Permit Modification Fact Sheet

Changes from the previous permit fact sheet are highlighted in grey.

General Information

Permit Number:	WI-0021245-10-1
Permittee:	City of New Richmond, 156 East 1st St, New Richmond, WI 54017
Discharge Location:	New Richmond Wastewater Treatment Facility, 636 Doar Dr., New Richmond, WI 54017
Receiving Water:	The Willow River in the Lower Willow River Watershed of the St. Croix River Basin in St. Croix County
StreamFlow ($Q_{7,10}$):	17 cfs
Stream Classification:	Warm Water Sport Fish, Non-Public Water Supply
Design Flow	0.98 MGD Annual Average
Significant Industrial Loading?	No
Operator at Proper Grade?	Steve Skinner (OIC) certified operator – A1, B, C, D, L, SS Greg Hermansen – certified operator – A1, B, SS
Approved Pretreatment Program?	N/A

Facility Description

The City of New Richmond owns and operates the New Richmond Wastewater Treatment Facility (New Richmond). The facility has an annual average design flow of 0.98 million gallons per day (MGD) and had an actual annual average influent flow of 0.63 MGD in 2021. Treatment consists of a grit channel and automatic screening, primary clarification, secondary clarification, biological and chemical phosphorus removal and a single stage nitrification activated sludge process. Alum is added for phosphorus removal. with ultraviolet (UV) light for disinfection of the effluent prior to discharge to the Willow River. Sludge is shipped after thickening to the West Central Wisconsin Biosolids Facility (WCWBF). Centrate from the WCWBF is then returned to New Richmond where it's stored in a holding tank and reintroduced through the treatment plant. In 2021, New Richmond underwent construction which among other things, introduced an Ortho Phosphorus Analyzer, two (2) new chemical pumps designed to feed off the Ortho Phosphorus Analyzer, and a new blower with Variable Frequency Drive (VFD) controls. Significant effluent monitoring & limit changes in this permit term are as follows: 1) the addition of annual monitoring for total nitrogen, nitrite + nitrate nitrogen and total Kjeldahl nitrogen, 2) fecal coliform monitoring and limits replaced with *Escherechia coli* (*E. coli*) monitoring and limits, 3) Monitoring every two months for PFOS and PFOA has been added in the permit in accordance with s. NR 106.98(2)(c), Wis. Adm. Code, and an associated schedule, 4) chronic & acute WET limits have been added and the WET testing frequency has increased, and 5) Phosphorus Adaptive Management interim limits and requirements have been added, including a compliance schedule. Three sample points have been added to the permit (601, 602 and 603) for reporting of instream monitoring data of the Willow River as required by the Adaptive Management Plan. The flow sample frequency at the influent and effluent has been changed from continuous to daily for eDMR reporting.

Substantial Compliance Determination

Enforcement During Last Permit: While there were no enforcement actions this permit term, New Richmond WWTF had some exceedances and missing data, and late submittals that have been addressed.

Per Adebowale Adesanwo on 08/22/2022: After a desk top review of all discharge monitoring reports, land app reports, compliance schedule, and a compliance inspection on May 10, 2022, this facility has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	Influent: 0.063 MGD (2021)	Representative influent samples shall be collected following the fine screen and the grit chamber.
001	Effluent to Willow River: 0.68 MGD (2021)	Representative effluent samples shall be collected from the effluent pipeline prior to UV disinfection; effluent grab samples for E. coli shall be collected after disinfection.
002	Approx. 318 dry tons hauled to WCWBF in 2021	As long as sludge is shipped to the West Central Wisconsin Biosolids Facility (WCWBF) for disposal, representative sludge samples shall be collected once per year and monitored for List 1. Sludge samples shall be collected prior to hauling and test results shall be reported on Form 3400-49 Waste Characteristics Report. Hauled sludge reports shall be submitted on Form 3400-52 Other Methods of Disposal or Distribution Report following each year that sludge is hauled.
601	New instream sample point for adaptive management	Representative water samples shall be collected from the Willow River. Sample point 601 is located downstream of the New Richmond WWTF Outfall, (Latitude 45.11398N, Longitude -92.56207W). Sample point 601 correlates with the sample locations described in the approved AM Plan No. WQT-2022-0007 (January 2022).
602	New instream sample point for adaptive management	Representative water samples shall be collected from the Willow River. Sample point 602 is located upstream of the New Richmond WWTF Outfall, (Latitude 45.11866N, Longitude -92.56013W). Sample point 602 correlates with the sample locations described in the approved AM Plan No. WQT-2022-0007 (January 2022).
603	New instream sample point for adaptive management	Representative water samples shall be collected from the Willow River. Sample point 603 is located upstream of the New Richmond WWTF Outfall, (Latitude 45.10531N, Longitude -92.47778W). Sample point 603 correlates with the sample locations described in the approved AM Plan No. WQT-2022-0007 (January 2022).

