Permit Modification Fact Sheet

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

General Information

Permit Number:	WI-0022870-10-1	
Permittee Name:	City of Oconto Falls	
Address:	500 N Chestnut St., PO Box 70	
City/State/Zip:	Oconto Falls WI 54154-0070	
Discharge Location:	Latitude 44° 52' 08" Longitude 88° 08' 34"	
Receiving Water:	Oconto River, Lower Oconto River Watershed, Upper Green Bay Basin, Oconto County	
StreamFlow ($Q_{7,10}$):	7-Q10 = 187 cfs cubic feet per second (cfs)	
Stream Classification:	Warm Water Sport Fish (WWSF) community, non-public water supply	
Discharge Type:	Existing, continuous	
Design Flow(s)	Annual Average	0.62 MGD
Industrial Contributors	Badger Paper Mill and Flexographic Printing	
Plant Classification	The plant is classified as basic and has the following subclasses: A2, B, C, P, D, L, and SS.	
Approved Pretreatment Program?	N/A	

Facility Description

The City of Oconto Falls operates a trickling filter/solids contact wastewater treatment facility that was designed for an average daily flow of 0.62 MGD. Flow incoming to the wastewater treatment plant (WWTP) arrives by either gravity or from the 5 lift stations spread throughout the collection system. Upon entering the plant the water goes through a fine screening system followed by a pista grit removal chamber. From there the water flows through a 6-inch parshall flume flow meter and into the clarigester, which is a primary clarifier on top of a digester. The primary effluent is then diverted into the two trickling filters and spread evenly across a plastic media. After exiting the trickling filters, the trickling filter effluent flows into a small coarse air aerated contact stabilization tank. The mixed liquor then flows to the center of the final clarifier in the flocculation center well and ferric chloride is mixed in to help with the phosphorus removal. The mixed liquor suspended solids settles out and the effluent flows over the weirs and into the disinfection zone, which is achieved via Ultraviolet (UV) system on a seasonal basis.

Waste sludge is pumped back up to the clarigester where it settles out into the digester portion, and is gradually pumped out of the digester and into a sludge storage tank until sludge is either land applied or hauled to another facility for treatment.

Substantial Compliance Determination

Enforcement During Last Permit: During the past permit term, the facility received Notices of Noncompliance for SSOs on September 4, 2022 and March 21, 2021. The facility has completed all previously required actions as part of the enforcement process.

After a desk top review of all discharge monitoring reports, CMARs, land app reports, compliance schedule items, and a site visit on May 8, 2024, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Laura Gerold, Wastewater Engineer on May 17, 2024.

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	0.38 MGD January 2019-December 2023	Influent: Representative influent samples shall be collected at the Parshall Flume in the headworks facility after screening and grit removal.
001	Flow is not monitored at this point.	Effluent: 24-hour flow proportional composite samples are collected at the final effluent channel before UV disinfection. Grab samples are collected after UV disinfection.
002	75 dry U.S. tons/year estimated in permit application.	Liquid Sludge: Representative samples of the anaerobically digested liquid sludge shall be collected from the draw-off line of the sludge mixing pumps.

1 Influent – Monitoring Requirements

1.1 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	
BOD5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

1.1.1 Changes from Previous Permit:

No changes made from previous permit.

1.1.2 Explanation of Limits and Monitoring Requirements

Influent monitoring is needed to assess loading to the facility and treatment performance. Requirements for flow, BOD, and TSS are established in accordance with ch. NR 210.04(2), Wis. Adm. Code.

2 Surface Water - Monitoring and Limitations

2.1 Sample Point Number: 001- Effluent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit effective May through September annually.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May through September annually. See the E. coli Percent Limit section in the permit. Enter the result in the DMR on the last day of the month.
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Comp	
Phosphorus, Total	Monthly Avg	5.2 lbs/day	3/Week	Calculated	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only in 2027.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only in 2027.
PFOS		ng/L	Annual	Grab	See PFOS/PFOA Sampling and Reporting Requirements permit section.
PFOA		ng/L	Annual	Grab	See PFOS/PFOA Sampling and Reporting Requirements permit section.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section in the permit.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section in the permit.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section below. 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 permit Section 2.2.1.6 for WET testing requirements and schedule.

2.1.1 Changes from Previous Permit

Sample types for Total Suspended Solids (TSS) and phosphorus have been changed from 24-hr comp to 24-hr flow proportional composite to reflect sampling practices taking place at the facility. Additional changes are listed below:

Phosphorus- Monthly average mass-based limit of 5.2 lbs/day has been added.

Nitrogen, Ammonia- Monitoring is no longer required for the entire permit term. Monthly monitoring is required in 2027.

