

Permit Fact Sheet

General Information

Permit Number:	WI-0020893-10-0	
Permittee Name:	New Holstein Utilities	
Address:	2110 Washington St	
City/State/Zip:	New Holstein WI 53061	
Discharge Location:	West bank of Jordan Creek, approximately 1,000 ft. North of the Wisconsin Avenue Bridge in New Holstein; SW ¼, SW ¼, Section 11, T17N, R20E	
Receiving Water:	Jordan Creek (WBIC 80200) in the South Branch Manitowoc River Watershed (MA05) of the Manitowoc River Basin, in Calumet County	
Stream Flow (Q _{7,10}):	0 cfs	
Stream Classification:	Limited Aquatic Life (LAL)	
Discharge Type:	Existing; Continuous	
Design Flow(s)	Daily Maximum	2.4 MGD
	Annual Average	1.33 MGD (actual annual avg. flow 4/1/18-3/31/24 was 0.515 MGD)
Significant Industrial Loading?	Bremer Manufacturing Co (Pretreatment Notification for manufacturing of cast aluminum products)	
Operator at Proper Grade?	Facility Level & Subclass: Advanced Level; Subclasses A1, B, C, L, P and SS OIC Level & Subclasses: Brian O'Reilly, WW Operator; A1, B, C, L, P and N – Advanced; SS – Basic; D – OIT	
Approved Pretreatment Program?	N/A	

Facility Description

Raw sewage and trucked-in waste enter the plant at the headworks building, where the wastewater passes through a rotating fine screen and degritter. After leaving the headworks, the influent flows to a lift station and is pumped up to the aeration basins, equipped with a fine-pore submerged diffused aeration system. The treated water flows to the final clarifier, then out to Jordan Creek. Poly-aluminum chloride is added just before entering the final clarifier. The biosolids are sent to an aerobic digester, then to secondary digesters for further treatment and gravity thickening. The thickened biosolids are pumped to storage lagoons until being hauled as liquid to farmers' fields. The plant was built in 1973, replacing a 1953 plant. Processes are updated when feasible. Surface aeration was replaced with fine bubbles in 1989. The lift station was updated in 1997 with new pumps and motors, and the addition of VFD drives. The headworks building was built in 2000, replacing a comminutor with a fine screen and installing a new degritter. Extensive remodeling and the installation of a SCADA system were also included in the project. A new blower and sludge transfer pump building were built in 2015. Also new sludge transfer pumps were installed in 2015.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Noncompliance (NON) was sent in 2021 for a late/missing annual chloride progress report. Two NONs were sent in 2022 for late/missing phosphorus reports associated with the WQBELs for Total P Schedule. The facility has completed all previously required actions as part of the enforcement process.

After a desk top review of all discharge monitoring reports, compliance maintenance annual reports, land application reports, compliance schedule items, and a site visit on 4/11/23, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Trevor Moen, Wastewater Engineer, on 4/11/23.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
701	Avg. Flow Rate 0.52 MGD (4/1/18-5/31/24)	INFLUENT - Total combined influent from the sanitary sewage collection system and hauled waste receiving station. At Sampling Point 701, the permittee shall collect representative samples of the influent from the automatic composite sampler drawing 24-hour flow proportional composite samples from the pipe following fine screening, grit removal, and influent wet well prior to the aeration basins. The permittee shall measure the influent flow rate using a continuous flow recording device after the influent wet well prior to the aeration basins.
001	N/A – no flow monitoring	EFFLUENT - At Sampling Point 001, the permittee shall collect representative samples of the effluent from the automatic composite sampler drawing 24-hour flow proportional composite samples from effluent manhole after the final clarifier except that the permittee shall collect grab samples of the effluent for pH, DO, E. coli, and temperature after the final clarifier and disinfection system (future) prior to being discharged to Jordan Creek via Outfall 001. Starting on January 1, 2028, the permittee shall measure the effluent flow rate using a continuous flow recording device prior to the disinfection system (future).
002	Avg. approx. 70 Metric Tons land applied annually (2019-2022; 2023 did not land apply)	LIQUID SLUDGE - Class B liquid sludge from the treatment of waste activated sludge that is aerobically digested, gravity thickened and loaded on to trucks. This outfall has been included for emergency use in case storage in the lagoons is not available. At Sampling Point 002, the permittee shall collect representative grab and/or composite samples of the liquid sludge from the sludge thickening tanks prior to being land applied on Department approved sites via Outfall 002. Sampling at Outfall 002 is only required if liquid sludge is removed directly from digestors and land applied or hauled to another permitted facility.
003	N/A – this is a new Sample Point	LAGOON SLUDGE - Class B liquid sludge from the treatment of waste activated sludge that is aerobically digested, gravity thickened, and stored in sludge storage lagoons. At Sampling Point 003, the permittee shall collect representative grab and/or composite samples of the sludge from the storage lagoons prior to being land applied on Department approved sites via Outfall 003.

1 Influent – Monitoring Requirements

Sample Point Number: 701- Influent

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD ₅ , Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

Changes from Previous Permit:

Influent monitoring requirements were re-evaluated for the proposed permit term and no changes were made from the previous permit.

Explanation of Limits and Monitoring Requirements

BOD₅ and Total Suspended Solids (TSS) – Monitoring and reporting of BOD₅ and TSS is required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code.

2 Surface Water - Monitoring and Limitations

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	The Flow Rate shall be reported starting January 1, 2028. See the Install Continuous Flow Recording Device Schedule.
BOD ₅ , Total	Weekly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD ₅ , Total	Monthly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	20 mg/L	3/Week	24-Hr Flow Prop Comp	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total	Weekly Avg	276 lbs/day	3/Week	Calculated	
Suspended Solids, Total	Monthly Avg	196 lbs/day	3/Week	Calculated	
Suspended Solids, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of TSS and report on the last day of the month on the eDMR. See TMDL Calculations permit section.
Suspended Solids, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of TSS discharged and report on the last day of the month on the eDMR. See TMDL Calculations permit section.
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	4.0 mg/L	3/Week	Grab	
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Monitoring and limit effective May through September annually per the Effluent Limitations for E. coli Schedule.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Monitoring and limit effective May through September annually per the Effluent Limitations for E. coli Schedule. See the E. coli Percent Limit permit section. Enter the result in the eDMR on the last day of the month.
Nitrogen, Ammonia (NH3-N) Total		mg/L	3/Week	24-Hr Flow Prop Comp	Monitoring only October through March each year. See Ammonia Limit Not Needed - Continue to Optimize Removal of Ammonia permit section in the Standard Requirements.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	3.8 mg/L	3/Week	24-Hr Flow Prop Comp	Applies in April each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	2.6 mg/L	3/Week	24-Hr Flow Prop Comp	Applies in May each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	2.0 mg/L	3/Week	24-Hr Flow Prop Comp	Applies June through September each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.5 mg/L	3/Week	24-Hr Flow Prop Comp	Applies in April each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	Applies in May each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	0.81 mg/L	3/Week	24-Hr Flow Prop Comp	Applies June through September each year.
Chloride	Weekly Avg	420 mg/L	4/Month	24-Hr Flow Prop Comp	Interim limit. See the Chloride Variance - Implement Source Reduction Measures permit section and the Chloride Source Reduction Measures (Target Value) Schedule.
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	9.6 lbs/day	3/Week	Calculated	
Phosphorus, Total	6-Month Avg	3.2 lbs/day	3/Week	Calculated	Limit effective starting May 1, 2025.
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the eDMR. See TMDL Calculations permit section.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the eDMR. See TMDL Calculations permit section.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring permit section.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring permit section.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring permit section. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See the Whole Effluent Toxicity (WET) Testing permit section.
Chronic WET	Monthly Avg	1.0 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See the Whole Effluent Toxicity (WET) Testing permit section.
Temperature Maximum		deg F	Weekly	Grab	Monitoring only January through December, 2028. See the Effluent Temperature Monitoring permit section.
PFOS		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need Schedule.
PFOA		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need Schedule.

Changes from Previous Permit:

- Addition of continuous flow monitoring per the Install Continuous Flow Recording Device Schedule.
- Addition of TMDL-based mass limits for TSS and total phosphorus.
- Addition of Escherichia coli (E. coli) monitoring and limits, to become effective per the Effluent Limitations for E. coli Schedule.
- Increased ammonia nitrogen monitoring frequency and addition of effluent limits.
- Decreased chloride variance interim limit from 480 mg/L to 420 mg/L and updated source reduction measures.

- Addition of annual total nitrogen monitoring (TKN, NO₂+NO₃ and Total N) in rotating quarters throughout the permit term.
- Addition of Acute Whole Effluent Toxicity (WET) testing and a Chronic WET effluent limit. New Holstein submitted an approvable SOP for poly-aluminum chloride (dated 7/9/24), therefore, 15 points were removed from the WET checklist which results in annual Acute and Chronic WET tests.
- Addition of temperature monitoring during the fourth year (2028) of the permit.
- Addition of PFOS/PFOA monitoring at a frequency of every other month in accordance with s. NR 106.98(2)(a), Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Monitoring Frequencies – The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. The Department has determined that an increase in monitoring frequency for ammonia nitrogen is warranted because of the inclusion of weekly average and monthly average effluent limits in the proposed permit.

Categorical Limits

BOD₅, Total Suspended Solids, pH, and Dissolved Oxygen – Standard municipal wastewater requirements for total 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. Monitoring and reporting of BOD₅ and total suspended solids is required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code, and in the Standard Requirements section of the permit. 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

Refer to the WQBEL memo, Water Quality-Based Effluent Limitations for New Holstein Wastewater Treatment Facility WPDES Permit No. WI-0020893-10, for the detailed calculations, prepared by the Water Quality Bureau, Nicole Krueger, Water Resources Engineer, dated June 11, 2024, used for this reissuance.

Expression of Limits – In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable. Minor changes have been made to the ammonia nitrogen effluent limits.

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. Effluent limits apply April-September, each year. Monitoring only October-March, each year.

Chloride – Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code. Subchapter VII of ch. NR 106 establishes the procedure for calculating WQBELs for chloride. Effluent limits are necessary in accordance with the reasonable potential analysis presented in the June 11, 2024 WQBEL memo. Section NR 106.83 of subchapter VII also provides for some permittees to obtain temporary relief from a chloride WQBEL through the use of a chloride variance. New Holstein Utilities applied for a chloride variance, under the provisions of s. NR 106.83, Wis. Adm. Code, with its application for permit reissuance. The previous permit also included a chloride variance.

The Department reviewed New Holstein’s application for a chloride variance. The information supplied in the application supports the establishment of an interim effluent limit. The permittee and the Department have reached agreement on an interim chloride limit of 420 mg/L (expressed as a weekly average), a target value of 400 mg/L, implementation of

chloride source reduction measures, and submittal of annual progress reports each year by January 31st. The chloride source reduction measures that are required to be implemented can be found in the proposed permit.

The Department concludes that New Holstein Utilities is qualified for a variance from the water quality standard for chloride and proposes reissuance of this permit with the proposed variance.

Disinfection and 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.

Section NR 102.04(5)(a), Wis. Adm. Code, states that all surface waters shall be suitable for recreational use and meet the E. coli criteria established to protect this use. Section NR 102.04(5)(b), Wis. Adm. Code, states that exceptions to the disinfection requirement can be made if the Department determines, in accordance with the procedures specified in s. NR 210.06(3), Wis. Adm. Code, that disinfection is not required to meet water quality criteria. As part of the reissuance process, the requirements for disinfection were reviewed under s. NR 210.06(3), Wis. Adm. Code.

It was determined that the permittee is required to disinfect, during the following months May – September. See the WQBEL memo for further explanation.