1 Influent - Monitoring

Sample Point Number: 701- AFTER GRIT CHAMBER

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	

Changes from Previous Permit:

The flow sample frequency has been changed from continuous to daily for eDMR reporting. The sample location changed due to treatment train changes at the facility.

Explanation of Limits and Monitoring Requirements

Monitoring of influent flow, BOD5 and total suspended solids is required by s. NR 210.04(2), Wis. Adm. Code, to assess wastewater strengths and volumes and to demonstrate the percent removal requirements in s. NR 210.05, Wis. Adm. Code, and in the Standard Requirements section of the permit.

2 Surface Water - Monitoring and Limitations

Sample Point Number: 001- DISCHARGE to WILLOW RIVER

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD_5, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies Nov - April
BOD_5, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies Nov - April
BOD_5, Total	Weekly Avg	26 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
BOD_5, Total	Monthly Avg	26 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
Suspended Solids, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies Nov - April
Suspended Solids, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies Nov - April
Suspended Solids, Total	Weekly Avg	26 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies May - Oct

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Suspended Solids, Total	Monthly Avg	26 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies Oct - March
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	16 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies Oct - March
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	31 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies April & May
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	17 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies April & May
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	33 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies June - Sept
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	18 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies June - Sept
E. coli	Geometric Mean - Monthly	126 #/100 ml	2/Week	Grab	Limit & monitoring effective May - Sept.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit & monitoring effective May - Sept. See the E. coli Percent Limit section below. Enter the result in the DMR on the last day of the month.
PFOS		ng/L	Annual	Grab	Monitoring only. See PFOS/PFOA section below and the Minimization Plan Determination of Need schedule.
PFOA		ng/L	Annual	Grab	
Phosphorus, Total	6-Month Avg	0.6 mg/L	5/Week	24-Hr Flow Prop Comp	Limit effective 05/01/2024. See phosphorus sections below.
Phosphorus, Total	Monthly Avg	1.0 mg/L	5/Week	24-Hr Flow Prop Comp	Limit effective throughout the permit term.
Phosphorus, Total		lbs/day	5/Week	Calculated	Calculate the daily mass discharge of phosphorus on the same days phosphorus sampling occurs. Mass (lbs/day) = concentration (mg/L) x Flow (mgd) x 8.34. See phosphorus sections below.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Monitoring required annually in specific quarters. See Nitrogen
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Series Monitoring subsection below.
Acute WET	Daily Max	1.0 TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing section below
Chronic WET	Monthly Avg	3.8 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	

Changes from Previous Permit

The effluent monitoring frequency for all parameters with limitations were considered. Monitoring frequencies are based on the size and type of the facility and are established to best characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Requirements in administrative code (NR 108, 205, 210 and 214 Wis. Adm. Code) and Section 283.55, Wis. Stats. were considered, where applicable, when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. For more information see the March 22, 2021 version of the Bureau of Water Quality Program Guidance Document "Monitoring Frequencies for Individual Wastewater Permits". The department has determined at this time that no changes in monitoring frequency is necessary.

