currently receives around 1,500,000 pounds of milk per day to produce Italian style cheese. Treated process wastewater is discharged to absorption ponds and eventually to groundwater. Noncontact cooling water (NCCW) discharges to an unnamed tributary to the North Branch of the Suamico River and is currently covered under the NCCW General Permit. The NCCW discharge is switching to an individual permit due to long term operation.

Attachment #2 is a map of the area showing the approximate location of Outfall 007.

Existing Permit Limitations

The current individual permit expires on 12/31/2023. Currently, the noncontact cooling water discharge is covered under the noncontact cooling water general permit, which has the following limits:

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate					1
TSS	40 mg/L			40 mg/L	
pH	9.0 s.u.	6.0 s.u.			2
Phosphorus					1
Oil & Grease	15 mg/L			15 mg/L	2
BOD_5					1
Ammonia Nitrogen					1
Temperature					1

Footnotes:

1. Monitoring only.
2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.

Receiving Water Information

- Name: Unnamed tributary to the North Branch of the Suamico River
- Waterbody Identification Code (WBIC): 5014649
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply. Note: 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-Q_{10} and

7-Q_2 values are estimates where Outfall 001 is located because it is near the headwaters of the tributary.

7-Q_{10} = 0 cfs (cubic feet per second)

7-Q_2 = 0 cfs

- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: Not applicable where the receiving water low flows are zero.
- Source of background concentration data: Background concentrations are not included because they don't impact the calculated WQBEL when the receiving water low flows are equal to zero.
- Multiple dischargers: None.
- Impaired water status: The immediate receiving water is not impaired. Green Bay at the mouth of the Suamico River is impaired for PCBs over ten miles downstream of Outfall 007.

Effluent Information

- Flow rate(s):
  Maximum annual average = 0.168 MGD (Million Gallons per Day)
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Private well.
- Additives: None.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled "MEAN EFFL. CONC.".

The following table presents the average concentrations and loadings at Outfall 007 from 08/01/2022 – 10/31/2023 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits

	Average Measurement
pH field	7.9 s.u.

PART 2 – PFAS

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, 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 – BOD_5 and TSS

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

not available to perform a site-specific model. The "26" value stems from the following equation:

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

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

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

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

Calculations based on Full Assimilative Capacity at 7Q10 Conditions:

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

Where:
Q_{eff} = effluent design flow = 0.168 MGD
DO_{stream} = background dissolved oxygen = 7 mg/L
DO_{std} = dissolved oxygen criteria from s. NR 102.04(4) = 5 mg/L
${}_7Q_{10}$ = 0 cfs
T = Receiving water temperature from s. NR 102.25

Because no dilution is available in the receiving water, the calculated limits would be the lowest that the Department typically gives to facilities. The recommended effluent limitations are 5.0 mg/L as a weekly average from May through October and 10 mg/L November through April (rounded to two significant digits). The Department normally doesn't give BOD_5 mass limits when the stream is effluent dominated. Given that these limitations are the lowest that the Department would typically give to a facility, these limitations shall be considered at those needed to prevent significant lowering of water quality.

The available BOD_5 effluent data is shown in the table below:

Effluent BOD_5 Data

Date	Result mg/L
12/02/2022	2.1
04/04/2023	<2

The available data is less than the calculated limits. Therefore, the **BOD_5 limits of 5.0 mg/L for May – October and 10 mg/L for November – April are recommended as weekly average limits to be effective upon permit reissuance. The recommended effluent dissolved oxygen limitation would be 7.0 mg/L as a daily minimum.**

TSS limitations are primarily given to maintain or improve water clarity and are not water quality based. However, the Department typically does not require TSS limits lower than 10 mg/L. The following table summarizes the available TSS data from the current permit term:

Effluent TSS Data

Date	Result mg/L
09/09/2022	0.60
11/16/2022	1.1
03/15/2023	1.0
05/02/2023	1.2
08/09/2023	1.5

The available data is well below the limit of 10 mg/L. **It's recommended that a monthly average limit of 10 mg/L be effective upon reissuance as a weekly average.**

Expression of limits requirements

Sections NR 106.07(4) and NR 205.067(7), Wis. Adm. Code require WPDES permits contain daily maximum and monthly average limitations for industrial dischargers whenever practicable and necessary to protect water quality. **Therefore, daily max and monthly average limits are required** to meet expression of limits requirements in addition to the weekly average limits.