At the end of the compliance schedule, disinfection requirements and E. coli limits of 126 #/100 ml as a monthly geometric mean that may not 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. Monitoring is not required until the limit becomes effective at the end of the compliance schedule.

Total 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 municipal dischargers of more than 150 pounds of phosphorus per month to 1.0 mg/L. Because this effluent limit is effective in the current permit, the 1.0 mg/L limit will remain in the proposed permit.

Total Maximum Daily Load (TMDL) Derived Limits – Northeast Lakeshore Basin (NEL) TMDL Approved – Waste load allocations (WLAs) specified in TMDLs are expressed as WQBELs (water quality-based effluent limits). The WLA-derived WQBELs are consistent with the assumptions and requirements of the approved NEL TMDL. The NEL TMDL sets TSS and total phosphorus WLAs for dischargers throughout the project area. WLA-derived limits must be included in WPDES permits once the TMDL has been approved by US EPA (NEL TMDL approved October 2023). Since WLAs are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits require the permittee to calculate and report rolling 12-month sums of total monthly loads for TSS and total phosphorus. Rolling 12-month sums can be compared directly to the annual WLA. New Holstein can currently meet the TMDL-based limits for TSS and total phosphorus and a compliance schedule is not needed in the reissued permit.

Total Nitrogen Monitoring (TKN, NO₂+NO₃ and Total N) – The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the Department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the “Guidance for Total Nitrogen Monitoring in Wastewater Permits” dated October 1, 2019. Annual tests are scheduled in the following rotating quarters: **April – June 2025; January – March 2026; July – September 2027; October – December 2028; and April – June 2029.**

Whole Effluent Toxicity (WET) – WET testing requirements and limits are determined in accordance with ss. NR 106.08 and NR 106.09, Wis. Adm. Code, as revised August 2016. Acute and Chronic WET tests are scheduled annually in the following rotating quarters: **April – June 2025; January – March 2026; July – September 2027; October – December 2028; and April – June 2029.** Additionally, a Chronic WET limit has been included in the permit.

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 monitoring has been added during the fourth year of the permit.

PFOS/PFOA – NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for major municipal dischargers with an average flow rate greater than 1 MGD but less than 5 MGD, at a minimum sample effluent once every two-months for PFOS and PFOA pursuant s. NR 106.98(2)(b), Wis. Adm. Code.

A sample frequency of 1/2 months means one sample is taken during any two-month period. Examples of 1/2 month sample would be every other month (Jan, March, May, etc.) or back-to-back months with a break in between (February & March, May & June, Aug & Sept, etc.). DMR Short Forms will be generated for the following time periods: January-February, March-April, May-June, July-August, September-October, and November-December. At a minimum one sample result will be present on each form.

The initial determination of the need for sampling shall be conducted for up to two years in order to determine if the permitted discharge has the reasonable potential to cause or contribute to an exceedance of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Points	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
002 and 003	B	Liquid	Fecal Coliform Reduction	Aerobic SOUR	Land Application	Approx. 70 tons/year
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? N/A						

Sample Point Number: 002- Liquid Sludge and 003- Lagoon Sludge

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

- Addition of Sample Point (Outfall) 003 for the land application of Lagoon Sludge from the sludge storage lagoons on to Department approved sites. Monitoring requirements are the same as those for Outfall 002.
- Removal of PCB monitoring; sludge monitoring during the previous permit term showed results were very low and consistent with the Department's Sludge Monitoring Guidance PCB monitoring may be removed.

- Addition of annual PFAS (PFOA + PFOS) monitoring pursuant to s. NR 204.06(2)(b)9., Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Requirements for land application of 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). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7) for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k). Radium requirements are addressed in s. NR 204.07(3)(n).

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) and NR 204.06(2)(b)9., 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.

4 Schedules

4.1 Chloride Source Reduction Measures (Target Value)

As a condition of the variance to the water quality based effluent limitation(s) for chloride granted in accordance with s. NR 106.83(2), Wis. Adm. Code, the permittee shall perform the following actions.

Required Action	Due Date
<p>Annual Chloride Progress Report: Submit an annual chloride progress report related to the source reduction activities for the previous year. The annual chloride progress report shall:</p> <p>Indicate which chloride source reduction measures or activities in the Source Reduction Plan have been implemented and state which, if any, source reduction measures from the Source Reduction Plan were not pursued and why. Include an assessment of whether each implemented source reduction measure appears to be effective or ineffective at reducing pollutant discharge concentrations and identify actions planned for the upcoming year;</p> <p>Include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data; and</p> <p>Include an analysis of how effluent chloride varies with time and with significant loadings of chloride. Note that the interim limitation listed in the Surface Water section of this permit remains enforceable until new enforceable limits are established in the next permit issuance.</p> <p>The first annual chloride progress report is to be submitted by the Date Due.</p>	01/31/2025
<p>Annual Chloride Progress Report #2: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.</p>	01/31/2026

<p>Annual Chloride Progress Report #3: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.</p>	01/31/2027
<p>Annual Chloride Progress Report #4: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.</p>	01/31/2028
<p>Final Chloride Report: Submit the final chloride report documenting the success in meeting the chloride target value of 400 mg/L, as well as the anticipated future reduction in chloride sources and chloride effluent concentrations.</p> <p>The report shall:</p> <p>Summarize chloride source reduction measures that have been implemented during the current permit term and state which, if any, source reduction measures from the Source Reduction Plan were not pursued and why;</p> <p>Include an assessment of which source reduction measures appear to have been effective or ineffective. Evaluate any needed changes to the pollutant reduction strategy accordingly;</p> <p>Include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data during the current permit term; and</p> <p>Include an analysis of how influent and effluent chloride varies with time and with significant loadings of chloride as identified in the source reduction plan.</p> <p>If the permittee intends to reapply for a chloride variance, for the reissued permit, proposed target limits and a detailed source reduction measures plan, outlining the source reduction activities proposed for the upcoming permit term, shall also be included per ss. NR 106.90 (5) and NR 106.83 (4), Wis. Adm. Code. An updated source reduction measures plan shall:</p> <p>Include an explanation of why or how each source reduction measure will result in reduced discharge of the target pollutant; and</p> <p>Evaluate any available information on pollutant sources, timing, and concentration to update the mass balance assumptions and expected sources of the pollutant, and</p> <p>Identify any information needs that would help to better determine pollutant sources and make plans to collect that information.</p> <p>Note that the target value is the benchmark for evaluating the effectiveness of the chloride source reduction measures but is not an enforceable limitation under the terms of this permit.</p>	01/31/2029
<p>Annual Chloride 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 annual chloride reports for the previous year following the due date of Annual Chloride Progress Reports listed above. Annual Chloride Progress Reports shall include the information as defined above.</p>	

4.2 Disinfection and Effluent Limitations for E. coli

The permittee shall install disinfection treatment and 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 requirement.

Required Action	Due Date
<p>Progress Report: The permittee shall submit a progress report on development and submittal of a facility plan for upgrades to meet disinfection requirements and E. coli limits.</p>	09/30/2025

Submit Facility Plan: The permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code for meeting disinfection requirements and complying with E. coli surface water limitations. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2026
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 meet disinfection requirements per s. NR 210.06(1), Wis. Adm Code, achieve compliance with final E. coli limitations, and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2027
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.	09/30/2027
Construction Upgrade Progress Report: The permittee shall submit a progress report on construction upgrades.	09/30/2028
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	03/31/2029
Achieve Compliance: The permittee shall achieve compliance with final E. coli limitations.	04/30/2029

4.3 Install Continuous Flow Recording Device

The permittee shall install a continuous flow recording device at Sampling Point (Outfall) 001 in accordance with the following schedule.

Required Action	Due Date
Submit Facility Plan: The permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code for installing a continuous flow recording device at Sampling Point (Outfall) 001. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	04/30/2026
Plans and Specifications: Submit plans and specifications per ch. NR 108, Wis. Adm. Code, for installing a continuous flow recording device at Sampling Point (Outfall) 001.	03/31/2027
Complete Install: The permittee shall complete installation of the continuous flow recording device at Sampling Point (Outfall) 001.	12/31/2027

4.4 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.	12/31/2025

<p>Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan.</p> <p>This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.</p> <p>The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan.</p> <p>If the department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for department approval no later than 90 days after written notification was sent from the department. The department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued.</p> <p>If, however, the department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.</p>	<p>12/31/2026</p>
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4.5 Sludge Management Plan

A management plan is required for the land application system.

Required Action	Due Date
<p>Sludge Management Plan Submittal: Submit an update to the management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall 1) specify information on pretreatment processes (if any); 2) identify land application sites; 3) describe site limitations; 4) address vegetative cover management and removal; 5) specify availability of storage; 6) describe the type of transporting and spreading vehicle(s); 7) specify monitoring procedures; 8) track site loading; 9) address contingency plans for adverse weather and odor/nuisance abatement; and 10) include any other pertinent information. Once approved, all landspreading activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes.</p>	<p>06/30/2025</p>

Explanation of Schedules

4.1 – Chloride Source Reduction Measures (Target Value) – This schedule is required to ensure that the permittee maintains compliance with the conditions and requirements of receiving a variance from the water quality-based chloride effluent limit of 400 mg/L expressed as a weekly average. Since a compliance schedule is being granted, an interim limit is required, and for New Holstein the limit is established as 420 mg/L (as a weekly average). The schedule requires that annual reports shall indicate which source reduction measures New Holstein has implemented during each calendar year, and an analysis of chloride concentration and mass discharge data based on chloride sampling and flow data. The annual reports shall document progress made towards meeting the chloride target value of 400 mg/L by the end of the permit term.

4.2 – Disinfection and Effluent Limitations for E. coli – A compliance schedule is included in the permit to provide time for the permittee to submit plans and specs and install disinfection treatment for meeting effluent E. coli water quality-based effluent limits and disinfection requirements pursuant s. NR 210.06, Wis. Adm. Code.

4.3 – Install Continuous Flow Recording Device – This schedule is included for the facility to install a continuous flow recording device at Outfall 001. Installation of a continuous flow recording device is a reviewable project per ch. NR 108, Wis. Adm. Code, therefore, a plans and specifications submittal requirement is included in this schedule.

4.4 – PFOS/PFOA Minimization Plan Determination of Need – As stated above, NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. S. NR 106.98, Wis. Adm. Code, specifies steps to generate data in order to determine the need for reducing PFOS and PFOA in the discharge. Data generated per the effluent monitoring requirements will be used to determine the need for developing a PFOS/PFOA minimization plan. As part of the schedule, the permittee is required to submit two annual Reports on Effluent Discharge.

If the Department determines that a minimization plan is needed, the permit will be modified or revoked/reissued to include additional requirements.

4.5 – Sludge Management Plan – This schedule requires the permittee to submit an updated Sludge Management Plan due to changes in the sludge outfalls with this permit reissuance and revisions to the CMOM (due 4/30/25).

Attachments:

WQBEL Memo: Water Quality-Based Effluent Limitations for New Holstein Wastewater Treatment Facility WPDES Permit No. WI-0020893-10, by Nicole Krueger, Water Resources Engineer, dated June 11, 2024

Chloride Variance EPA Data Sheet

SRM (Source Reduction Measures) Plan, dated 8/28/24

Expiration Date:

December 31, 2029

Justification Of Any Waivers From Permit Application Requirements:

No waivers from permit application requirements were requested or granted.

Prepared By: Sarah Donoughe, Wastewater Specialist-Adv

Date: September 3, 2024

Notice of reissuance is published in the Tri-County News, PO Box 237, Kiel, WI 53042-0237.

