Permit Fact Sheet for Modification

General Information

Permit Number:	WI-0031372-09-1 *Modification items are highlighted and go into effect January 1, 2025.	
Permittee Name:	Village of Cascade	
Address:	P O Box 157 301 First Street	
City/State/Zip:	Cascade, WI 53011	
Discharge Location:	East bank of the Milwaukee River, approximately 380 feet south of the Milwaukee Avenue bridge (Lat: 43.65619°N Long: -88.00615°W)	
Receiving Water:	Milwaukee River (North Branch Milwaukee River Watershed, Milwaukee River Basin) in Sheboygan County	
StreamFlow ($Q_{7,10}$):	2.2 cfs	
Stream Classification:	Warm water sport fish community, non-public water supply.	
Design Flow(s)	Daily Maximum	0.195 MGD
	Weekly Maximum	N/A
	Monthly Maximum	0.156 MGD
	Annual Average	0.13 MGD
Significant Industrial Loading?	No, however, Cascade Cheese Co. and Quality Cut Meats discharge to the collection system and are considered potentially toxic discharges.	
Operator at Proper Grade?	Yes, Lon Schneider is the OIC is certified in all plant subclasses. Cascade is a Basic facility in subclasses A2, A4, P, D and SS.	
Approved Pretreatment Program?	N/A	

Description of Modification

The modification revises the schedule, 'Total Suspended Solids – TMDL Derived WQBELs for TSS sample point 001 (effluent)'. The date to achieve final TSS limits remains unchanged as September 30, 2026. The revised schedule allows additional time for the Village of Cascade to coordinate with Cascade Cheese Company before submitting final plans and specifications for treatment plant upgrades. In addition, the monthly TMDL-based limits for TSS have been removed from the monitoring grid for Outfall 001 with their inclusion retained in Section 2.2.1.2 of the permit. The modification will go into effect January 1, 2025, and the permit's expiration date will remain September 30, 2026.

Facility Description

The Village of Cascade operates a 0.13 million gallons per day (MGD) annual average design flow wastewater treatment facility that serves an estimated population of 900 people from the Village of Cascade and the Lyndon Sanitary District #1, and two small businesses Cascade Cheese Co. and Quality Cut Meats. The facility was upgraded in 2010, when it was converted to a single lagoon "Lemna" system that is composed of a complete mix cell, a partial mix cell and a settling

cell. From the settling cell the wastewater flows to a Lemna polishing reactor and then to ultraviolet disinfection before being discharged to the North Branch Milwaukee River in Sheboygan County. Solids are pumped back to the head of the plant as return flow. Accumulated sludge is planned to be removed from the lagoon during the proposed permit term. The facility was found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	Flow 0.08 MGD; TSS 349.56 mg/L; BOD_5 410.75 mg/L (all April 2016 through June 2020 avg)	INFLUENT: 24-hour flow proportional composite samples shall be collected from the main lift station wetwell.
001	Flow 0.09 MGD; TSS 24.51 mg/L; BOD_5 8.95 mg/L (all April 2016 through April 2020 avg)	EFFLUENT: 24-hour flow proportional composite samples shall be collected from the inlet to the UV channel. Grab samples shall be collected from the end of the UV channel.
002	N/A	Sludge sample shall be a composite sample consisting of a minimum of 7 individual grab samples in an evenly spaced grid pattern, collected from the settling cell of the Lemna treatment pond.

1 Influent - Proposed Monitoring

1.1 Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
BOD_5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	Monitoring November through April.
$CBOD_5$		mg/L	3/Week	24-Hr Flow Prop Comp	Monitoring May through October.
Phosphorus, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

1.1.1 Changes from Previous Permit:

Monitoring frequency for influent BOD5, total suspended solids, and total phosphorus was increased from twice per week to three times per week.

CBOD5 influent monitoring three times per week was added to the proposed permit.

1.1.2 Explanation of Limits and Monitoring Requirements

Tracking of BOD_5, $CBOD_5$, and total suspended solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the standard requirements section of the permit.