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:

- A monthly average limitation shall be set equal to the weekly average limit.
- A daily maximum is calculated using the following procedure:

  Daily Maximum Limitation= WQBELc × DMF

  Where:

  DMF = Daily Multiplication Factor as defined in Table 2 of s. NR 106.07(4)(e), Wis. Adm. Code

  CV = coefficient of variation (CV) as calculated in s. NR 106.07(5m), Wis. Adm. Code.

  *A CV of 0.6 is used when there are less than 10 data points

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

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

Expression of Limits Summary

Parameter	Daily Maximum	Weekly Average	Monthly Average	Multiplication Factor (CV)
BOD_5 May – September October – April	 **8.2 mg/L** **16 mg/L**	 5.0 mg/L 10 mg/L	 **5.0 mg/L** **10 mg/L**	1.639 (0.6)
TSS	**16 mg/L**	10 mg/L	**10 mg/L**	1.639 (0.6)

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

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that Belgioioso does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

Ammonia Nitrogen Effluent Data

Sample Date	Ammonia Nitrogen mg/L
12/02/2022	0.31
04/04/2023	<0.14

These concentrations are low, and well below any of the water quality-based effluent limits based on the applicable acute and chronic criteria for the receiving water. Therefore, **no water quality-based effluent limits are recommended in the reissued permit. Monitoring is recommended to continue in the reissued permit.**

PART 5 – PHOSPHORUS

Technology-Based Effluent Limit
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industrial facilities that discharge greater than 60 pounds of Total Phosphorus per month to comply with a rolling 12-month average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Belgioioso does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 60 lbs/month, which is the threshold for industrial facilities in accordance to s. NR 217.04(1)(a)2, Wis. Adm. Code, and therefore no technology-based limit is required.

Effluent Phosphorus Data

Date	Result mg/L
12/02/2022	<0.05
04/04/2023	<0.5

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.

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a),

Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.075 mg/L applies for the unnamed tributary.

The conservation of mass equation is described in s. NR 217.13(2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs) provided below.

$$\text{Limitation} = [(WQC)(Qs+(1-f)\ Qe) - (Qs-f\ Qe)\ (Cs)]/Qe$$

Where:

WQC = 0.075 mg/L for the unnamed tributary.
Qs = 100% of the 7-Q_2 of 0 cfs
Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code
Qe = effluent flow rate = 0.168 MGD = 0.259 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

The effluent limit is set equal to criteria because the receiving water flow is equal to zero.

Effluent Data
The following table summarizes effluent total phosphorus monitoring data from the current permit term.

Effluent Phosphorus Data

Date	Result mg/L
12/02/2022	<0.05
04/04/2023	<0.5

Reasonable Potential Determination
There is very limited data and both samples were reported as nondetect. **Monitoring is recommended in the reissued permit to determine reasonable potential to cause or contribute to an exceedance of the water quality criteria.** The sample from 04/04/2023 had an LOD of 0.5 mg/L which is greater than the WQBEL of 0.075 mg/L. **A more stringent LOD (0.075 mg/L) is recommended to be used so that it can be determined if water quality is being met or not.**

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. Because the receiving water flow is

0 cfs, the calculated limits are equal to the acute and sub-lethal criteria.

A heat loss equation is used to adjust the calculated limit based upon the length of the storm sewer/storm water conveyance channel before discharge to waters of the state, because the discharge is to a storm sewer. The discharge from permit Outfall 007 travels through about 990 feet of storm sewer/storm water conveyance channel before reaching the unnamed tributary. Under s. NR 106.55(5), Wis. Adm. Code, the default cooling rate is estimated as 1º F for every 400 feet of storm sewer/storm water conveyance channel. The adjusted limits are shown in the table.

The table below summarizes the maximum temperatures reported during monitoring from 08/01/2022 – 10/31/2023.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	82	82	**51**	**78**
FEB	87	87	**52**	**78**
MAR	83	83	**54**	**79**
APR	77	77	**57**	81
MAY	82	82	**67**	84
JUN	55	55	78	86
JUL	84	84	**83**	87
AUG	80	87	83	**86**
SEP	81	89	**75**	**84**
OCT	82	82	**63**	82
NOV	83	83	**51**	**79**
DEC	82	82	**51**	**78**

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, **daily maximum temperature limits are needed for the months of January, February, March, August, September, November, and December and weekly average temperature maximum limits are necessary for the months of January, February, March, April, May, July, September, October, November, and December.**

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.