CORRESPONDENCE/MEMORANDUM

DATE: 06/11/2024

TO: Sarah Donoughe – SER

FROM: Nicole Krueger – SER *Nicole Krueger*

SUBJECT: Water Quality-Based Effluent Limitations for New Holstein Wastewater Treatment Facility
WPDES Permit No. WI-0020893-10

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 New Holstein Wastewater Treatment Facility in Calumet County. This municipal wastewater treatment facility (WWTF) discharges to Jordan Creek, located in the South Branch Manitowoc River Watershed in the Manitowoc River Basin. This discharge is included in the Northeast Lakeshore Total Maximum Daily Load (TMDL) as approved by EPA in October 2023. The evaluation of the permit recommendations is discussed in more detail in the attached report.

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
BOD ₅			30 mg/L	20 mg/L		1
TSS			30 mg/L 276 lbs/day	20 mg/L 196 lbs/day		2
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		4.0 mg/L				1
Bacteria						3
Final Limit <i>E. coli</i>				126 #/100 mL geometric mean		
Ammonia Nitrogen April May June – September			3.8 mg/L 2.6 mg/L 2.0 mg/L	1.5 mg/L 1.0 mg/L 0.81 mg/L		4,5
Chloride			400 mg/L			6
PFOS and PFOA						7
Phosphorus TBEL TMDL				1.0 mg/L 9.6 lbs/day	3.2 lbs/day	2
TKN, Nitrate+Nitrite, and Total Nitrogen						8
Acute WET						9,10
Chronic WET				1.0 TUc		9, 10
Temperature						11

Footnotes:

1. No changes from the current permit.
2. The TSS and phosphorus mass limits are based on the Total Maximum Daily Load (TMDL) for the Northeast Lakeshore Basin to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA in October 2023.

3. Bacteria limits apply during the disinfection season of May through September. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
4. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
5. Ammonia monitoring only is recommended for October – March.
6. This is the WQBEL for chloride. An alternative effluent limitation of 420 mg/L as a weekly average (equal to the 4-day P₉₉) may be included in the permit in place of this limit if the chloride variance application that was submitted is approved by EPA. If the variance is not approved, a wet weather mass limit would also be required.
7. PFOS and PFOA monitoring is recommended once every two months.
8. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all municipal minor permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).
9. Annual acute and 2x/year chronic WET testing is recommended. The Instream Waste Concentration (IWC) to assess chronic test results is 100%. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5% and the dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from Jordan Creek.
10. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).
11. Monitoring only.

If New Holstein develops an approvable SOP for poly-aluminum chloride, 15 points would be removed from the WET checklist which would result in 1x yearly acute and chronic WET tests.

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 Diane Figiel at Diane.Figiel@wisconsin.gov.

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

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Trevor Moen, Wastewater Engineer – NER
Heidi Schmitt Marquez, Regional Wastewater Supervisor –NER
Diane Figiel, Water Resources Engineer – WY/3
Kari Fleming, Environmental Toxicologist – WY/3
Michael Polkinghorn, Water Resources Engineer – NOR/Rhineland Service Center
Nate Willis, Wastewater Engineer – WY/3

Attachment #1
**Water Quality-Based Effluent Limitations for
 New Holstein Wastewater Treatment Facility**

WPDES Permit No. WI-0020893-10

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Raw sewage and trucked-in waste enter the plant at the headworks building, where the wastewater passes through a rotating fine screen and degritter. After leaving the headworks, the influent flows to a lift station and is pumped up to the aeration basins, equipped with a fine-pore submerged diffused aeration system. The treated water flows to the final clarifier, then out to Jordan Creek. Poly-aluminum chloride is added just before entering the final clarifier. The biosolids are sent to an aerobic digester, then to secondary digesters for further treatment and gravity thickening. The thickened biosolids are pumped to storage lagoons until being hauled as liquid to farmers’ fields. The plant was built in 1973, replacing a 1953 plant. Processes are updated when feasible. Surface aeration was replaced with fine bubbles in 1989. The lift station was updated in 1997 with new pumps and motors, and the addition of VFD drives. The headworks building was built in 2000, replacing a comminutor with a fine screen and installing a new degritter. Extensive remodeling and the installation of a SCADA system were also included in the project. A new blower and sludge transfer pump building were built in 2015. Also new sludge transfer pumps were installed in 2015.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations

The current permit, expiring on April 1, 2023, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
BOD ₅			30 mg/L	20 mg/L		1
TSS			30 mg/L	20 mg/L		1
pH	9.0 s.u.	6.0 s.u.				2
Dissolved Oxygen		4.0 mg/L				1
Ammonia Nitrogen						3
Chloride			480 mg/L			4
Phosphorus Interim Final				1.0 mg/L 0.225 mg/L	0.075 mg/L 0.83 lbs/day	5
Chronic WET						6

Footnotes:

1. These limits are based on the Limited Aquatic Life (LAL) community of the immediate receiving water as described in s. NR 104.02(3)(b), Wis. Adm. Code.

Attachment #1

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.
3. Monitoring only.
4. This is an interim variance limit to the WQBEL of 395 mg/L.
5. A compliance schedule is in the current permit to meet the final WQBEL by April 1, 2027.
6. The IWC for chronic WET was 100% and testing is required once every other year.

Receiving Water Information

- Name: Jordan Creek
- Waterbody Identification Code (WBIC): 80200
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Jordan Creek is classified as a Limited Aquatic Life (LAL) classification in Table 5 in ch. NR 104, Wis. Adm. Code. Pine Creek, approximately 1½ miles downstream of Outfall 001, is classified as a Limited Forage Fish (LFF) Classification downstream to Danes Rd, for approximately 1 mile. At Danes Rd, Pine Creek is classified as a Warm Water Sport Fish (WWSF) community.
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-Q₁₀ and 7-Q₂ values are estimates from USGS, where Outfall 001 is located.

Jordan Creek (LAL classification)
7-Q₁₀ = 0 cfs (cubic feet per second)
7-Q₂ = 0 cfs

Pine Creek (LFF and WWSF classifications)
7-Q₁₀ = 0 cfs
7-Q₂ = 0 cfs

- Hardness = 375 mg/L as CaCO₃. This data is from chronic WET tests from 08/03/2021 – 07/23/2023.
- % 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 303(d) listed as impaired for PCBs.

Effluent Information

- Design flow rate(s):
Annual average = 1.33 MGD (Million Gallons per Day)
For reference, the actual average flow from 04/01/2018 – 03/31/2024 was 0.515 MGD.
- Hardness = 404 mg/L as CaCO₃. This value represents the geometric mean of data from the permit reissuance application from 05/01/2022 – 06/05/2022.
- 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: Domestic wastewater with water supply from wells.
- Additives: Poly-aluminum chloride is used for phosphorus removal.

Attachment #1

- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness and phosphorus. Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled “MEAN EFFL. CONC.”. Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

Effluent Copper Data

Sample Date	Copper µg/L	Sample Date	Copper µg/L	Sample Date	Copper µg/L
05/01/2022	14	05/15/2022	36	05/30/2022	18
05/04/2022	11	05/18/2022	12	06/02/2022	15
05/08/2022	14	05/22/2022	17	06/05/2022	12
05/11/2022	11	05/27/2022	11		
1-day P ₉₉ = 39 µg/L					
4-day P ₉₉ = 26 µg/L					

Effluent Chloride Data

	Chloride mg/L
1-day P ₉₉	517
4-day P ₉₉	416
30-day P ₉₉	360
Mean	331
Std	67.0
Sample size	294
Range	193 - 530

The following table presents the average concentrations and loadings at Outfall 001 from 04/01/2018 – 03/31/2024 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
BOD ₅	3.7 mg/L*
TSS	7.0 mg/L*
pH field	7.2 s.u.
Phosphorus	0.15 mg/L*
Ammonia Nitrogen	0.65 mg/L*
Dissolved Oxygen	7.7 mg/L
Chloride	347 mg/L

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

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

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

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q₁₀

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

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

Where:

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

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

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

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

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

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

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		340		340	68.0	0.24		

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SUBSTANCE	REF. HARD.* mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Cadmium	404	143		143	28.6	<0.3		
Chromium	301	4446		4446	889	<1.3		
Copper	404	57.9		57.9			39	36
Lead	356	365		365	72.9	<3.5		
Nickel	268	1080		1080	216	5.7		
Zinc	333	345		345	68.9	45		
Chloride (mg/L)		757		757			517	530

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

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152		152	30.4	0.24	
Cadmium	175	3.82		3.82	0.76	<0.3	
Chromium	301	326		326	65.2	<1.3	
Copper	375	32.1		32.1			26
Lead	356	95.5		95.5	19.1	<3.5	
Nickel	268	169		169	33.8	5.7	
Zinc	333	345		345	68.9	45	
Chloride (mg/L)		395		395			416

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

Monthly Average Limits based on Wildlife Criteria (WC)

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

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 0 cfs

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	880		880	176	<0.3
Chromium (+3)	8400000		8400000	1680000	<1.3
Lead	2240		2240	448	<3.5
Nickel	110000		110000	22000	5.7

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 0 cfs

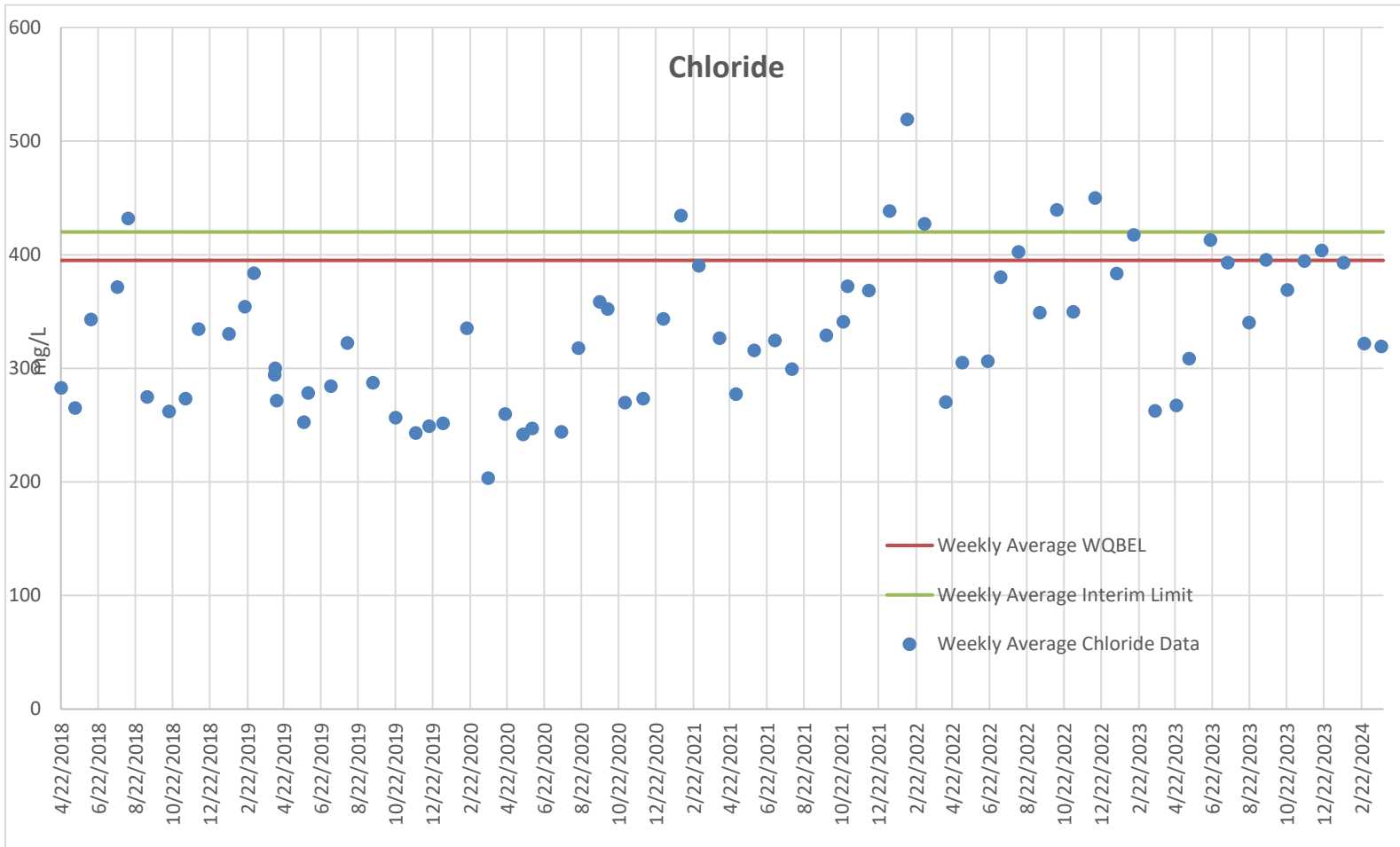
SUBSTANCE	HCC	MEAN BACK- GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	40		40.0	8.00	0.24

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for chloride.