Other significant effluent monitoring and/or limit changes in the upcoming permit term are as follows: 1) the addition of annual monitoring for total nitrogen, nitrite + nitrate nitrogen and total Kjeldahl nitrogen, 2) fecal coliform monitoring and limits have been replaced with *Escherichia coli* (*E. coli*) monitoring and limits, 3) ~~Monitoring every two months for PFOS and PFOA has been added in the permit in accordance with s. NR 106.98(2)(c), Wis. Adm. Code, along with an associated schedule,~~ the monitoring frequency for PFOS and PFOA has been reduced from 1/ 2 Months to Annual, 4) chronic & acute WET limits have been added and the WET testing frequency for both has increased from twice during the permit term to annually, 5) Phosphorus Adaptive Management interim limits and requirements have been added, and 6) the flow sample frequency has been changed from continuous to daily for eDMR reporting.

Explanation of Limits and Monitoring Requirements

Limits were determined for the Village of New Richmond's existing discharge to the Willow River using chs. NR 102, 104, 105, 106, 207, 210, 212 and 217 of the Wisconsin Administrative Code (where applicable). For more information see the October 18, 2022 memo from Benjamin Hartenbower to Holly Heldstab titled "Water Quality-Based Effluent Limitations for the New Richmond Wastewater Treatment Facility WPDES Permit No. WI-0021245".

MUNICIPAL EFFLUENT LIMITS – In accordance with the federal regulation 40 CFR 122.45(d), limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable.

BOD5, Total Suspended Solids (TSS) and pH: No changes have been made to the categorical permit limitations for BOD5, TSS, or pH. Because the reference effluent flow rates and receiving water characteristics have not changed, limitations do not need to be re-evaluated at this time.

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. There has been a change in expression of limits per the 2016 revisions to NR 205.065. In accordance with the federal regulation 40 CFR 122.45(d), limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable.

E. coli: Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying *E. coli* WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for *E. coli* while facilities are disinfecting during the recreation

period, and establish effluent limitations for *E. coli* established in s. NR 210.06 (2), Wis. Adm Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to *E. coli* to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code.; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code.; and, updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code. New Richmond can meet the *E. coli* limits at permit reissuance, therefore no compliance schedule has been included.

PFOS and 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 municipal dischargers with an average flow rate less than 1 MGD, to be evaluated on a case-by-case basis to determine if monitoring is required pursuant to s. NR 106.98(2)(c), Wis. Adm. Code. The department evaluated the need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, it was identified that the POTW has an indirect discharger(s) that may be a potential source of PFOS/PFOA. Therefore, monitoring once every two months is included. 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.

Pursuant to s. NR 205.066, Wis. Adm. Code, the department may specify the monitoring frequency for PFOS and PFOA on a case-by-case basis after the initial 24 months of sampling.

After a review of the data submitted with the Year 2 Report on Effluent Discharges, the department has determined that it is warranted to reduce the sampling frequency in this case. The department is requiring continued monitoring of these compounds to complete the permit term to ensure that the current effluent quality is maintained. At the next permit reissuance, the department will make another determination as to whether further reduction or removal of monitoring is warranted, based on the continued sampling results.

Total Phosphorus – The New Richmond Wastewater Treatment Facility is subject to a phosphorus wasteload allocation of 3,161 pounds per year (1,434 kg/year) under the Lake St. Croix TMDL report. The TMDL was approved by EPA on August 8, 2012. Annual total effluent phosphorus data from 20180-02021 demonstrates that the permittee is discharging well below the individual phosphorus allocation. However, this TMDL was not derived such that local water quality criteria in the Willow River would be met through TMDL implementation, therefore the phosphorus limits in the reissued permit must also be evaluated based on s. NR 217.13, Wis. Adm. Code.

The proposed permit will be New Richmond's second permit term under new administrative rules for phosphorus discharges that took effect December 1, 2010. Details regarding the administrative rules for phosphorus discharges may be found at: http://dnr.wi.gov/topic/surfacewater/phosphorus.html. The new phosphorus rules are contained in s. NR 102.06 and ch. NR 217, Subchapter III, Wis. Adm. Code. A monthly average interim limit of 1 mg/L is effective upon reissuance. An Adaptive Management Interim limit of 0.6 mg/L expressed as a 6-month average (averaging period of May through October and Nov through April) was added and becomes effective 05/01/2024. The facility has shown ability to meet this Adaptive Management Interim limit. For information purposes, the final calculated water quality based effluent limitations for phosphorus are a 6-month seasonal average limitation of 0.075 mg/L & 0.61 lbs/day, and a monthly average limitation of 0.225 mg/L based on current in-stream phosphorus data. These limitations may be recalculated based on changes in the in-stream data at the time of permit reissuance. These limits will become effective at the end of four permit terms unless the adaptive management project is terminated per s. NR217.18(3)(g), Wis. Adm. Code, in which case the limits may be imposed at an earlier date, or the phosphorus reductions specified in the adaptive management plan have been achieved.