The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Based the facility's industrial contributors, variability of influent, history of WET testing failures, and instances of noncompliance, influent monitoring was increased to the frequency recommended by guidance. 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.

2 Surface Water - Proposed Monitoring and Limitations

2.1 Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD_5, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November through April.
BOD_5, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November through April.
$CBOD_5$	Weekly Avg	40 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May through October.
$CBOD_5$	Monthly Avg	25 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May through October.
Suspended Solids, Total	Weekly Avg	60 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective year-round through the permit term as a minimum control level. Final TMDL-derived water quality-based limits are listed in the 'Total Maximum Daily Load (TMDL) Limitations' section and go into effect on October 1, 2026.
Suspended Solids, Total	Monthly Avg	60 mg/L	3/Week	24-Hr Flow Prop Comp	Effective as an interim limit in August and a minimum control level September through July. Final TMDL-derived water quality-based limits are listed in the 'Total Maximum Daily Load (TMDL) Limitations' section and go into effect

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					on October 1, 2026.
Suspended Solids, Total		lbs/day	3/Week	Calculated	Final TMDL-derived water quality-based limits are listed in the 'Total Maximum Daily Load (TMDL) Limitations' section and go into effect on October 1, 2026
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
Fecal Coliform	Geometric Mean - Monthly	400 #/100 ml	Weekly	Grab	Interim limit effective May through September annually until the final E. coli limit goes into effect per the Effluent Limitations for E. coli schedule.
E. coli		#/100 ml	Weekly	Grab	Monitoring only May through September annually until the final E. coli limit goes into effect per the Effluent Limitations for E. coli schedule.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit effective May through September annually per the Effluent Limitations for E. coli schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May through September annually per the Effluent Limitations for E. coli schedule. See the E. coli Percent Limit Section in permit. Enter the result in the DMR on the last day of the month.
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	Calculated	Report the calculated variable Ammonia limit on the DMR year-round. See Maximum Ammonia limits table in section 2.2.1.4 of

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					the permit.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	3/Week	24-Hr Flow Prop Comp	Report Ammonia effluent value on the DMR. Year-round.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	37 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November through March.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	21 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective in April.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	42 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May through September.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	27 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective in October.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	22 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November through March.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective in April.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	28 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May through September.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	17 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective in October.
Chloride		mg/L	Quarterly	24-Hr Flow Prop Comp	
Temperature Maximum		deg F	3/Week	Measure	Monitor during calendar year 2024. See 'Effluent Temperature Monitoring' section in permit.
Phosphorus, Total	Monthly Avg	3.8 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim MDV limit effective through March 31, 2025. See the MDV/Phosphorus sections and phosphorus schedules.
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/week	24-Hr Flow Prop Comp	This is an interim MDV limit effective on April 1, 2025. See the MDV/Phosphorus sections and phosphorus schedules.
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly phosphorus discharged in lbs/month on the last day of

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					the month on the DMR. See Standard Requirements for 'Appropriate Formulas' to calculate the Total Monthly Discharge in lbs/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 report form.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section in permit.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section in permit.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section in permit. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET	Daily Max	1.0 TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See 'WET Testing' section in permit.
Chronic WET	Monthly Avg	3.7 TUc	Quarterly	24-Hr Flow Prop Comp	See 'WET Testing' and schedules sections in permit.

2.1.1 Changes from Previous Permit

Total BOD_5 and $CBOD_5$: Monitoring frequency was increased from weekly to 3 times per week.

Total Suspended Solids: The monthly average limit of 60 mg/L was decreased to 12 mg/L for the month of August. The new final TMDL-derived water quality-based effluent limits were added to the proposed permit and are listed in section 2.2.1.2 of the permit. Monitoring frequency was increased from weekly to 3 times per week.

Fecal Coliform and E. coli: Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits. E. coli monitoring is required at the permit effective date. An interim fecal coliform limit of 400 #/100ml as a monthly geometric mean will apply from the permit effective date through the end of a schedule. At the end

of the schedule, E. coli limits of 126 #/100ml as a monthly geometric mean that may never be exceeded and 410 #/100 ml as a daily maximum that may not be exceeded more than 10 percent of the time in any calendar month will apply.