Chloride – Considering available effluent data from the current permit term (04/22/2018 – 03/28/2024), the 1-day P₉₉ chloride concentration is 517 mg/L, and the 4-day P₉₉ of effluent data is 416 mg/L. The graph below shows the effluent data from the current permit term.



Because the 4-day P_{99} exceeds the calculated weekly average WQBEL, an effluent limit is needed in accordance with s. NR 106.05(4)(b), Wis. Adm. Code.

However, Subchapter VII of ch. NR 106, Wis. Adm. Code, provides for a variance from water quality standards for this substance, and New Holstein has requested such a variance. That variance may be granted subject to the following conditions:

- 1) The permit shall include an “Interim” limitation intended to prevent an increase in the discharge of Chloride;
- 2) The permit shall specify “Source Reduction Measures” to be implemented during the permit term, with periodic progress reports; and
- 3) The permit shall include a “Target Limit” or “Target Value” to gage the effectiveness of the Source Reduction Measures, and progress toward the WQBELs.

Interim Limit for Chloride

Section NR 106.82(9), Wis. Adm. Code, defines a “Weekly average interim limitation” as either the 4-day P_{99} concentration or 105% of the highest weekly average concentration of the representative data.

The current permit includes an interim weekly average limit of 480 mg/L which was based on the 4-day P_{99} from the previous evaluation. Since the previous evaluation, chloride levels have decreased. **The**

recommended interim limit for the reissued permit is 420 mg/L expressed as a weekly average, which is equal to the current 4-day P₉₉, rounded to two significant figures.

A target limit and permit language for Source Reduction Measures are not recommended as part of this evaluation. These should follow contact with New Holstein. Though if the Department and New Holstein are unable to reach agreement on all the terms of a Chloride Variance, the calculated limits described earlier should be included in the permit, in accordance with s. NR 106.83(3), Wis. Adm. Code.

Chloride Monitoring Recommendations

Four samples per month (on consecutive days) are recommended. This allows for averaging of the results to compare with the interim limit and allows the use of the average in determining future interim limits, and degree of success with chloride reduction measures.

In the absence of a variance, New Holstein would be subject to the WQBEL of 395 mg/L as a weekly average; the weekly average mass limit of 4,380 lbs/day (395 mg/L × 1.33 MGD × 8.34); and an alternative wet weather mass limit.

Mercury – The permit application did not require monitoring for mercury because New Holstein is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3, Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, “there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5), Wis. Adm. Code.” A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. All sample results were not detected. Therefore, **no mercury monitoring is recommended at Outfall 001.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge and nondomestic contributions, **PFOS and PFOA monitoring is recommended at an every other month frequency.** The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

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

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

Where:

A = 0.633 and B = 90.0 for Limited Aquatic Life, and

pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1793 sample results were reported from 04/02/2018 – 03/29/2024. The maximum reported value was 7.9 s.u. (Standard pH Units). The effluent pH was 7.5 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.5 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.5 s.u. Therefore, a value of 7.5 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.5 s.u. into the equation above yields an ATC = 31 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method

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

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

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	61
1-Q ₁₀	31

The 1-Q₁₀ method yields the most stringent limits for New Holstein.

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

The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, because those limits relate to the assimilative capacity of the receiving water.

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

Jordan Creek (immediate receiving water – LAL)

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as Limited Aquatic Life is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

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

Where:

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

E = 1.0,

C = 8.09 × 10^{(0.028 × (25 - T))}

T = the temperature of the receiving (°C)

Attachment #1

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q₁₀ (4-Q₃, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ (estimated as 85% of the 7-Q₂ if the 30-Q₅ is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 °C, 25% of the flow is used if the Temperature < 11 °C, and 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

Weekly and Monthly Ammonia Nitrogen Limits

Limited Aquatic Life		Spring	Spring	Summer	Winter
		April	May	June – Sept.	Oct. - March
Effluent Flow	Qe (MGD)	1.33	1.33	1.33	1.33
Background Information	7-Q ₁₀ (cfs)	0	0	0	0
	7-Q ₂ (cfs)	0	0	0	0
	Ammonia (mg/L)	0.04	0.04	0.05	0.105
	Average Temperature (deg C)	9	14	19	4
	Maximum Temperature (deg C)	9	14	21	10
	pH (s.u.)	8.34	8.56	8.52	8.03
	% of Flow used	25	50	100	25
	Reference Weekly Flow (cfs)	0	0	0	0
	Reference Monthly Flow (cfs)	0	0	0	0
Criteria mg/L	4-day Chronic	33	16	12	51
	30-day Chronic	13	6.5	4.7	20
Effluent Limits mg/L	Weekly Average	33	16	12	51
	Monthly Average	13	6.5	4.7	20

Pine Creek (1½ miles downstream – LFF classification)

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

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

Where:

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

E = 1.0,

C = the minimum of 3.09 or $3.73 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Present), or

C = $3.73 \times 10^{(0.028 \times (25 - T))}$ – (Early Life Stages Absent), and

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

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

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

The “default” basin assumed values are used for Temperature, pH and background ammonia concentrations, because minimum ambient data is available. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits

Limited Forage Fish		Spring	Spring	Summer	Winter
		April	May	June – Sept.	Oct. - March
Effluent Flow	Qe (MGD)	1.33	1.33	1.33	1.33
Background Information	7-Q ₁₀ (cfs)	0	0	0	0
	7-Q ₂ (cfs)	0	0	0	0
	Ammonia (mg/L)	0.04	0.04	0.05	0.105
	Average Temperature (deg C)	10	15	19	6
	Maximum Temperature (deg C)	10	15	21	13
	pH (s.u.)	8.34	8.56	8.52	8.03
	% of Flow used	25	50	100	25
	Reference Weekly Flow (cfs)	0	0	0	0
Reference Monthly Flow (cfs)	0	0	0	0	
Criteria mg/L	4-day Chronic				
	Early Life Stages Present		3.1	3.4	
	Early Life Stages Absent	14			20
	30-day Chronic				
	Early Life Stages Present		1.2	1.3	
Early Life Stages Absent	5.7			7.8	
Effluent Limitations mg/L	Weekly Average				
	Early Life Stages Present		3.1	3.4	
	Early Life Stages Absent	14			20
	Monthly Average				
	Early Life Stages Present		1.2	1.3	
Early Life Stages Absent	5.7			7.8	

Pine Creek (2 ½ miles downstream – WWSF classification)

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

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

Where:

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

E = 0.854,

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

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

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

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

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in Pine Creek. So

“ELS Absent” criteria apply from October through March, and “ELS Present” criteria will apply from April through September for a WWSF classification.

The “default” basin assumed values are used for Temperature, pH and background ammonia concentrations, because minimum ambient data is available. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits

Warmwater Sport Fish		Spring	Spring	Summer	Winter
		April	May	June – Sept.	Oct. - March
Effluent Flow	Qe (MGD)	1.33	1.33	1.33	1.33
Background Information	7-Q ₁₀ (cfs)	0	0	0	0
	7-Q ₂ (cfs)	0	0	0	0
	Ammonia (mg/L)	0.04	0.04	0.05	0.105
	Average Temperature (deg C)	9	14	19	4
	Maximum Temperature (deg C)	9	14	21	10
	pH (s.u.)	8.34	8.56	8.52	8.03
	% of Flow used	25	50	100	25
	Reference Weekly Flow (cfs)	0	0	0	0
	Reference Monthly Flow (cfs)	0	0	0	0
Criteria mg/L	4-day Chronic				
	Early Life Stages Present	3.6	2.4		
	Early Life Stages Absent			1.8	6.5
	30-day Chronic				
	Early Life Stages Present	1.4	0.95		
Early Life Stages Absent			0.72	2.6	
Effluent Limitations mg/L	Weekly Average				
	Early Life Stages Present	3.6	2.4	1.8	
	Early Life Stages Absent				6.5
	Monthly Average				
	Early Life Stages Present	1.4	0.95	0.72	
Early Life Stages Absent				2.6	

Ammonia Decay

The Department must establish limits to protect downstream uses, according to s. NR 106.32(1)(b), Wis. Adm. Code. Ammonia decay may be considered when determining limits at the outfall to protect the downstream classification, according to s. NR 106.32(4)(c), Wis. Adm. Code. Where the calculated limits are more restrictive based on downstream uses, ammonia decay can be considered to determine if these more restrictive limits are needed or if the ammonia will decay before it reaches the point of the classification change.

Ammonia decay rates are dependent on temperature with in-stream nitrification essentially non-existent in the winter. In-stream decay is expected so a first order decay model should be used. Based on the available literature, a decay rate of 0.25 day⁻¹ at 20°C has been suggested as a default rate. A temperature correction factor of $\theta = 1.08$ is ($k_t = k_{20} \theta^{(T-20)}$). The ammonia nitrogen decay equation is provided below.

$$N_{Limit} = \left(\frac{N_{down}}{EXP(-k_t T)} \right)$$

Attachment #1

Where: N_{Limit} = Ammonia limit needed to protect downstream use (mg/L)
 N_{down} = Ammonia limit calculated based on downstream classification and flow (mg/L)
 $-k_t$ = Ammonia decay rate at background stream temperature (day⁻¹)
 T = Travel time from outfall to downstream use (day)

The velocity of receiving water is assumed to be 5 miles per day. After decay, the limits are increased as shown in the following table.

Ammonia Nitrogen Decay Limits Comparison

Months Applicable	LAL		LFF		After decay LAL to LFF		WWSF		After decay LFF to WWSF	
	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L
April	33	13	14	5.7	15	5.9	3.6	1.4	3.8	1.5
May	16	6.5	3.1	1.2	3.3	1.3	2.4	0.95	2.6	1.0
June – Sept	12	4.7	5.4	2.2	5.8	2.3	1.8	0.72	2.0	0.81
Oct. – March	51	20	20	7.8	20	8.0	6.5	2.6	6.7	2.7

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from 05/15/2018 – 03/28/2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in New Holstein’s permit for the respective month ranges. That need is determined by calculating 99th upper percentile (or P₉₉) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit. For the months that had less than 11 detected samples, 1/5th of the calculated limits are compared to the average of data.