New Richmond requested, and the Department conditionally approved a plan to implement a watershed adaptive management (AM) approach under s. NR 217.18, Wis. Adm. Code as a means for New Richmond to achieve compliance with the phosphorus water quality standard in s. NR 102.06, Wis. Adm. Code. The phosphorus limitations and conditions in this permit reflect the approved Adaptive Management (AM) Plan WQT-2022-0007. The permittee shall design and implement the actions identified in AM Plan No. WQT-2022-0007 in accordance with the goals and measures identified. The goal of the AM plan is to reduce phosphorus loadings within the watershed action area so the receiving water can meet water quality standards. A minimum of 200 lbs/yr are expected to be reduced by the end of this permit term (March 31, 2028). In addition, annual progress reports are required. See Schedules section for more details. The Department may terminate the AM option based on the reasons enumerated in s. NR 217.18 (3) (e)2, Wis. Adm. Code.

Surface water monitoring requirements (Sample Points 601, 602 and 603) are included in the proposed permit in support of the goals and measures of the Adaptive Management Plan and are discussed in more detail in following subsections of this fact sheet. Sampling is required as outlined in the approved Adaptive Management Plan. See below for information.

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

- 2nd quarter (April – June) 2023
- 3rd quarter (July – August) 2024
- 4th quarter (Oct – Dec) 2025
- 2nd quarter (April – June) 2026
- 1st quarter (Jan – March) 2027

Whole Effluent Toxicity (WET)

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

- 3rd quarter (July – August) 2024
- 4th quarter (Oct – Dec) 2025
- 2nd quarter (April – June) 2026
- 1st quarter (Jan – March) 2027

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. Based on the available effluent data, no effluent limits or monitoring are required.

Sampling Point Numbers:

- **601- Instream Sample Pt- Downstream of Outfall (Latitude 45.11398N, Longitude -92.56027W),**
- **602- Instream Sample Pt- Upstream of Outfall (Latitude 45.11866N, Longitude -92.56013W), and**
- **603- Instream Sample Pt- Upstream of Outfall (Latitude 45.10531N, Longitude -92.47778W)**

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		cfs	Per Occurrence	Measure	Effective 07/01/2023: Provide voluntary river flow estimates for each day that in-stream phosphorus monitoring is performed November 1 through April 30 annually. See the associated schedule regarding installation of flow monitoring equipment.
Flow Rate		cfs	Monthly	Measure	Effective 07/01/2023: Provide an estimate of river flow for each day that in-stream phosphorus monitoring is performed May 1 through October 31 annually. See the associated schedule regarding installation of flow monitoring equipment.
Phosphorus, Total		mg/L	Per Occurrence	Grab	Voluntary monitoring November 1 through April 30 annually. See permit sections for sampling and reporting requirements.
Phosphorus, Total		mg/L	Monthly	Grab	Collect samples Monthly May 1 through October 31 annually. See sections below for sampling and reporting requirements.
Phosphorus, Total		lbs/month	Per Occurrence	Calculated	Calculated total phosphorus loads may also be reported for the months of November through April, as

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					data is available. See permit sections for calculation of total monthly loads.
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate and report total monthly phosphorus loads for the months of May through October annually. See permit sections for calculation of total monthly loads.

Changes from Previous Permit

Downstream and Upstream surface water monitoring of the Willow River was not required during the previous permit term. Monitoring is included as part of the approved Adaptive Management Plan requirements. See associated schedule for more information.