Ammonia Nitrogen: The weekly average limit for the month of April was decreased from 23 mg/L to 21 mg/L. Weekly average limits of 42 mg/L (May through September) and 27 mg/L (October) were added to the proposed permit. The monthly average limit for the month of April was decreased from 14 mg/L to 13 mg/L and the monthly average limit for the month of October was decreased from 18 mg/L to 17 mg/L. A monthly average limit of 28 mg/L during the months of May through September was added to the proposed permit.

Temperature: One year of continuous temperature monitoring was added to the proposed permit during calendar year 2024.

Phosphorus MDV: The new final TMDL-derived water quality-based effluent limits were added to the proposed permit and are listed in section 2.2.1.2 of the permit. The limits were to become effective during this permit term, however, the permittee has applied for a multi-discharger variance (MDV) for phosphorus and the application has been approved by the Department. An MDV interim limit of 3.8 mg/L has been added that goes into effect per a schedule. The permittee is now 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 $54.99 per pound of phosphorus discharged during the previous year in excess of the target value of 0.2 mg/L.

Total Nitrogen Monitoring (TKN, N02+N03 and Total N): Annual monitoring in rotating quarters throughout the permit term was added to the proposed permit.

Copper: The 1-day P_{99} of 17.4 mg/L is significantly less than the calculated water quality-based limit of 90.8 mg/L, therefore no water quality based effluent limits are included, and monitoring is discontinued in the proposed permit.

WET: Annual monitoring with an acute WET limit of 1.0 TUa was added to the proposed permit and becomes effective upon permit reissuance. Quarterly monitoring with a chronic WET limit of 3.7 TUc upon completion of a Toxicity Reduction Evaluation (TRE) per the schedule in section 4.6 of the permit was added to the proposed permit.

2.1.2 Explanation of Limits and Monitoring Requirements

Categorical Limits

Total $CBOD_5$, BOD_5, Total Suspended Solids, and pH: Standard municipal wastewater requirements for $CBOD_5$, BOD_5, suspended solids, and pH are included based on ch. NR 210, Wis. Adm. Code 'Sewage Treatment Works' requirements for discharges to fish and aquatic life streams. Chapter NR 102, Wis. Adm. Code 'Water Quality Standards for Surface Waters' also specifies requirements for pH for fish and aquatic life streams.

Water Quality Based Limits, WET Requirements, and Disinfection

Refer to the "Water Quality-Based Effluent Limitations for the Village of Cascade", prepared by Nicole Krueger, dated December 14, 2020 (updated June 21, 2021) and used for this reissuance.

- **Monitoring Frequency:** The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Based the facility's industrial contributors, variability of effluent, history of WET testing failures, and instances of noncompliance, effluent monitoring for total BOD_5, $CBOD_5$, and total suspended solids was increased to the frequency recommended by guidance. 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.
- **Total Suspended Solids:** The December 14, 2020 (updated June 21, 2021) "Water-Quality Based Effluent Limitations for the Village of Cascade" memo presents recommendations for total suspended solids WQBELs

derived from the Waste Load Allocations (WLAs) for the Cascade WWTF in the approved Total Maximum Daily Load (TMDL) for Total Phosphorus, Total Suspended Solids, and Fecal Coliforms for the Milwaukee River Basin, was approved by US EPA in March 2018. Those water quality-based effluent limits for TSS, based upon the WLAs for Cascade are shown in the table below. TMDL TSS WLAs become effect on October 1, 2026 per the schedule in section 4.2 of the permit.