Ammonia Nitrogen Effluent Data

	April mg/L	May mg/L	June – September mg/L	October – March mg/L
1-day P ₉₉			3.75	1.31
4-day P ₉₉			2.25	0.73
30-day P ₉₉			0.93	0.37
Mean*	0.43	0.53	0.33	0.23
Std	0.83	1.87	1.15	0.29
Sample size	9	9	39	55
Range	<0.02 - 2.4	<0.02 - 4.3	<0.02 - 5.8	<0.02 - 1.3

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

Based on this comparison, **weekly and monthly average limits are required for May – September and monthly average limits are required for April.**

Expression of Limits

Revisions to ch. NR 106, Wis. Adm. Code, in September 2016 aligned Wisconsin’s WQBELs with 40 CFR § 122.45(d), which specifies that effluent limits for continuous dischargers must be expressed as weekly and monthly averages for publicly owned treatment works and as daily maximums and monthly averages for all other dischargers, unless shown to be impracticable. Because a monthly average limit is

necessary for April, a weekly average limit is also required under this code revision. Therefore, **the calculated weekly average limit of 3.8 g/L is required for April.**

Conclusions and Recommendations

In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code. Additional limits to meet the requirements in s. NR 106.07, Wis. Adm Code, are shown below in bold.

Final Ammonia Nitrogen Limits		
	Weekly Average mg/L	Monthly Average mg/L
April	3.8	1.5
May	2.6	1.0
June – September	2.0	0.81

Monitoring only is recommended for October – March.

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

Section NR 102.04(5), Wis. Adm. Code, states that all surface waters shall be suitable for supporting recreational use and shall meet E. coli criteria during the recreation season. Section NR 102.04(5)(b), Wis. Adm. Code, allows the Department to make exceptions when it determines, in accordance with s. NR 210.06(3), Wis. Adm. Code, that wastewater disinfection is not required to meet E. coli limits and protect the recreational use. Section NR 210.06(3), Wis. Adm. Code, tasks the Department with determining the need for disinfection using a site-specific analysis based on potential risk to human or animal health. It sets out the factors that must be considered in determining the necessity to disinfect municipal wastewater or to change the length of the disinfection season.

New Holstein had previously been exempted from disinfection based on the limited aquatic life community classification of the receiving water. Section NR 210.06(3)(g), Wis. Adm. Code, states that disinfection decisions may be made based on the hydrologic classifications listed in s. NR 104.02(1), Wis. Adm. Code (not on the water quality classifications - i.e., limited forage fish, limited aquatic life - that are defined in s. NR 104.02(3), Wis. Adm. Code). The hydrologic classification for Jordan Creek is listed in ch. NR 104, Wis. Adm. Code, as continuous. Continuous streams have a higher likelihood of providing opportunities for full contact recreational activities. Therefore, disinfection should not be exempted based solely on this hydrological classification.

The Department has considered the information required by s. NR 210.06(3), Wis. Adm. Code, and has determined that the discharge cannot meet bacteria limits without disinfection. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

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

These limits are required during May through September. The permit will include a compliance schedule to meet these limits.

PART 5 – PHOSPHORUS

Technology-Based Effluent Limit

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because New Holstein currently has a limit of 1.0 mg/L, this limit should be included in the reissued permit. This limit remains applicable unless a more stringent WQBEL is given.

Northeast Lakeshore TMDL

Total phosphorus (TP) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs* (April 2020) and are based on the annual phosphorus wasteload allocation (WLA) given in pounds per year. This WLA found in Appendix K of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Northeast Lakeshore Region* report are expressed as maximum annual loads (lbs/year).

For the reasons explained in the April 30, 2012 paper entitled *Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin*, WDNR has determined that the phosphorus WQBELs set equal to WLAs would not be consistent with the assumptions and requirements of the TMDL. Therefore, limits given to facilities included in the Northeast Lakeshore Basin TMDL are given monthly average mass limits and, if the equivalent effluent concentration is less than or equal to 0.3 mg/L, six-month average mass limits are also included. The following equation shows the calculation of equivalent effluent concentration:

$$\begin{aligned} \text{TP Equivalent Effluent Concentration} &= \text{WLA} \div (365 \text{ days/yr} * \text{Flow Rate} * \text{Conversion Factor}) \\ &= 1,002 \text{ lbs/yr} \div (365 \text{ days/yr} * 1.33 \text{ MGD} * 8.34) \\ &= 0.25 \text{ mg/L} \end{aligned}$$

Since this value is less than 0.3 mg/L, both a six-month average mass limit and a monthly average mass limit are applicable for total phosphorus. The monthly average limit is set equal to three times the six-month average limit.

$$\begin{aligned} \text{TP 6-Month Average Permit Limit} &= \text{WLA} \div 365 \text{ days/yr} * \text{multiplier} \\ &= (1,002 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.17 \\ &= 3.2 \text{ lbs/day} \end{aligned}$$

$$\begin{aligned} \text{TP Monthly Average Permit Limit} &= \text{TP 6-Month Average Permit Limit} * 3 \\ &= 3.2 \text{ lbs/day} * 3 \\ &= 9.6 \text{ lbs/day} \end{aligned}$$

The multiplier used in the six-month average calculation was determined according to the implementation guidance. A coefficient of variation was calculated, based on phosphorus mass monitoring data, to be 1.4.

Attachment #1

This is the standard deviation divided by the mean of mass data. However, it is believed that the optimization of the wastewater treatment system to achieve the WLA-derived permit limits will reduce effluent variability. Thus, the maximum anticipated coefficient of variation expected by the facility is 0.6. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies phosphorus monitoring as weekly; if a different monitoring frequency is used, the stated limits should be reevaluated.

Six-month average and monthly average mass effluent limits are recommended for this discharge. The limits are equivalent to concentrations of 0.29 mg/L and 0.87 mg/L, respectively, at the facility design flow of 1.33 MGD.

The TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries in the Northeast Lakeshore Basin. Therefore, WLA-based WQBELs are protective of immediate receiving waters and TP WQBELs derived according to s. NR 217.13, Wis. Adm. Code are not required.

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TP. Rolling 12-month sums can be compared directly to the annual wasteload allocation.

Effluent Data

The following table lists the statistics for effluent phosphorus levels from 04/01/2018 – 03/31/2024.

Total Phosphorus Effluent Data

	Phosphorus mg/L	Phosphorus lbs/day
1-day P ₉₉	1.43	9.80
4-day P ₉₉	0.80	5.34
30-day P ₉₉	0.45	2.55
Mean*	0.30	1.58
Std	0.30	2.17
Sample size	896	896
Range	0.024 – 3.7	0.07 – 45.3

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

New Holstein can currently meet the TMDL-based phosphorus mass limits and a compliance schedule is not needed. The current TBEL of 1.0 mg/L as a monthly average is recommended to continue in the reissued permit.

PART 6 – TOTAL SUSPENDED SOLIDS

Total Suspended Solids (TSS) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs* (April 2020). This WLAs found in Appendix I of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Northeast Lakeshore Region* report are expressed as maximum annual loads (lbs/year).

Revisions to chs. NR 106 and 205, Wis. Adm. Code align Wisconsin water quality-based effluent limits with 40 CFR 122.45(d), which requires WPDES permits to contain the following concentration limits, whenever practicable and necessary to protect water quality:

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

New Holstein is a municipal treatment facility and is therefore subject to weekly average and monthly average TSS limits derived from TSS annual WLAs.

$$\begin{aligned} \text{TSS Monthly Average Permit Limit} &= \text{WLA} \div 365 \text{ days/yr} * \text{multiplier} \\ &= (48,649 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.47 \\ &= 196 \text{ lbs/day} \end{aligned}$$

$$\begin{aligned} \text{TSS Weekly Average Permit Limit} &= \text{WLA} \div 365 \text{ days/yr} * \text{multiplier} \\ &= (48,649 \text{ lbs/yr} \div 365 \text{ days/yr}) * 2.07 \\ &= 276 \text{ lbs/day} \end{aligned}$$

The multiplier used in the weekly average and monthly average calculation was determined according to implementation guidance. A coefficient of variation was calculated, based on TSS mass monitoring data, to be 1.0. This is the standard deviation divided by the mean of mass data. However, it is believed that the optimization of the wastewater treatment system to achieve the WLA-derived permit limits will reduce effluent variability. Thus, the maximum anticipated coefficient of variation expected by the facility is 0.6. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies TSS monitoring as 3/week; if a different monitoring frequency is used, the stated limits should be reevaluated.

Weekly average and monthly average mass effluent limits are recommended for this discharge. The limits are equivalent to concentrations 25 mg/L and 18 mg/L, respectively, at the facility design flow of 1.33 MGD.

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TSS. Rolling 12-month sums can be compared directly to the annual wasteload allocation.

Effluent Data

The following table summarizes effluent total suspended solids monitoring data from 04/04/2018 – 03/27/2024.

Total Suspended Solids Effluent Data

	TSS mg/L	TSS lbs/day
1-day P ₉₉	25.4	147
4-day P ₉₉	14.5	80.6
30-day P ₉₉	8.91	44.6
Mean*	6.46	29.5

Attachment #1

	TSS mg/L	TSS lbs/day
Std	5.06	30.1
Sample size	991	991
Range	<1.0 – 105	0 – 359

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

New Holstein can currently meet the TMDL-based limits and a compliance schedule is not needed in the reissued permit.

PART 5 – 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.

LAL discharge

The daily maximum effluent temperature limitation shall be 86 °F for discharges to surface waters classified as Limited Aquatic Life according to s. NR 104.02(3)(b)1, Wis. Adm. Code, except for those classified as wastewater effluent channels and wetlands regulated under ch. NR 103 and described in s. NR 106.55(2), Wis. Adm. Code, which has a daily maximum effluent temperature limitation of 120 °F. The 86 °F limit applies because the hydrologic classification is not listed as wetland in ch. NR 104, Wis. Adm. Code.

LFF Classification

Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from 04/01/2018 – 03/31/2024.

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 001 travels through at least 6,500 feet of the LAL classification before reaching Pine Creek at the point the classification changes to LFF. Under s. NR 106.55(5), Wis. Adm. Code, the default cooling rate is estimated as 1° F for every 400 feet of storm sewer/storm water conveyance channel. The adjusted limits are shown in the table.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		LAL Calculated Effluent Limit		LFF Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)	(°F)	(°F)
JAN	46	47	-	86	70	94
FEB	42	43	-	86	70	95
MAR	47	48	-	86	73	96
APR	49	51	-	86	79	97
MAY	58	60	-	86	86	100
JUN	62	64	-	86	93	101
JUL	72	73	-	86	97	102
AUG	70	72	-	86	95	102
SEP	69	71	-	86	89	101
OCT	64	65	-	86	79	99
NOV	61	62	-	86	70	96
DEC	54	55	-	86	70	95

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

Based on the available effluent data no effluent limits are recommended for temperature. The complete thermal table used for the limit calculation is attached. **Monitoring for one year is recommended in the reissued permit.**

PART 6 – 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

Attachment #1

limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022)*.

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC₅₀ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC₂₅ (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of **100%** shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

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

Where:

- Q_e = annual average flow = 1.33 MGD = 2.058 cfs
- f = fraction of the Q_e withdrawn from the receiving water = 0
- Q_s = ¼ of the 7-Q₁₀ = 0 cfs ÷ 4 = 0 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.
- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations. Significant changes were made to WET test methods in 2004 and these changes were assumed to be fully implemented by certified labs by no later than June 2005. Data prior to July 1, 2005 has been excluded in this evaluation.