Explanation of Limits and Monitoring Requirements

As part of the Adaptive Management Plan requirements, downstream and upstream monitoring for river flow rate, in-stream phosphorus concentration and total monthly in-stream phosphorus loads is required during the months of May through October. Monitoring for these same parameters is voluntary during the months of November through April. When voluntary monitoring is completed, results must be reported on the monthly eDMR. The in-stream phosphorus concentration and river flow rate are used to calculate the total monthly loading of phosphorus in the Willow River on a monthly basis. This monitoring will allow the permittee to demonstrate reductions in phosphorus loading for each month of the year. A schedule has been included in the permit allowing the permittee three months to install flow monitoring equipment.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**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	B	Liquid	Hauled	Hauled	Hauled	346 dry US tons (2021)
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
Is a priority pollutant scan required? No						

Sample Point Number: 002- SLUDGE TO THE WCWBF

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Grab	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Grab	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Grab	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Grab	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Grab	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Grab	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Grab	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Grab	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Grab	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Grab	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Grab	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Grab	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Grab	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Grab	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Grab	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Grab	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Grab	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Grab	

Changes from Previous Permit:

No changes.

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).

4 Schedules

4.1 Adaptive Management Interim Limit Compliance Update

Required Action	Due Date
Comply with Adaptive Management Interim Limit: The Adaptive Management interim effluent limit of 0.6 mg/L as a six-month average goes into effect. The averaging periods are May through October and November through April. Compliance with the 6-month average limit is evaluated at the end of each 6-month period on April 30 and October 31 annually.	05/01/2024

Explanation of Schedule: This compliance schedule provides the permittee until May 1, 2024 to meet the adaptive management interim limit, at the beginning of a 6-month averaging period.

4.2 Installation of Receiving Water Flow Monitoring Equipment

Required Action	Due Date
Final Equipment Installation: Permittee shall complete installation of flow monitoring equipment in order to report receiving water flow per Section 7 of the approved Adaptive Management PlanNo. WQT-2022-007 (January 20022). Reporting of flow data shall begin no later than July 1, 2023.	06/30/2023

4.3 Watershed Adaptive Management Option Annual Report Submittals

The permittee shall submit annual reports on the implementation of AM Plan No. WQT-2022-0007 (January 2022) as specified in the "Phosphorus Limitation(s) and Adaptive Management Requirements" permit section and the following schedule.

Required Action	Due Date
Annual Adaptive Management Report: Submit an annual adaptive management report. The annual adaptive management report shall: o Identify the nonpoint source best management practices listed in chapters five and six of the approved adaptive management plan that were completed during the previous calendar year and those actions that are in progress; o Evaluate collected monitoring data; o Document progress in achieving the goals and measures identified in the approved adaptive management plan; o Describe the outreach and education efforts that occurred during the past calendar year; o Identify any corrections or adjustments to the adaptive management plan that are needed to achieve compliance with the phosphorus water quality standards specified in s. NR 102.06, Wis. Adm. Code; o Describe any updates needed to New Richmond's approved phosphorus optimization plan; and o Submit results from all sample points outlined in AM plan No. WQT-2022-0007 (January 2022) to the Department using the Department's Laboratory Data Entry System (LDES)	03/31/2024
Annual Adaptive Management Report #2: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2025