Month	Monthly Ave TSS Effluent Limit (lbs/day)	Monthly Ave TSS Effluent Limit (mg/L)	Weekly Ave TSS Effluent Limit (lbs/day)
Jan	21.2		34.7
Feb	18.1		29.7
Mar	19.8		32.5
Apr	15.9		26.1
May	28.3		46.4
Jun	22.4		36.7
Jul	20.2		33.1
Aug		12	21.0
Sep	18.4		30.2
Oct	18.7		30.7
Nov	35.9		58.8
Dec	23.0		37.8

- **E. coli:** Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying E. coli WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for E. coli while facilities are disinfecting during the recreation period and establish effluent limitations for E. coli established in s. NR 210.06 (2), Wis. Adm. Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to E. coli to protect recreation in ch. NR 102, Wis. Adm. Code; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code; and updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.
- **Ammonia Nitrogen:** Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Table 2C and Table 4B of ch. NR 105, Wis. Adm. Code (effective March 1, 2004). Subchapter IV of ch. NR 106 establishes procedures for calculating water quality-based effluent limitations (WQBELs) for ammonia (effective March 1, 2004).

  Regulatory changes to s. NR 205.065, Wis. Adm. Code, became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. Therefore, weekly average limits of 27 mg/L (October) and 42 mg/L (May-September) and a monthly average limit of 28 mg/L (May-September) were added to the proposed permit.

  Monthly average limits for the months of October and April were decreased because the average ambient pH values have increased since limits were last calculated.

A daily maximum variable ammonia limit is continued in the proposed permit. See the table below for a pH variable daily maximum ammonia limit:

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

- **Chloride:** Chloride effluent concentrations during the current permit term were below the calculated WQBELs for chloride, so no effluent limits are included in the proposed permit. Quarterly chloride monitoring for the length of the permit term is included for use during the next permit reissuance.
- **Temperature:** New surface water quality standards for temperature took effect on October 1, 2010. These new 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. Based on the available effluent data, no effluent limits are recommended for temperature. However, a full year of monitoring during calendar year 2024 is included to ensure sufficient data is available for subsequent permit reissuance.
- **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 December 14, 2020 (updated June 21, 2021) "Water-Quality Based Effluent Limitations for the Village of Cascade" memo presents recommendations for total phosphorus WQBELs derived from the Waste Load Allocations (WLAs) for the Cascade WWTF in the approved Total Maximum Daily Load (TMDL) for Total Phosphorus, Total Suspended Solids, and Fecal Coliforms for the Milwaukee River Basin, was approved by US EPA in March 2018. The final TMDL-derived WQBELs for phosphorus 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 February 6, 2017 until February 5, 2027. 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.

  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 of 0.2 mg/L. The "price per pound" value is $50.00 adjusted for CPI annually during the first quarter 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 uses these payments to implement non-point source (agricultural and urban) phosphorus control strategies at the watershed level.

- **Nitrogen Series Monitoring:** The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under s. 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the "Guidance for Total Nitrogen Monitoring in Wastewater Permits" dated October 1, 2019. Tests are scheduled in the following rotating quarters: October-December 2021, April-June 2022, July-September 2023, January-March 2024, October-December 2025
- **WET Testing:** Whole effluent toxicity (WET) testing requirements 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). Because the facility's effluent exhibited routine toxicity in both acute and chronic WET tests, an acute limit of 1.0 TUa and a chronic limit of 3.7 TUc are included in the proposed permit. The acute limit of 1.0 TUa and annual monitoring become effective upon permit reissuance. A Toxicity Reduction Evaluation (TRE) is required to be completed to find and remove the source of the toxicity and achieve compliance with the chronic WET limit per the schedule in section 4.6 of the permit. Quarterly monitoring and the chronic WET limit become effective after completion of the TRE and associated schedule.

3 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description	
Sample Point	
002	Sludge sample shall be a composite sample consisting of a minimum of 7 individual grab samples in an evenly spaced grid pattern, collected from the settling cell of the Lemna treatment pond.
Does sludge management demonstrate compliance? **Yes**	
Is additional sludge storage required? **No**	
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No**	
Is a priority pollutant scan required? **No**	

3.1 Sample Point Number: 002- LAGOON SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
PCB Total Dry Wt		mg/kg	Once	Composite	

3.1.1 Changes from Previous Permit:

No changes from previous permit.

3.1.2 Explanation of Limits and Monitoring Requirements

Requirements for municipal sludge are determined in accordance with ch. NR 204, Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Monitoring frequencies are in accordance with s. NR 204.06(2), Wis. Adm. Code. Monitoring for all parameters is required once during the permit term in 2019. The permittee shall notify the Department at least 6 months prior to desludging.