Chloride- Monthly monitoring has been added for the year of 2027. Monitoring is to occur on four consecutive days each month.

E. coli- Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

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

PFOS and PFOA – Monitoring once every two months is included in the permit in accordance with s. NR 106.98(2)(c), Wis. Adm. Code. The monitoring frequency has been reduced from 1/ 2 Months to Annual.

Acute WET- Required 2 times during the permit term.

2.1.2 Explanation of Limits and Monitoring Requirements

Refer to the WQBEL memo for the detailed calculations, prepared by the Water Quality Bureau dated April 11, 2024, used for this reissuance.

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.

Previously permitted monitoring frequencies for BOD, TSS and phosphorus technology based effluent limits fall below the standard monitoring frequency outlined in guidance for facilities with a design flow between 2 and 0.25 MGD. Since data submitted during the previous permit term shows consistent compliance with permit limitations, and the set monitoring frequency is consistent with requirements of state code, the reduced monitoring frequency is continued in the proposed permit. If performance levels begin to vary during the permitted term, the department may re-evaluate sampling frequencies and implement more frequent monitoring via permit modification or at permit 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.

BOD_5, TSS, and pH- Categorical limits are included in the permit as outlined in s. NR 210.04, Wis. Adm. ode. The effluent limitations for BOD_5, TSS and pH are carried over into this permit and are not subject to change at this time because the receiving water characteristics have not changed.

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.

E. coli monitoring is required at the permit effective date. An interim fecal coliform limit of 400 #/100 ml as a monthly geometric mean will apply from the permit effective date through the end of a compliance schedule. At the end of the compliance schedule, 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.

Phosphorus- Phosphorus requirements are based on the Phosphorus Rules as detailed in NR 102 (water quality standards) and NR 217, Wis. Adm. Code (effluent standards and limitations for phosphorus). Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters.

A Technology-Based Effluent Limit (TBEL) of 1.0 mg/L is needed if a facility discharges more than the threshold of 150 pounds per month (s. NR 217.04(1)(a)1 Wis. Adm. Code). This limit was included in previous issuances and will remain in this permit to prevent backsliding. An mass limit is also required pursuant to s. NR 217.14(1)(a), Wis. Adm. Code, in situations where downstream waters qualify as a lake or reservoir. Since Lake Michigan is an existing lake, mass limit equal to 1.0 mg/L × 8.34 × 0.62 MGD, or 5.2 lbs/day, has been added as a monthly average.

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 it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily or weekly value. The final effluent limit for phosphorus is expressed as a monthly average. This final effluent limit was derived from and complies with the applicable water quality criterion.

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.

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 water quality based effluent limitations (WQBELs) for chloride. If the permittee's effluent data shows that a calculated WQBEL for chloride cannot be met, then the permit will include a chloride effluent limitation. s. 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". (See chloride guidance dated March 2010 at this link: Implementation plan for the chloride rule)

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 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. Annual tests are scheduled in the following rotating quarters: October- December, 2024; July- September, 2025; January- March, 2026; April- June, 2027; and October- December, 2028

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

Acute monitoring is required in the following quarters: July- September, 2025; and October- December, 2028

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	Fecal Coliform	Injection	Land Applied or Hauled to another facility	75 dry US Tons/Year estimated
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? Yes If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in land applying sludge from this facility						
Is a priority pollutant scan required? No. Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

3.1 Sample Point Number: 002- Liquid Sludge

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 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	
Radium 226 Dry Wt		pCi/g	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2025.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2025.
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.

3.1.1 Changes from Previous Permit:

PFAS – Annual monitoring is included in the permit pursuant to s. NR 204.06(2)(b)9., Wis. Adm. Code.

3.1.2 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.

4 Schedules

4.1 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.	07/31/2025
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.	07/31/2026

4.1.1 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.

4.2 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan Submittal: Submit a 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.	07/31/2025

4.2.1 Explanation of Schedules

This schedule requires the submittal of a Land Application Management Plan that documents how the permittee will manage the land application of sludge, consistent with ch. NR 204, Wis. Adm. Code.

5 Special Reporting Requirements

None

6 Attachments:

PFOS and PFOA Water Quality-Based Effluent Limitations for the Oconto Falls Wastewater Treatment Facility -WPDES Permit No. (WI-0022870) in Oconto County, by Amy Garbe, PE, Wastewater Engineer, dated October 27, 2026

7 Expiration Date:

June 30, 2029

8 Justification Of Any Waivers From Permit Application Requirements

No waivers have been made from permit application requirements.