Annual Adaptive Management Report #3: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2026
Annual Adaptive Management Report #4: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2027
Renewal of Adaptive Management Plan for Permit Reissuance: If the permittee intends to seek renewal of AM plan No. WQT-2022-0007 (January 2022) per s. NR 217.18, Wis. Adm. Code, for the reissued permit term, proposed AM goals and actions based on an updated AM plan shall be submitted to the Department for review and approval. The permittee may propose to adjust load reductions required by AM plan No. WQT-2022-0007 (January 2022) either up or down at the beginning of each WPDES permit term to reflect changes in loads associated with point and non-point sources. This schedule may be modified to incorporate any changes in AM goals and actions, removed if the AM program is terminated per the "Adaptive Management Reopener Clause" permit section, or removed if the adaptive management plan has achieved water quality standards as determined by the Department within the AM action area.	09/30/2027
Final Adaptive Management Report for 1st Permit Term: Submit the final Adaptive Management (AM) report documenting progress made during the first permit term under AM in meeting the watershed phosphorus reduction target of 200 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions from the approved AM plan No. WQT-2022-0007 (January 2022) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions.	09/30/2027
Annual Adaptive Management Report #6: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2029
Comply with Adaptive Management Interim Limit: For the second permit term under Adaptive Management the permittee shall comply with an Adaptive Management total phosphorus interim limit no higher than 0.5 mg/L as a 6-month average, in addition to the 1.0 mg/L monthly avg already effective.	05/01/2029
Annual Adaptive Management Report #7: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2030
Annual Adaptive Management Report #8: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2031
Annual Adaptive Management Report #9: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2032
Renewal of Adaptive Management Plan for Permit Reissuance: If the permittee intends to seek renewal of AM plan No. WQT-2022-0007 (January 2022) per s. NR 217.18, Wis. Adm. Code, for the reissued permit term, proposed AM goals and actions based on an updated AM plan shall be submitted to the Department for review and approval. The permittee may propose to adjust load reductions required by AM plan No. WQT-2022-0007 (January 2022) either up or down at the beginning of each WPDES permit term to reflect changes in loads associated with point and non-point sources. This schedule may be modified to incorporate any changes in AM goals and actions, removed if the AM program is terminated per the "Adaptive Management Reopener Clause" permit	09/30/2032

section, or removed if the adaptive management plan is has achieved water quality standards as determined by the Department within the AM action area.	
Final Adaptive Management Report for 2nd Permit Term: Submit the final Adaptive Management (AM) report documenting progress made during the second permit term under AM in meeting the watershed phosphorus reduction target of 1,075 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions from the approved AM plan No. WQT-2022-0007 (January 2022) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions.	09/30/2032
Annual Adaptive Management Report #11: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2034
Annual Adaptive Management Report #12: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2035
Annual Adaptive Management Report #13: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2036
Annual Adaptive Management Report #14: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2037
Renewal of Adaptive Management Plan for Permit Reissuance: If the permittee intends to seek renewal of AM plan No. WQT-2022-0007 (January 2022) per s. NR 217.18, Wis. Adm. Code, for the reissued permit term, proposed AM goals and actions based on an updated AM plan shall be submitted to the Department for review and approval. The permittee may propose to adjust load reductions required by AM plan No. WQT-2022-0007 (January 2022) either up or down at the beginning of each WPDES permit term to reflect changes in loads associated with point and non-point sources. This schedule may be modified to incorporate any changes in AM goals and actions, removed if the AM program is terminated per the "Adaptive Management Reopener Clause" permit section, or removed if the adaptive management plan has achieved water quality standards as determined by the Department within the AM action area.	09/30/2037
Final Adaptive Management Report for 3rd Permit Term: Submit the final Adaptive Management (AM) report documenting progress made during the first permit term under AM in meeting the watershed phosphorus reduction target of 1,950 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions from the approved AM plan No. WQT-2022-0007 (January 2022) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions.	03/31/2038
Annual Adaptive Management Report #16: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2039

Annual Adaptive Management Report #17: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2040
Annual Adaptive Management Report #18: Submit an Adaptive Management report with the required information described in this section (see above).	03/31/2041
Annual Adaptive Management Report #19: Submit an Adaptive Management report with the required information described in this section (see above).	09/30/2042
Final Adaptive Management Report for 4th Permit Term: Submit the final Adaptive Management (AM) report documenting progress made during the second permit term under AM in meeting the watershed phosphorus reduction target of 2,300 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions from the approved AM plan No. WQT-2022-0007 (January 2022) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions.	01/31/2043
Achieve Water Quality Standards and Adaptive Management Plan Success: All the receiving waters identified within the AM plan WQT-2022-0007 (January 2022) shall comply with water quality standards specified in s. NR 102.06, Wis. Adm. Code. The permittee shall continue to comply with applicable effluent limits (required under s. 217.18(3)(e)3. expressed as a 6-month avg and 1.0 mg/L monthly avg) and continue monitoring surface waters WQT-2022-0007 (January 2022) at a minimum of monthly May through October for total phosphorus.	03/31/2043

Explanation of Schedule: This compliance schedule requires the permittee to submit annual adaptive management (AM) annual reports that show progress towards meeting the goals and measures contained in the approved AM plan. The final AM Report for this permit term must document the success of meeting the watershed phosphorus reduction target of 200 lbs/year, as well as the anticipated future reduction in phosphorus sources and phosphorus effluent concentrations. The compliance schedule may be modified at permit reissuance, should changes in AM goals and measures or timing necessitate different dates for schedule items.