4 Schedules

4.1 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification

Required Action	Due Date
Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	11/21/2021

Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than **April 30, 2023**. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than April 30, 2023. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by **April 30, 2023** and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule ('Submit Facility Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', 'Construction Upgrade Progress Report', 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than **April 30, 2026**.	10/31/2022
Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2023
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final E. coli limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2024
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2024
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2025
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2026
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2026

4.1.1 Explanation of Schedule

A schedule is included in the permit to provide time for the permittee to investigate options for meeting new effluent E. coli water quality-based effluent limits while coming into compliance with the limits as soon as reasonably possible.

4.2 Total Suspended Solids – TMDL Derived WQBELs for TSS

The permittee shall comply with the TMDL (Total Maximum Daily Load) derived WQBELs (Water Quality Based Effluent Limits) for TSS as specified.

Required Action	Due Date
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final TSS WQBELs, the submittal shall include a preliminary engineering design report.	09/30/2022
Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final TSS WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110.	09/30/2023
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications.	03/31/2024
Progress Report on Plans & Specifications #2: Submit progress report regarding the progress of preparing final plans and specifications.	12/31/2024
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Water Quality Trading measures the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final TSS WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance is subject to s. 283.53(2) Stats.)	03/31/2025
Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	09/30/2025
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	03/31/2026
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	06/30/2026
Achieve Compliance: The permittee shall achieve compliance with final TSS WQBELs.	09/30/2026

4.2.1 Explanation of Schedule

Per the WQBEL memo, dated December 14, 2020 (updated June 21, 2021), the facility is unable to meet new TMDL mass-based limits for TSS upon permit reissuance. Subsection NR 106.117, Wis. Adm. Code, allows the department to provide a schedule of compliance for TMDL-based TSS limits where the permittee cannot immediately achieve compliance. This schedule is included to provide time for the permittee to complete actions needed to complete sludge

removal from the Lemna treatment pond, assess plant performance, and evaluate additional options for TSS removal. The schedule provides 5 years from the proposed permit effective date to achieve compliance with the final TMDL-derived TSS limits but requires that the permittee comply with final TMDL-derived TSS limits as soon as reasonably possible.

4.3 Phosphorus Schedule – Optimization Plan

The permittee is required to optimize performance to control phosphorus discharges per the following schedule.

Required Action	Due Date
Optimization Plan: The permittee shall prepare an Optimization Plan and submit it for Department approval. The plan shall include an evaluation of collected effluent data, possible source reduction measures and operational improvements to optimize performance to control phosphorus discharges. The plan shall contain a schedule for implementation of the measures and improvements. Once the plan is approved by the Department, the permittee shall take the steps called for in the Optimization Plan and follow the schedule of implementation as approved.	09/30/2022
Progress Report #1: Submit a progress report on optimizing removal of phosphorus.	09/30/2023
Progress Report #2: Submit a progress report on optimizing removal of phosphorus.	09/30/2024
Progress Report #3: Submit a progress report on optimizing removal of phosphorus.	09/30/2025
Progress Report #4 Submit a progress report on optimizing removal of phosphorus.	09/30/2026

4.3.1 Explanation of Schedule

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 multi-discharger variance interim limits. This compliance schedule requires the permittee to prepare an optimization plan with a schedule for implementation and submit it for Department approval. The permittee shall take the steps called for in the optimization plan and submit annual progress reports on optimizing the removal of phosphorus.

4.4 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 ($54.99 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 0.2 mg/L as defined by s. 283.16(1)(h), Wis. Stats. The "per pound" value is $50.00 adjusted for CPI.	03/01/2022
Annual Verification of Payment #2: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2023

Annual Verification of Payment #3: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2024
Annual Verification of Payment #4: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2025
Annual Verification of Payment #5: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2026
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.	

4.4.1 Explanation of Schedule

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 non-point 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 the 0.2 mg/L target value. The pounds of phosphorus discharged in excess of the target value is multiplied by a per pound phosphorus charge that will equal $54.99 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).