Prepared By: Amanda Perdzock, Wastewater Specialist **Date: June 3, 2024**

Revised By: Sarah Donoughe, Wastewater Specialist-Adv **Date:** November 3, 2026

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: October 27, 2026

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the Oconto Falls Wastewater Treatment Facility -WPDES Permit No. (WI-0022870) in Oconto County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for the Oconto Falls Wastewater Treatment Facility. This municipal wastewater treatment facility (WWTF) discharges to the Oconto River, located in the Lower Oconto River Watershed in the Upper Green Bay Basin.

The current permit, effective since August 2024, 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: Oconto River
- Classification: Warm Water Sport Fish (WWSF) community, non-public water supply. Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.
- Flow: The following 7-Q_{10} and 7-Q_2 values are from a USGS station near where Outfall 001 is located:
  7-Q_{10} = 187 cfs (cubic feet per second)
  7-Q_2 = 252 cfs
  Harmonic Mean Flow = 373 cfs using a drainage area of 739 mi^2

The Harmonic Mean has been estimated based on average flow and the 7-Q_{10} 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).

- % of Flow used to calculate limits: 25%

Effluent Information

- Flow: Average Design Flow = 0.62 MGD (million gallons per day)
  For reference, the actual average flow from January 2024 to June 2026 was 0.37 MGD.
- Effluent characterization: This facility is categorized as a minor municipality.

The following table lists the statistics for effluent PFOS and PFOA levels from August 2024 through June 2026.

	PFOS ng/L	PFOA ng/L
1-day P_{99}	4.86	4.50
4-day P_{99}	3.85	3.34
30-day P_{99}	2.68	2.72

Printed on Recycled Paper

Mean*	2.14	3.42
Std	0.80	0.71
Sample Size	13	13
Range	<1.4-4.4	1.4-3.6

*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 Oconto River
Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 93.25 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 = 0.62 MGD = 0.96 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

After substituting the appropriate variables, the calculated PFOA limit is 9,329 ng/L.

Reasonable Potential Determination

In accordance with s. NR 106.98(4)(b), 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 30-day P99 of reported effluent PFOS data is less than the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is not required.**

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 PFOA** because the 30-day P_{99} of reported effluent PFOA data is less than the calculated WQBEL (9,329 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: 10/27/26
Amy Garbe, P.E., Wastewater Engineer

cc: Laura Gerold, P.E., Basin Engineer – NER/Green Bay
Nate Willis, P.E., PFAS Implementation Coordinator – CO

Attachment 1 – PFOS Data

EFFLUENT VARIABILITY ANALYSIS -			
=	= = =	=	
SUBSTANCE:			
NUMBER OF VALUES:	------		
TOTAL	13		
DETECTED	11		
NON-DETECTED	2		
d	0.153846		
m	2.527273		
mean of all data	2.138462		
s	0.802609		
	------	------	------
n	1	4	30
d^n	0.153846	0.00056	4.1E-25
p	0.988182	0.989994	0.99
Z_p	2.26343	2.326575	2.326785
1+(s/m)^2	1.100857	1.100857	1.100857
(sigma_d)^2	0.096089	0.096089	0.096089
mu_d	0.879096	0.879096	0.879096
(sigma_dn)^2	0.096089	0.071996	0.009984
mu_dn	0.879096	0.724649	0.755095
P_99 exponent	1.580718	1.348916	0.987584
	-------	-------	-------
P_99	4.86	3.85	2.68
	-------	-------	-------

Data Summary	
Aug-24	2.1
Oct-24	1.7
Dec-24	2.1
Feb-25	2
Apr-25	2.8
May-25	2.7
Jul-25	4.4
Oct-25	<1.4
Dec-25	<1.4
Feb-26	1.8
Mar-26	3.4
Jun-26	2.7
Aug-26	2.1

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -			
=	= =	=	=
SUBSTANCE:			
NUMBER OF VALUES:	------		
TOTAL	13		
DETECTED	13		
NON-DETECTED	0		
d	0		
m	2.4		
mean of all data	2.4		
s	0.707107		
	------	------	------
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	1.086806	1.086806	1.086806
(sigma_d)^2	0.083243	0.083243	0.083243
mu_d	0.833847	0.833847	0.833847
(sigma_dn)^2	0.083243	0.021469	0.002889
mu_dn	0.833847	0.864734	0.874024
P_99 exponent	1.505167	1.205664	0.999095
	-------	-------	-------
P_99	4.50	3.34	2.72
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Data Summary

Aug-24	2.6
Oct-24	1.8
Dec-24	1.4
Feb-25	2.4
Apr-25	1.9
May-25	3.2
Jul-25	3.1
Oct-25	2
Dec-25	1.5
Feb-26	2
Mar-26	2.5
Jun-26	3.2
Aug-26	3.6