Pursuant to s. NR 217.18(1) Wis. Adm. Code., phosphorus water quality criteria must be achieved "as soon as possible". The duration for this adaptative management schedule is 20 years. This timeframe is consistent with the approved adaptive management plan, and represents the shortest possible duration based upon the following factors that influence time required for the water body to achieve the phosphorus criterion:

- Magnitude of point and/or nonpoint source phosphorus reductions required
- Costs associated with point and/or nonpoint source phosphorus reductions
- For nonpoint source reductions, the time required to contact landowners and receive adequate participation to implement practices
- Physical characteristics of the watershed and receiving water, including landuse, soil properties, slopes, channel gradient, and level of legacy sediment/phosphorus currently in the system.

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	03/31/2024

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 PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results.	
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. 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. The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan. 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. 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.	03/31/2025

Explanation of Schedule: 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.

Special Reporting Requirements: None

Other Comments:

Previous publishing newspaper: The News, PO Box 98, New Richmond, WI 54017-0098

Attachments:

- ~~Water Quality Based Effluent Limits: October 18, 2022 memo from Benjamin Hartenbower to Holly Heldstab titled~~
- ~~Public Notice~~
- ~~Adaptive Management Final Approved Plan - January 1, 2022~~

- ~~Adaptive Management Plan Approval Letter - June 29, 2022~~
- PFOS and PFOA Water Quality-Based Effluent Limitations for the New Richmond Wastewater Treatment Facility - WPDES Permit No. (WI-0021245) in St. Croix County, by Amy Garbe, PE, Wastewater Engineer, dated May 15, 2025

Proposed Expiration Date: March 31, 2028

Justification Of Any Waivers From Permit Application Requirements

N/A

Prepared By: Holly Heldstab, Wastewater Specialist

Date: March 14, 2023

Revised By: Sarah Donoughe, Wastewater Specialist-Adv

Date: July 11, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: May 15, 2025

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the New Richmond Wastewater Treatment Facility -WPDES Permit No. (WI-0021245) in St. Croix County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for the New Richmond Wastewater Treatment Facility. This municipal wastewater treatment facility (WWTF) discharges to the Willow River, located in the Lower Willow River Watershed in the St. Croix River Basin.

The current permit, effective since April 2023, has monitoring only for PFOS and PFOA. The following review is based on new regulations which are now in effect throughout the state of Wisconsin and recommendations are made in accordance with chapters NR 102, 104, 105, 106, 207, and 217 of the Wisconsin Administrative Code, where applicable.

Receiving Water Information

- Name: Willow River
- Classification: Warm Water Sport Fish (WWSF) community, non-public water supply
- Flow: The following 7-Q10 and 7-Q2 values are from USGS for the Station 05341699 where Outfall 001 is located. The Harmonic Mean has been estimated based on average flow and the 7-Q10 using an equation from U.S. EPA's Technical Support Document for Water Quality-Based Toxics Control (March 1991, EPA/505/2-90-001, pgs. 88-89).
  7-Q10 = 17 cfs (cubic feet per second)
  7-Q2 = 29 cfs
  Harmonic Mean Flow = 58 cfs

- % of Flow used to calculate limits: 25%

Effluent Information

- Flow: Average Design Flow = 0.98 MGD. For reference, the actual average flow from January 2023 to March 2025 was 0.708 MGD.
- Effluent characterization: This facility is categorized as a minor municipality.

The following table lists the statistics for effluent PFOS and PFOA levels from December 2020 and May 2023 through March 2025.