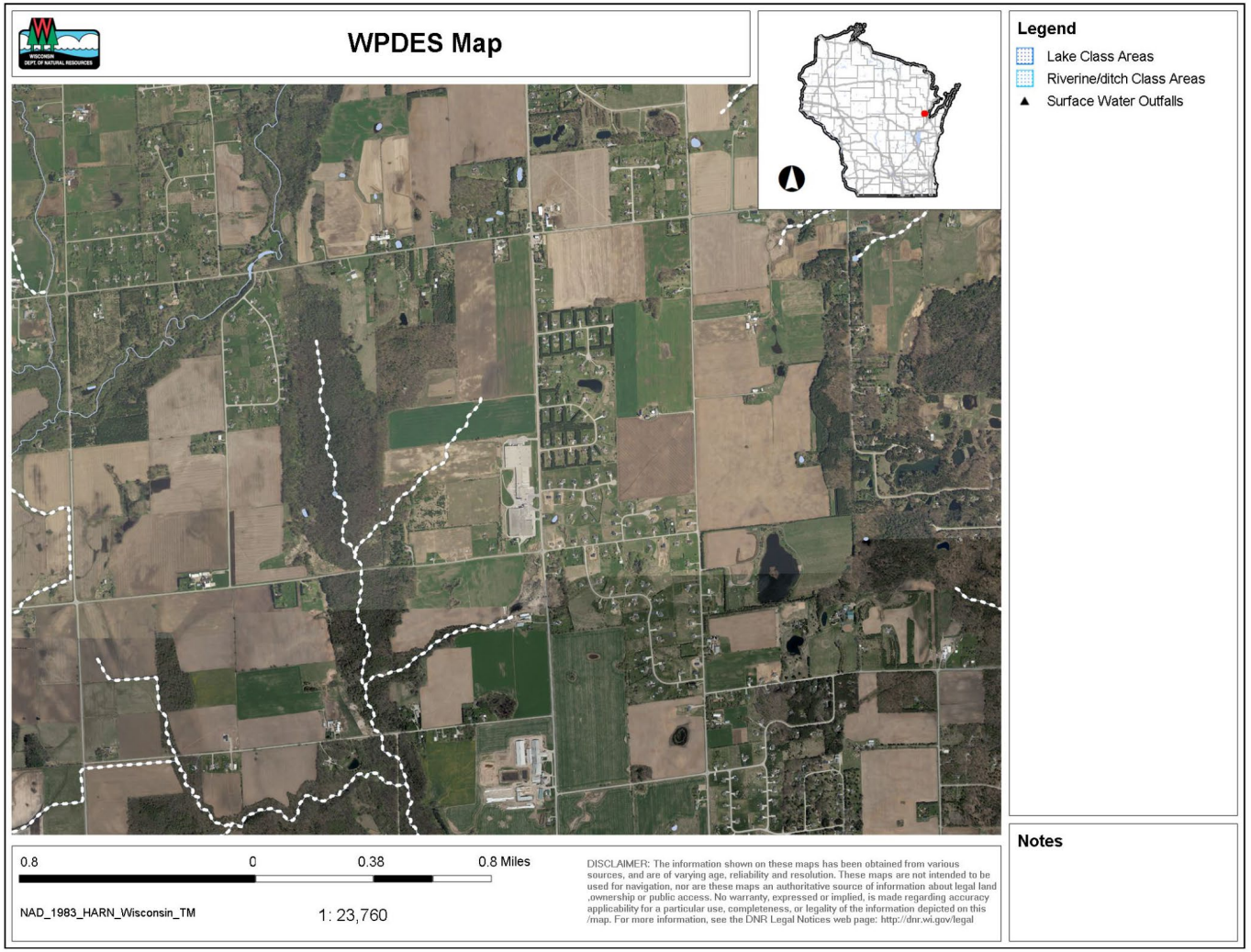
These options are explained in additional detail in the August 15, 2013 Department *Guidance for Implementation of Wisconsin's Thermal Water Quality Standards* http://dnr.wi.gov/topic/surfacewater/documents/ThermalGuidance2edition8152013.pdf

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).*

Outfall 007 is comprised of noncontact cooling water from private wells and toxic compounds are not expected at levels of concern. Since there is believed to be a very low risk of toxicity, **WET testing is not recommended during the reissued permit term.**