WET Data History

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Algae (IC ₅₀)	Pass or Fail?	Use in RP?
12/13/2005					>100	>100		Pass	Yes

Attachment #1

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Algae (IC ₅₀)	Pass or Fail?	Use in RP?
08/22/2016					>100	>100		Pass	Yes
06/05/2007					>100	>100		Pass	Yes
02/12/2008	>100	>100	Pass	Yes	>100	>100		Pass	Yes
02/22/2011					>100	>100		Pass	Yes
06/12/2012					>100	>100		Pass	Yes
07/23/2013	>100	>100	Pass	Yes	>100	>100		Pass	Yes
10/14/2014					>100	>100		Pass	Yes
04/09/2019					>100	>100		Pass	Yes
08/03/2021	>100	>100	Pass	Yes	>100	31.8		Fail	Yes
09/28/2021					>100	>100		Pass	Yes
10/26/2021					>100	>100		Pass	Yes
08/22/2023					>100	>100		Pass	Yes
09/19/2023	>100	>100	Pass	Yes	>100	>100	>100	Pass	Yes

- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

$$\text{Acute Reasonable Potential} = [(TU_a \text{ effluent}) (B)(AMZ)]$$

$$\text{Chronic Reasonable Potential} = [(TU_c \text{ effluent}) (B)(IWC)]$$

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

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

$$\text{Chronic Reasonable Potential} = [(TU_c \text{ effluent}) (B)(IWC)]$$

Chronic WET Limit Parameters

TU _c (maximum) 100/IC ₂₅	B (multiplication factor from s. NR 106.08(6)(c), Wis. Adm. Code, Table 4)	IWC
100/31.8 = 3.1	6.2 Based on 1 detect	100%

$$[(TU_c \text{ effluent}) (B)(IWC)] = 19.5 > 1.0$$

Therefore, reasonable potential is shown for a chronic WET limit using the procedures in s. NR 106.08(6) and representative data from 12/13/2005 – 08/22/2023.

Expression of WET limits

Chronic WET limit = $[100/IWC] TU_c = 1.0 TU_c$ expressed as a monthly average

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

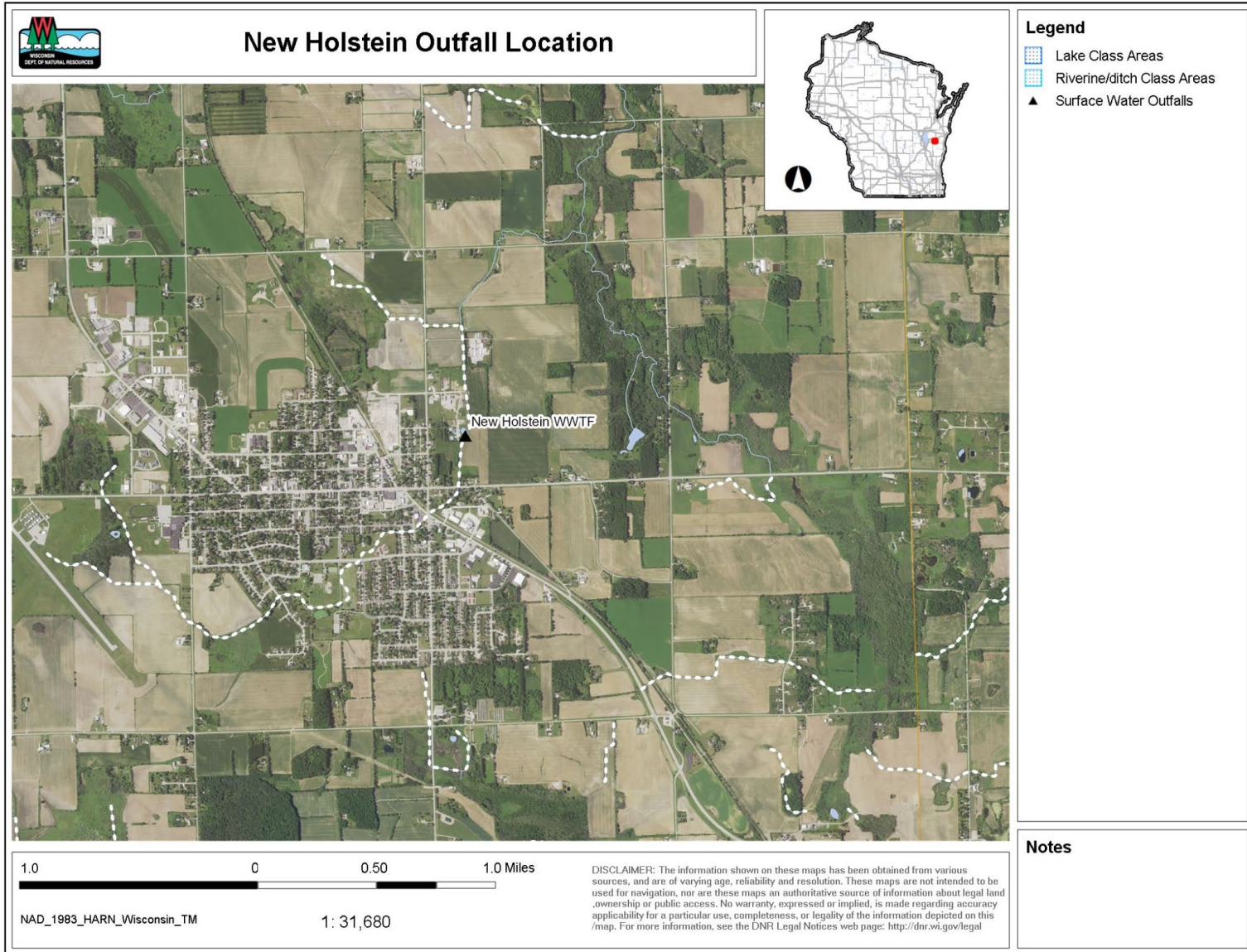
WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 100%. 15 Points
Historical Data	4 tests used to calculate RP. No tests failed. 0 Points	14 tests used to calculate RP. 1 test failed. 0 Points
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. 0 Points	Same as Acute. 0 Points
Receiving Water Classification	LAL, less than 4 miles downstream to a WWSF classification. 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	No reasonable potential for limits based on ATC; Copper, arsenic, nickel, zinc, chloride, and ammonia detected. Additional Compounds of Concern: None. 3 Points	Reasonable potential for limits for ammonia and chloride based on CTC; Copper, arsenic, nickel, and zinc detected. Additional Compounds of Concern: None. 9 Points
Additives	1 Water Quality Conditioner (poly-aluminum chloride) is added. 16 Points	All additives used more than once per 4 days. 16 Points
Discharge Category	0 Industrial Contributors. 0 Points	Same as Acute. 0 Points
Wastewater Treatment	Secondary or Better 0 Points	Same as Acute. 0 Points
Downstream Impacts	No impacts known 0 Points	Same as Acute. 0 Points

	Acute	Chronic
Total Checklist Points:	24 Points	45 Points
Recommended Monitoring Frequency (from Checklist):	1x yearly	2x yearly
Limit Required?	No	Yes Limit = 1.0 TU _c
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above, annual acute and 2x/year chronic WET tests are recommended in the reissued permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).
- According to the requirements specified in s. NR 106.08, Wis. Adm. Code, a chronic WET limit is required. The chronic WET limit shall be expressed as 1.0 TU_c as a monthly average in the effluent limits table of the permit.
- A minimum of annual chronic monitoring is required because a chronic WET limit is required. Federal regulations in 40 CFR Part 122.44(i) require that monitoring occur at least once per year when a limit is present.
- A minimum of annual acute and chronic monitoring is recommended because New Holstein has a design flow greater than 1.0 MGD. Federal regulations at 40 CFR Part 122.21(j) require at least 4 acute and chronic WET tests with each permit application on samples collected since the previous reissuance. Therefore, annual monitoring is recommended in the permit term, so that data will be available for the next permit application.

If New Holstein develops an approvable SOP for poly-aluminum chloride, 15 points would be removed from the WET checklist which would result in 1x yearly acute and chronic WET tests.



Facility Specific Chloride Variance Data Sheet

Directions: Please complete this form electronically. Record information in the space provided. Select checkboxes by double clicking on them. Do not delete or alter any fields. For citations, include page number and section if applicable. Please ensure that all data requested are included and as complete as possible. Attach additional sheets if needed.

Section I: General Information

A. Name of Permittee: New Holstein Utilities

B. Facility Name: New Holstein Wastewater Treatment Facility

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Chloride **Date completed:** September 3, 2024

E. Permit #: WI-0020893-10-0 **WQSTS #:** _____ (EPA USE ONLY)

F. Duration of Variance **Start Date:** January 1, 2025 **End Date:** December 31, 2029

G. Date of Variance Application: October 13, 2022

H. Is this permit a: **First time submittal for variance**
 Renewal of a previous submittal for variance (*Complete Section IX*)

I. Description of proposed variance:

The City of New Holstein Wastewater Treatment Facility (WWTF) discharges to Jordan Creek in Calumet County. New Holstein Utilities seeks a variance to the water quality standards for chloride for its WWTF.

The Department concludes that New Holstein Utilities has met the requirements of s. NR 106.83(2), Wisconsin Administrative Code, and s. 283.15, Wisconsin Statutes. The Department further concludes that requiring New Holstein Utilities to meet the water quality standard for chloride would result in substantial and widespread adverse social and economic impacts in its service area. Furthermore, the Department concludes that there is no feasible pollutant control technology that can be applied to achieve compliance with the chloride water quality-based effluent limit (WQBEL). The Department therefore proposes that this permit include a discharger-specific variance to the chloride water quality standard for aquatic life.

The proposed variance for chloride, from the chronic WQBEL of 400 mg/L, to an interim limit of 420 mg/L, is expressed as a weekly average limit. The Department concludes that the interim limit reflects the greatest pollutant reduction achievable by the permittee with the pollutant control technologies currently applied in the permittee's WWTF. The permit requires the permittee to implement Source Reduction Measures (SRMs). The Department considers the highest attainable condition (HAC) of the receiving water to be the interim limit – applied for the term of the variance – combined with the permittee's implementation of SRMs. The term of the proposed variance is five years, concurrent with the term of the proposed WPDES permit. The underlying designated uses and criteria of Wisconsin's chloride water quality standards (WQS) will be retained, and all other applicable WQS will remain in effect with adoption of the proposed variance.

This is a renewal of a previous submittal to EPA for a chloride variance for this permittee. The previous permit for this facility contained an interim chloride limit, target values and requirements to implement source reduction measures, in accordance with s. NR 106.83(2), Wis. Adm. Code.

Citation: An interim chloride effluent limitation under s. NR 106.83(2), Wis. Adm. Code represents a variance to water quality standards authorized by s. 283.15, Wis. Stats., and 40 CFR §131.14.