	PFOS ng/L	PFOA ng/L
1-day P_{99}	N/A	9.19
4-day P_{99}	N/A	6.28
30-day P_{99}	N/A	4.78
Mean*	0.94	4.04
Std	0.60	1.61

Sample Size	13	13
Range	<0.32-2.6	2.0-7.4

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

Water Quality Based Limit – PFOS and PFOA

Administrative rules for PFOS and PFOA took effect on August 1, 2022. These rule revisions include additions to ch. NR 102 (s. NR 102.05), Wis. Adm. Code, which establish PFOS and PFOA standards for surface waters. Revisions to ch. NR 106 (s. NR 106, Subchapter VIII), Wis. Adm. Code establish procedures for determining water quality based effluent limits for PFOS and PFOA, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

PFOS

Due to PFOS being a bioaccumulating compound of concern (BCC), no mixing zone is allowed pursuant to s. NR 106.98(4), Wis. Adm. Code. Therefore, the effluent limit for PFOS is set equal to criterion (8 ng/L).

PFOA

The conservation of mass equation is described in s. NR 106.06(4)(b)1. Wis. Adm. Code, and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream PFOA concentrations (Cs) provided below.

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

Where:

WQC = 95 ng/L for the Willow river

Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 14.5 cfs

Cs = background concentration of PFOA in the receiving water pursuant to s. NR 106.06(4)(e), Wis. Adm. Code

Qe = effluent flow rate = 0.98 MGD = 1.52 cfs

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

After substituting the appropriate variables, the calculated PFOA limit is 1,003 ng/L.

Reasonable Potential Determination

In accordance with s. NR 106.98(4)(a), Wis. Adm. Code, **the discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS** because the arithmetic average of reported effluent PFOS data is less than 1/5th of the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is not required.**

The discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOA because the 30-day P_{99} of reported effluent PFOA data is less than the calculated WQBEL (1,003 ng/L). Therefore, **a WQBEL is not required.**

Conclusions

The discharge has no reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS nor PFOA. Therefore, no WQBELs are required.

Pursuant to s. NR 205.066, Wis. Adm. Code, the department may specify the monitoring frequency for PFOS and PFOA on a case-by-case basis after the initial 24 months of sampling. **After a review of the**

available data, the department has determined that it is warranted to reduce the sampling frequency in this case to annually.

If there are any questions or comments on these recommendations, please contact Amy Garbe by telephone at (608) 716-9968 or by email at Amy.Garbe@wisconsin.gov.

Attachments (2) – P99 Calculations

PREPARED BY: _____ date: 5/15/25

Amy Garbe, P.E., Wastewater Engineer

cc: Adebowale Adesanwo, Basin Engineer – WCR/Eau Claire
Nate Willis, P.E., PFAS Implementation Coordinator – CO

Attachment 1 – PFOS P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -
= = = =

SUBSTANCE:	
NUMBER OF VALUES:	------
TOTAL	13
DETECTED	8
NON-DETECTED	5
d	0.384615
m	1.523375
mean of all data	0.937462
s	0.600839

Data Summary	
Dec-20	0.914
May-23	1.4
Jul-23	<0.41
Sep-23	0.975
Nov-23	0.898
Jan-24	<0.33
Mar-24	2.6
May-24	<0.32
Jul-24	1.9
Sep-24	1.9
Nov-24	1.6
Jan-25	<0.32
Mar-25	<1.5

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -			
SUBSTANCE:			
NUMBER OF VALUES:			
TOTAL	13		
DETECTED	13		
NON-DETECTED	0		
d	0		
m	4.043077		
mean of all data	4.043077		
s	1.614406		
n	1	4	30
d^n	0	0	0
p	0.99	0.99	0.99
Z_p	2.326785	2.326785	2.326785
1+(s/m)^2	1.159442	1.159442	1.159442
(sigma_d)^2	0.147938	0.147938	0.147938
mu_d	1.323037	1.323037	1.323037
(sigma_dn)^2	0.147938	0.039086	0.005301
mu_dn	1.323037	1.377463	1.394356
P_99 exponent	2.217983	1.837475	1.563759
P_99	9.19	6.28	4.78

Data Summary	
Dec-20	5.31
May-23	2.6
Jul-23	5.6
Sep-23	4.91
Nov-23	3.34
Jan-24	2.7
Mar-24	2.6
May-24	2.8
Jul-24	7.4
Sep-24	3.5
Nov-24	4.1
Jan-25	5.7
Mar-25	2