4.5 Phosphorus Multi-Discharger Variance Interim Limit (1.0 mg/L)

The permittee shall comply with the 1.0 mg/L MDV interim effluent limit by the end of this compliance schedule.

Required Action	Due Date
Submit Final Compliance Plan: The permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code.	03/31/2022
Submit Plans & Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Wis. Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with the interim phosphorus effluent limit and a schedule for completing construction of the upgrades by the 'Complete Construction' date specified below.	06/30/2022
Treatment Plant Upgrade: Upon approval of the final construction plans and schedule by the Department and pursuant to s. 281.41, Wis. Stats., the permittee shall initiate construction of the treatment plant upgrades in accordance with the approved plans and specifications.	03/31/2023
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	03/31/2024
Complete Construction and Achieve Compliance: The permittee shall complete construction and achieve compliance with the phosphorus interim effluent limit of 1.0 mg/L.	03/31/2025

4.5.1 Explanation of Schedule

Subsection 283.16(6), Wis. Stats., establishes required interim phosphorus effluent limits that must be met for multi-discharger variance (MDV) eligibility. Subsection 283.16 (6) (am), Wis. Stats., allows a technology based phosphorus limit of 1.0 mg/L as the MDV interim limit if a permittee certifies that its treatment facility cannot achieve compliance with the MDV interim limit without a major facility upgrade. The permittee qualifies for a 1.0 mg/L total phosphorus MDV interim limit and the schedule above provides the permittee with four years to comply with that limit.

4.6 Whole Effluent Toxicity Limit

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

Required Action	Due Date
Toxicity Reduction Evaluation - Update: Update the Toxicity Reduction Evaluation (TRE) plan describing procedures to be used to identify the source(s) responsible for the effluent toxicity.	03/31/2022
TRE Plan Implementation: Implement the TRE plan, make a reasonable attempt to identify the source(s) of the toxicity, and submit a report to the Department presenting the results of the evaluation.	09/30/2022
Progress Report: Submit a progress report identifying the actions taken to date to implement the TRE plan.	09/30/2023
Complete Actions: Complete all actions identified in the TRE Plan and achieve compliance with the chronic effluent toxicity limitations.	03/31/2024

4.6.1 Explanation of Schedule

Because the effluent exhibited routine toxicity in chronic WET tests, WET limits are required per s. NR 106.08, Wis. Adm. Code. This schedule allows the permittee time to complete a full toxicity reduction evaluation, including time to investigate the source(s) of toxicity and to choose the best method for removing toxicity after the source has been identified.

4.7 Lagoon Desludging Management Plan

Required Action	Due Date
Lagoon Desludging Management Plan Submittal: Submit a plan to the Department for removal and/or land application of lagoon sludge. If applicable, the permittee shall submit a Land Application Management Plan for approval per Wisconsin Administrative Code NR 204.11. If the chosen option involves landspreading, the permittee shall submit land application sites for approval at least 60 days prior to commencement of landspreading activities.	03/31/2022
Initiate Actions: Initiate removal of sludge from the lagoon system.	06/30/2022
Complete Actions: Complete removal of sludge from the lagoon system and submit a final report detailing the conclusion of the project.	09/30/2022

4.7.1 Explanation of Schedule

The permittee did not complete de-sludging of the lagoon during the previous permit term and the system experienced significant solids accumulation. As a result, it was determined that the permittee must develop a plan and remove sludge from the lagoon system. The facility is currently assessing solutions, but this compliance schedule requires a desludging assessment and removal of accumulated solids from the lagoon system during the proposed permit term.

Attachments:

Substantial Compliance Determination dated November 20, 2020 and prepared by Curt Nickels.

Water Quality Based Effluent Limitations for the Village of Cascade, dated December 14, 2020 (updated June 21, 2021) and prepared by Nicole Krueger.

Proposed Expiration Date:

September 30, 2026

Justification Of Any Waivers From Permit Application Requirements

No waivers were given from permit application requirements.

Prepared By:

Bryan Hartsook, SE Region Wastewater Field Supervisor

Date: July 22, 2024