J. List of all who assisted in the compilation of data for this form

Name	Email	Phone	Contribution
Sarah Donoughe	Sarah.Donoughe@Wisconsin.gov	920-366-6076	Permit Drafter
Trevor Moen	Trevor.Moen@Wisconsin.gov	920-410-5192	Compliance Staff
Nicole Krueger	Nicole.Krueger@Wisconsin.gov	414-897-5750	Parts II D-H and J

Section II: Criteria and Variance Information

A. Water Quality Standard from which variance is sought: Chloride (395 mg/L aquatic life chronic toxicity criterion)

B. List other criteria likely to be affected by variance: None

C. Source of Substance: Regeneration wastewater from multiple point-of-use water softeners (the majority of which are the 1,450 or so New Holstein Utilities rental units for residents), hauled-in septage, domestic sewage, road salt that flows into manholes during the winter, snow melt and wash water from snowplow vehicles inside a shop	
D. Ambient Substance Concentration: <u>0 mg/L</u>	<input type="checkbox"/> Measured <input type="checkbox"/> Estimated <input checked="" type="checkbox"/> Default <input type="checkbox"/> Unknown
E. If measured or estimated, what was the basis? Include citation. The background stream flow is zero, so a background concentration is not used to calculate the limit.	
F. Average effluent discharge rate: 0.515 MGD (04/01/2018 – 03/31/2024) Annual average design flow: 1.33 MGD	Maximum effluent discharge rate: 2.42 MGD (05/04/2018)
G. Effluent Substance Concentration: 1-day P99: 517 mg/L 4-day P99: 416 mg/L <u>Average: 331 mg/L</u>	<input checked="" type="checkbox"/> Measured <input type="checkbox"/> Estimated <input type="checkbox"/> Default <input type="checkbox"/> Unknown
H. If measured or estimated, what was the basis? Include Citation. Permit-required monitoring from 04/22/2018 – 03/28/2024.	
I. Type of HAC:	<input type="checkbox"/> Type 1: HAC reflects waterbody/receiving water conditions <input type="checkbox"/> Type 2: HAC reflects achievable effluent conditions <input checked="" type="checkbox"/> Type 3: HAC reflects current effluent conditions
J. Statement of HAC: The Department has determined the highest attainable condition of the receiving water is achieved through the application of the variance limit in the permit, combined with a permit requirement that the permittee implement its Chloride SRM plan. Thus, the HAC at commencement of this variance is 420 mg/L, which reflects the greatest chloride reduction achievable with the current treatment processes, in conjunction with the implementation of the permittee's Chloride SRM plan. The current effluent condition is reflective of on-site optimization measures that have already occurred. This HAC determination is based on the economic feasibility of available compliance options for the City of New Holstein WWTF at this time (see Economic Section below). The permittee may seek to renew this variance in the subsequent reissuance of this permit; the Department will reevaluate the HAC in its review of such a request. A subsequent HAC cannot be defined as less stringent than this HAC.	
K. Variance Limit: 420 mg/L as a weekly average. This is equivalent to the 4-day P99, rounded to two significant figures.	
L. Level currently achievable (LCA): 420 mg/L	
M. What data were used to calculate the LCA, and how was the LCA derived? (Immediate compliance with LCA is required.) The LCA represents the 4-day P99 from permit-required sampling from 04/01/2018 – 03/31/2024.	
N. Explain the basis used to determine the variance limit (which must be ≤ LCA). Include citation. The variance limit = 4 Day P99. The limit is established in accordance with s. 283.15 (5), Wis. Stats. and ch. NR 106 Subchapter II, Wis. Adm. Code.	
O. Select all factors applicable as the basis for the variance provided under 40 CFR 131.10(g). Summarize justification below: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6	
The use of a reverse osmosis system was evaluated. The cost of the system was estimated to an average cost per household that would result in a MHI of 6.09%. Installing centralized lime softening on the current municipal water supply system was also evaluated, and the estimated cost of doing so would be about 11.24% of the MHI. Those cost estimates are in the range in which the application of either treatment would be expected to result in substantial and widespread economic and social impacts to the community. Without a variance, meeting the water quality standard of 400 mg/L would result in substantial and widespread economic and social impacts.	

Section III: Location Information			
A. Counties in which water quality is potentially impacted: <u>Calumet; Manitowoc</u>			
B. Receiving waterbody at discharge point: <u>Jordan Creek</u>			
C. Flows into which stream/river? <u>Pine Creek; South Branch Manitowoc River</u>		How many miles downstream? <u>1 mile to Pine Creek; 5 miles to South Branch</u>	
D. Coordinates of discharge point (UTM or Lat/Long): <u>43° 57' 10" N Latitude, 88° 04' 45" W Longitude</u>			
E. What is the distance from the point of discharge to the point downstream where the concentration of the substance falls to less than or equal to the chronic criterion of the substance for aquatic life protection? Approximately 20 miles. There are several other facilities in the Manitowoc River basin that have a chloride variance, which are listed below. The flow-weighted chloride concentration from these facilities plus Rockland Sanitary District (which has a WQBEL of 400 mg/L) is 647 mg/L. For the mass balance equation shown below to equal 395 mg/L or less, the stream flow needs to be at least 3.7 cfs. The 7Q10 of the Manitowoc River just upstream of the Branch River is 4.4 cfs, which is approximately 20 miles downstream of New Holstein.			
F. Provide the equation used to calculate that distance (<i>Include definitions of all variables, identify the values used for the clarification, and include citation</i>): Mass balance equation solving for the cumulative stream flow needed to result in an instream concentration less than or equal to the chronic toxicity criteria of 395 mg/L. (interim limit in mg/L x effluent design flow in cfs) + (background concentration in mg/L x background stream flow in cfs) / (effluent design flow in cfs + background stream flow in cfs) = ≤ 395 mg/L.			
G. What are the designated uses associated with the direct receiving waterbody, and the designated uses for any downstream waterbodies until the water quality standard is met? The receiving water and downstream waters are designated for recreation, non-public water supply, and fish and aquatic life uses (limited aquatic life and warmwater sport fish classifications). The aquatic life classification is irrelevant because chloride water quality criteria are the same for all aquatic life classifications in Wisconsin.			
H. Identify all other variance permittees for the same substance which discharge to the same stream, river, or waterbody in a location where the effects of the combined variances would have an additive effect on the waterbody: The flow-weighted effluent chloride concentration based on all of these facilities, including New Holstein, using the current annual average design flow (total flow of 3.47 MGD) is 649 mg/L.			
Permit Number	Facility Name	Facility Location	Variance Limit [mg/L]
WI-0022195	St. Nazianz (design flow = 0.20 MGD)	St. Nazianz	Current = 490 mg/L
WI-0022799	Chilton (design flow = 1.189 MGD)	Chilton	Current = 670 mg/L
WI-0020443	Brillion (design flow = 0.708 MGD)	Brillion	Current = 1100 mg/L
WI-0029025	Potter (design flow = 0.0434 MGD)	Potter	Current = 450 mg/L Proposed = 450 mg/L
I. Please attach a map, photographs, or a simple schematic showing the location of the discharge point as well as all variances for the substance currently draining to this waterbody on a separate sheet See attached map (Current Outfall Variances June 2024).			
J. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown			

River Mile	Pollutant	Impairment
Jordan Creek: 0.00-1.36	PCBs	Contaminated Sediment & Fish Tissue
Pine Creek: 0.00-5.54	PCBs	Contaminated Sediment
South Branch: 0.00-12.64	Phosphorus	Water Quality Use Restrictions
South Branch: 0.00-12.64	PCBs	Contaminated Sediment & Fish Tissue
South Branch: 0.00-12.64	Unknown	Elevated Water Temperature

K. Please list any contributors to the POTW in the following categories:
May need to contact facility for this information

Food processors (cheese, vegetables, meat, pickles, soy sauce, etc.)	None
Metal Plating/Metal Finishing	None
Car Washes	None
Municipal Maintenance Sheds (salt storage, truck washing, etc.)	None
Laundromats	None
Other presumed commercial or industrial chloride contributors to the POTW	None

L. If the POTW does not have a DNR-approved pretreatment program, is a sewer use ordinance enacted to address the chloride contributions from the industrial and commercial users? If so, please describe.

City has enacted sewer use ordinances under Chapter 14 of the Municipal codes, the City has enacted sewer use ordinances related to chloride contributions:

1. New water softeners shall have DIR (Demand Initiated Regeneration) controls and have a minimum salt efficiency of 3350 grains of hardness per pound of salt. A building permit shall be required for the installation of new water softeners not installed by New Holstein Utility to ensure said standards are met.
2. The City has the authority to test the discharge from industrial and commercial users and prohibit the discharge of wastewater to collection system if the discharge has deleterious effects upon the wastewater treatment facility, processes, equipment, or receiving waters, or which otherwise create a hazard to life, health, or constitute a public nuisance.
3. The City has the authority to enter the premises or buildings to examine the pipes and fixtures.
4. The City has the authority to enact enforcement against an industrial or commercial user in violation of the ordinances.

Section IV: Pretreatment (complete this section only for POTWs with DNR-Approved Pretreatment Programs. See w:\Variances\Templates and Guidance\Pretreatment Programs.docx)

A. Are there any industrial users contributing chloride to the POTW? If so, please list.
 N/A

B. Are all industrial users in compliance with local pretreatment limits for chloride? If not, please include a list of industrial users that are not complying with local limits and include any relevant correspondence between the POTW and the industry (NOVs, industrial SRM updates and timeframe, etc)
 N/A

C. When were local pretreatment limits for chloride last calculated?
 N/A

D. Please provide information on specific SRM activities that will be implemented during the permit term to reduce the industry's discharge of the variance pollutant to the POTW
 N/A

Section V: Public Notice

A. Has a public notice been given for this proposed variance? Yes No
B. If yes, was a public hearing held as well? Yes No N/A
C. What type of notice was given?
 Notice of variance included in notice for permit Separate notice of variance
D. Date of public notice: September 12, 2024 Date of hearing: October 29, 2024
E. Were comments received from the public in regards to this notice or hearing? (If yes, see notice of final determination) Yes No

Section VI: Human Health

A. Is the receiving water designated as a Public Water Supply? Yes No
B. Applicable criteria affected by variance: No human health criteria for chloride.
C. Identify any expected impacts that the variance may have upon human health, and include any citations:
None.

Section VII: Aquatic Life and Environmental Impact

A. Aquatic life use designation of receiving water: Limited aquatic life classification
B. Applicable criteria affected by variance: Chronic toxicity criterion for chloride is 395 mg/L per ch. NR 105, Wis. Adm. Code.
C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:
The limit of 420 mg/L exceeds the genus mean chronic value for the water flea-*ceriodaphnia dubia*; 417 mg/L.
D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations: None that would affect the water quality criterion, as the chronic toxicity criterion for chloride is more stringent than all genus mean chronic values for organisms with chloride toxicity data. As a result, no endangered species with data would need more protection than already provided by the existing criterion.

County	Species	Status

Citation: U.S. Fish & Wildlife Service – Environmental Conservation Online System (<http://www.fws.gov/endangered/>) and National Heritage Index (<http://dnr.wi.gov/topic/nhi/>)

Section VIII: Economic Impact and Feasibility

A. Describe the permittee’s current pollutant control technology in the treatment process:
Treatment processes include preliminary treatment using fine screens; secondary treatment using activated sludge technology; phosphorus removal; sludge stabilization and thickening using aerobic digestion and gravity settling. None of these wastewater treatment processes remove chloride.
B. What modifications would be necessary to comply with the current limits? Include any citations.
Upgrades to the wastewater treatment facility would include installing a reverse osmosis (RO) to comply with the chloride WQBELs of 395 mg/L.
C. How long would it take to implement these changes?
It would not be economically feasible for the City of New Holstein to install reverse osmosis treatment at the WWTF. Obtaining the funds to install reverse osmosis would be the limiting factor.
D. Estimate the capital cost (Citation): \$1,496,250 for RO treatment (source: WDNR Form 3400-193 Chloride Variance Application from permittee)
E. Estimate additional O & M cost (Citation): \$485,450/yr for RO treatment (source: WDNR Form 3400-193 Chloride Variance Application from permittee)
F. Estimate the impact of treatment on the effluent substance concentration, and include any citations:

Reverse osmosis systems can be operated to achieve levels of chloride below the water quality standard of 395 mg/L. However, it is not economically feasible for the City of New Holstein at this time.

G. Identify any expected environmental impacts that would result from further treatment, and include any citations:

End-of-pipe RO wastewater treatment technology for chloride produces concentrated brine that can be as much or more of an environmental liability than the untreated effluent. Since the concentrated brine cannot be further treated, the only recourse for the disposal of the brine is transfer to another community, which is often not feasible. Appropriate chloride source reduction activities are preferable environmentally to effluent end-of-pipe treatment in most cases, since the end product of treatment (production of a concentrated brine) does not remove the load of chloride from the environment.

There would be some impacts based on disposal of brine from RO. These include air pollution impacts from trucking brine and increased chloride impacts at the point where brine is discharged.