Attachment #2



Attachment #3

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

						Temp Dates	Flow Dates
Facility:	Belgioioso Cheese Inc Chase		**7-Q10:**	0.00	cfs		
Outfall(s):	007		**Dilution:**	25%	**Start:**	######	09/09/22
Date Prepared:	11/28/2023		**f:**	0	**End:**	######	08/09/23
Design Flow (Qe):	0.17	MGD	**Stream type:**	Small warm water sport or forage fish com			
Storm Sewer Dist.	990	ft	**Qs:Qe ratio:**	0.0	:1		
			Calculation Needed?	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs)	Representative Highest Effluent Flow Rate (Qe)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit		**Adjusted Thermal Limits**	
	Ta (default)	Sub-Lethal WQC	Acute WQC		7-day Rolling Average (Qesl)	Daily Maximum Flow Rate (Qea)		Weekly Average	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation	**Weekly Average**	**Daily Maximum**
	(°F)	(°F)	(°F)	(cfs)	(MGD)	(MGD)		(°F)	(°F)	(°F)	(°F)	(°F)	(°F)
JAN	33	49	76	0.00	0.168	0.168	0	82	82	**49**	**76**	**51**	**78**
FEB	34	50	76	0.00	0.168	0.168	0	87	87	**50**	**76**	**52**	**78**
MAR	38	52	77	0.00	0.168	0.168	0	83	83	**52**	**77**	**54**	**79**
APR	48	55	79	0.00	0.168	0.168	0	77	77	**55**	79	**57**	81
MAY	58	65	82	0.00	0.168	0.168	0	82	82	**65**	**82**	**67**	84
JUN	66	76	84	0.00	0.168	0.168	0	55	55	76	84	78	86
JUL	69	81	85	0.00	0.168	0.168	0	84	84	**81**	85	**83**	87
AUG	67	81	84	0.00	0.168	0.168	0	80	87	81	**84**	83	**86**
SEP	60	73	82	0.00	0.168	0.168	0	81	89	**73**	**82**	**75**	**84**
OCT	50	61	80	0.00	0.168	0.168	0	82	82	**61**	**80**	**63**	82
NOV	40	49	77	0.00	0.168	0.168	0	83	83	**49**	**77**	**51**	**79**
DEC	35	49	76	0.00	0.168	0.168	0	82	82	**49**	**76**	**51**	**78**

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: April 21, 2022 Modified February 6, 2024 FILE REF: 3400

TO: File

FROM: Woody Myers - WCR

SUBJECT: BelGioioso Cheese, Inc. - Land Disposal System Evaluation Report, WPDES Permit # WI-0065579

Land Treatment Effluent & Groundwater Evaluation Summary

Table 1 Land Treatment Effluent Parameters and Limits

Parameter	Proposed Permit WI-0065579-01-1	
	Limits and Units	Limit Type
Flow Rate	- MGD	
BOD_5	50 mg/l	Monthly Avg
Nitrite + Nitrate as N	- mg/l	
Kjeldahl Nitrogen	- mg/l	
Ammonia	- mg/l	
Organic Nitrogen	- mg/l	
Total Nitrogen	10 mg/l	Monthly Avg
Chloride	250 mg/l	Monthly Avg
Total Dissolved Solids	*900 mg/l	Monthly Avg
pH, Field	- su	

* Modified 2/6/2024

These recommendations are based on evaluation of groundwater compliance and should not replace the needs for up-stream treatment evaluation. Limits for BOD5, Total Nitrogen, Chloride and Total Dissolved Solids were derived from s. NR 206.05 Wis. Adm. Code. While this facility is not a municipal discharger I the limits are consistent with other facilities under s. NR 214.12 (3) (a) Wis. Adm. Code.

Table 2 Monitoring Wells

Well	Proposed Permit WI-0065579-01-1	
	Well Location	Well Designation
801 MW-1	Down/side-gradient	Non-Point of Standard
802 MW-2	Down/side-gradient	Non-Point of Standard
803 MW-3	Up-gradient	Background
*804 MW-4	Down-gradient	Point of Standard

* Modified 2/6/2024

Table 3 Groundwater Standards

Parameter	Proposed Permit WI-0065579-01-1	
	PAL	ES
Depth to Groundwater	N/A	N/A
Groundwater Elevation	N/A	N/A
Nitrogen, Nitrite + Nitrate	2.0 mg/l	10.0 mg/l
Nitrogen Total Kjeldahl	N/A	N/A
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l
Nitrogen, Organic	N/A	N/A
Chloride	125 mg/l	250 mg/l
Total Dissolved Solids	N/A	N/A

Site Information

BelGioioso Cheese is an industrial facility and is located at 7700 N Brown County Line Road, Chase, Oconto County. Wastewater is currently treated and will be discharged to groundwater via absorption ponds (seepage cells) located in the SE ¼ of the SE ¼ of Section 35, T26N, R19E, Town of Chase.

Geology

The bedrock under this facility is the Sinnipee Group. This group includes the Galena, Decorah and Platteville formations. The Sinnipee is comprised of dolomite with the exception of the Decorah Formation which is comprised of shale (*Bedrock Geologic Map of Wisconsin*, Wisconsin Geological and Natural History Survey (WGNHS), 1982). Bedrock is anticipated to be between 50 and 100 feet below ground surface (bgs) (*Depth to Bedrock in Wisconsin,* WGNHS, 1973). The regolith is assumed to consist of material ranging from sand to silt. Surface soil primarily consists of the Onaway-Ossineke sandy loam (USDA Web Soil Survey).

Hydrogeology

Calculated groundwater elevation ranges between 758 and 762 feet above mean sea level (msl). Depth to groundwater was reported to be between 7 and 13 feet bgs. Groundwater flow direction was calculated to the north based on one set of groundwater elevations. Regional groundwater is to the southeast in this area of Oconto County (*Mean Elevation of Water Table*, Map United States Geological Survey, 1968). The site is approximately 1,200 feet southeast of an un-named creek. A review of known wells was performed as a part of this evaluation. These wells include municipal, other than municipal, private and high-capacity wells. There are 27 wells within a 1,500-foot range of this facility's groundwater discharge.

Hydraulic and Nitrogen Loading Rates

Outfall 006 is the discharge associated with the groundwater monitoring network.

Table 4 Sampling Points/Outfalls

Sampling Point (Outfall) Listed in SWAMP		
Number	Outfall Type	Description
Outfall 004	Land Application	Process WW and sludge
Outfall 005	Surface Water	Trdt Proc WW, COW & NCCW
*Outfall 006	Land Treatment	Absorption ponds

* New outfall to replace 005.

Table 6 Groundwater Monitoring Well Data

Sample Point	Well Name	Elevation (feet above msl)					Well Type
		Casing Top	Ground Surface	Screen Top	Screen Bottom	Screen Length	
801	MW-1	766.70	763.8	753.2	743.2	10.0	WT
802	MW-2	770.90	768.3	757.9	747.9	10.0	WT
803	MW-3	770.75	768.2	757.8	747.8	10.0	WT

All measurements in feet
WT-Water table Observation P-Piezometer O-Other

Established groundwater quality standards are found in s. NR140. 10 Table 1 Public Health Groundwater Quality Standards, and NR140.12 Table 2 Public Welfare Groundwater Standards. The thresholds of these standards are the Enforcement Standard (ES) and the PAL.

Proposed Groundwater Monitoring Requirements

The groundwater monitoring wells should be sampled at the frequency for the parameters in the table below. No groundwater limits were calculated as a part of this groundwater evaluation. The groundwater monitoring wells do not meet the criteria to be designated as Point of Standards Application wells per s. NR140.22, Wis. Adm. Code. Parameters are analyzed for the aqueous or dissolved phase in groundwater.

Table 7 Well Sampling Recommendations

Well Name	Sample Point	Sample Frequency	Sample Parameters	Well Designation
801	MW-1	Quarterly	Table 8	Non-Point of Standards
802	MW-2	Quarterly	Table 8	Non-Point of Standards
803	MW-3	Quarterly	Table 8	Background

Table 8 Proposed Groundwater Standards –Permit WI-0065579-01-1

Parameter	PAL	ES	Source
Depth to Groundwater	N/A	N/A	Measured
Groundwater Elevation	N/A	N/A	Measured
Nitrogen, Nitrite + Nitrate	2.0 mg/l	10.0 mg/l	Table 1, NR140
Nitrogen, Total Kjeldahl	N/A	N/A	Measured
Nitrogen, Ammonia	0.97 mg/l	9.7 mg/l	Table 1, NR 140
Nitrogen, Organic	2.4 mg/l	N/A	Calculated
Chloride	125 mg/l	250 mg/l	Table 2, NR 140
Total Dissolved Solids	820 mg/l	N/A	Calculated

Conclusions

The groundwater monitoring results will be reviewed prior to the next permit reissuance after the absorption ponds have been put into production. Based on these results the sampling frequency, sampling parameters and PALs and ACLs will be evaluated.

Based on the preliminary data the wells appear to be located adequately.

Overall, the facility is found to be substantially compliant with respect to groundwater quality.

Compliance Schedule Recommendations

The facility should develop a land treatment management plan to be submitted to the department for review. This can be done the first year of the next permit.

Boring logs from the groundwater monitoring well installation need to be submitted to the department.