H. Is it technically and economically feasible for this permittee to modify the treatment process to reduce the level of the substance in the discharge? Yes No Unknown

Reverse Osmosis treatment of the City of New Holstein WWTF effluent to meet the WQBEL is technically feasible. However, it is not economically feasible. See DNR variance application and screening tool for costs of reverse osmosis. Use of reverse osmosis at the WWTF was evaluated; the resulting total cost for sewer user rates was estimated to result in an average cost to households that would be 6.09% of the MHI. An increase of this magnitude would cause substantial and widespread adverse social and economic impacts in the area where the discharge is located.

Lime softening treatment of the municipal water supply – in lieu of ion-exchange is technically feasible and would potentially enable the WWTF effluent to meet the chloride WQBEL. However, lime softening is not economically feasible. See the Chloride Variance Economic Eligibility Tool (Lime Softening) screening tool for costs of lime softening. Use of municipal lime softening was evaluated; the resulting cost for sewer user rates was estimated to result in an average cost to households that would be 11.24% of the MHI. An increase of this magnitude would cause substantial and widespread adverse social and economic impacts in the area where the discharge is located.

I. If treatment is possible, is it possible to comply with the limits on the substance? Yes No Unknown

J. If yes, what prevents this from being done? Include any citations.

The cost of adding RO to the existing WWTF's treatment train would cause substantial and widespread adverse social and economic impacts in the area where the discharge is located. Implementation of the SRMs in the proposed permit is preferable economically and environmentally to installing RO.

K. List any alternatives to current practices that have been considered, and why they have been rejected as a course of action, including any citations:

- Reverse Osmosis (RO) – not economically feasible (6.09% MHI)
- Regional Lime Softening Treatment – not economically feasible (11.24% MHI)

Section IX: Compliance with Water Quality Standards

A. Describe all activities that have been, and are being, conducted to reduce the discharge of the substance into the receiving stream. This may include existing treatments and controls, consumer education, promising centralized or remote treatment technologies, planned research, etc. Include any citations.

As part of implementing the chloride source reduction measures (SRMs) as required per s. NR 106.83(2), Wis. Adm. Code, the permittee conducted the following activities:

- Tune-up rental softeners when they are serviced.

- Educate new customers at time of property transfer and perform softener maintenance as necessary.
- Replace older softeners with new high efficiency units, and install new softeners in new construction.
- Provide information about the City's existing ordinance that requires the use of demand initiated regeneration and a high salt efficiency standard for new and replacement softeners.
- Educate softener owners of the impact of chloride on water quality; provide information about increasing softener efficiency and reducing the use of softened water.
- Evaluate the feasibility of installing a municipal lime softening system to replace point-of-use softeners.
- Work with industrial and commercial contributors to prevent increases in the amount of chloride discharged, and seek reductions from those sources.
- Evaluate the feasibility of switching to a non-chloride containing chemical, or using biological processes for phosphorus removal at the wastewater treatment facility.
- Minimize chloride loading to the sanitary sewer collection system from infiltration and inflow (I/I).
- Submitted annual chloride progress reports.

See the submitted Annual Chloride Progress Reports for further details.

B. Describe all actions that the permit requires the permittee to complete during the variance period to ensure reasonable progress towards attainment of the water quality standard. Include any citations.

This permit contains a variance to the water quality-based effluent limit (WQBEL) for chloride granted in accordance with s. NR 106.83(2), Wis. Adm. Code. As conditions of this variance the permittee shall (a) maintain effluent quality at or below the interim effluent limitation specified in the table above, (b) implement the chloride source reduction measures specified below, (c) follow the Source Reduction Plan dated September 14, 2023, and (d) perform the actions listed in the schedule (See the Schedules section herein):

1. SRMs Targeting the City's Rental Softener Program
 - a. Tune-up rental softeners when they are serviced.
 - b. Educate new customers at time of property transfer and perform softener maintenance as necessary.
 - c. Replace older softeners with new high efficiency units and install new softeners in new construction.
2. SRMs Targeting Owners/Users of Rental and Non-Rental Water Softeners
 - a. Provide information about the City's existing ordinance that requires the use of demand-initiated regeneration and a high salt efficiency standard for new and replacement softeners.
 - b. Educate softener owners/users of the impact of chloride on water quality; provide information about increasing softener efficiency and reducing the use of softened water.
 - c. Explore the imposition of installation restrictions so that outside hose bibs are on unsoftened water.
 - d. Continued collection of water softener data for the city by inspection at times of service calls.
3. SRMs Targeting Industrial, Commercial and Municipal Sources
 - a. Continued outreach and education with industrial/commercial sources to optimize their water softener settings and to confirm the presence of processes that could contribute discharges of chlorides and seek reductions for these discharges.
 - b. Continue monitoring hauled-in waste for chloride concentrations. High-chloride loads will be defined as >400 mg/L.

4. SRMs Targeting Winter Road Maintenance

- a. Develop and implement best management practices to reduce the discharge of chloride to the sanitary sewer system at municipal/county owned facilities housing vehicles used for snow plowing and road de-icing.
- b. Education and outreach to municipal officials and public works departments on proper winter road maintenance, impacts to surface water quality and impacts on the treatment facility effluent quality.
- c. Reduce inflow into collection system through CMOM implementation.
- d. Educate residential customers about good salting practices.

5. SRMs Targeting I/I

- a. Address I/I issues during road construction projects.
- b. Reduce I/I from open pick manhole covers.
- c. Line sewers as budget allows.

Citation: City of New Holstein, New Holstein Utilities Chloride Source Reduction Plan, dated August 28, 2024

Section X: Compliance with Previous Permit (Variance Reissuances Only)

A. Date of previous submittal: December 15, 2017 **Date of EPA Approval:** January 19, 2018

B. Previous Permit #: WI-0020893-09-0 **Previous WQSTS #:** (EPA USE ONLY)

C. Effluent substance concentration: 4-day P99 = 420mg/L **Variance Limit:** 480 mg/L (weekly avg)

D. Target Value(s): 430 mg/L **Achieved?** Yes No Partial

E. For renewals, list previous steps that were to be completed. Show whether these steps have been completed in compliance with the terms of the previous variance permit. Attach additional sheets if necessary.

Condition of Previous Variance	Compliance
Annual Chloride Progress Report #1	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Annual Chloride Progress Report #2	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Annual Chloride Progress Report #3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Annual Chloride Progress Report #4	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Final Chloride Report	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Annual Chloride Progress Report #6 (After permit expiration)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Tune-up rental softeners when they are serviced.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Educate new customers at time of property transfer and perform softener maintenance as necessary.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Provide information about the City's existing ordinance that requires the use of demand initiated regeneration and a high salt efficiency standard for new and replacement softeners.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Educate softener owners of the impact of chloride on water quality; provide information about increasing softener efficiency and reducing the use of softened water.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Evaluate the feasibility of installing a municipal lime softening system to replace point-of-use softeners	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Work with industrial and commercial contributors to prevent increases in the amount of chloride discharged, and seek reductions from those sources.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Evaluate the feasibility of switching to a non-chloride containing chemical, or using biological processes for phosphorus removal at the wastewater treatment facility.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Minimize chloride loading to the sanitary sewer collection system from infiltration and inflow (I/I).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Chloride Source Reduction Plan

City of New Holstein, New Holstein Utilities WPDES Permit No. WI-0020893-10-0

2024 - 2029

Interim Limit: 420 mg/L, Weekly Avg

Target Value: 400 mg/L, Weekly Avg

Water Quality Based Limits: 400 mg/L and 4,400 lbs/day, Weekly Avg

SRM/PMP Activities	Actions	Frequency/Year of the Permit				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
1. SRMs Targeting the City's Rental Softener Program						
a. Tune-up rental softeners when they are serviced.	Adjust softener settings to provide optimal operation each time a rental softener is serviced by a New Holstein Utilities technician; track tune-ups conducted. Since the 2023 SRM update, NHU performed 116 softener service calls.	X	X	X	X	X
b. Educate new customers at time of property transfer and perform softener maintenance as necessary.	Hand out or send information (e.g., brochures) to new customers and track tune-ups conducted.	X	X	X	X	X
c. Replace older softeners with new high efficiency units and install new softeners in new construction.	Target installation of 40 new high efficiency softeners each year through replacement of old units and installations in new home construction. Since the 2023 SRM update, NHU replaced 7 softeners, and removed 3 softeners.	X	X	X	X	X
2. SRMs Targeting Owners/Users of Rental and Non-Rental Water Softeners						

SRM/PMP Activities	Actions	Frequency/Year of the Permit				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
a. Provide information about the City’s existing ordinance that requires the use of demand-initiated regeneration and a high salt efficiency standard for new and replacement softeners.	Include information about this ordinance and the City’s Softener Rental Program in the packets provided to home buyers by the Chamber of Commerce. Also provide this information annually, attached to the New Holstein Utilities Newsletter.	X	X	X	X	X
b. Educate softener owners/users of the impact of chloride on water quality; provide information about increasing softener efficiency and reducing the use of softened water.	Send information (e.g., brochures) to customers with a utility bill and post information on the City’s web site. Also provide this information annually, attached to the New Holstein Utilities Newsletter.	X	X	X	X	X
c. Explore the imposition of installation restrictions so that outside hose bibs are on unsoftened water.	Evaluation of cost, methods of outreach.	X				
d. Continued collection of water softener data for the city by inspection at times of service calls.	Note age, maintenance history, types of water softener during service calls.	X	X	X	X	X
3. SRMs Targeting Industrial, Commercial and Municipal Sources						
a. Continued outreach and education with industrial/commercial sources to optimize their water softener settings and to confirm the presence of processes that could contribute discharges of chlorides and seek reductions for these discharges.	Conduct annual meetings, site visits, inspections, emails, or phone calls with each large industrial and commercial contributor during which sources of chloride discharged will be identified; potential means of reducing the amount of chloride discharged will be identified; and – where appropriate – plans will be developed to implement additional source reduction measures.	X	X	X	X	X

SRM/PMP Activities	Actions	Frequency/Year of the Permit				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
b. Continue monitoring hauled-in waste for Chloride concentrations. High-Chloride loads will be defined as > 400 mg/L.	Check hauled loads of varying sources monthly, on a rotating basis. (Residential/Commercial/Industrial)	X	X	X	X	X
4. SRMs Targeting Winter Road Maintenance						
a. Develop and implement best management practices to reduce the discharge of chloride to the sanitary sewer system at municipal/county owned facilities housing vehicles used for snow plowing and road de-icing.	Develop management practices to reduce the discharge of chloride from facilities housing vehicles used to clear roads in the winter. Encourage city managers who oversee snow removal and salt application to implement the management practices by conducting annual trainings for staff and incorporating those practices into standard operating procedures by reminding them annually.	X	X	X	X	X
b. Education and outreach to municipal officials and public works departments on proper winter road maintenance, impacts to surface water quality and impacts on the treatment facility effluent quality.	A letter or email will be distributed annually to the city’s Administrator and Department of Public Works reminding them to implement management practices.	X	X	X	X	X
c. Reduce inflow into collection system through CMOM implementation.	Perform collection system maintenance as prescribed by the Utility’s CMOM Program to reduce I/I.	X	X	X	X	X
d. Educate residential customers about good salting practices.	NHU will develop an announcement for residents about good salting practices, including limiting overuse of salt to deice driveways and sidewalks. The announcement may be in a mailer or on the utility’s website or social media.	X	X	X	X	X

SRM/PMP Activities	Actions	Frequency/Year of the Permit				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
5. SRMs Targeting I/I						
a. Address I/I issues during road construction projects.	Summer 2023: Replaced ¾ miles of sanitary sewer, replaced 7 manholes.	X				
b. Reduce I/I from open pick manhole covers.	Purchase plugs for different size pick hole manhole covers.	X	X	X	X	X
c. Sewer lining as budget allows.	In 2024, 442 feet of sewer running underneath Jordan Creek was lined.	X				