Permit Fact Sheet

General Information

Permit Number:	WI-0022233-08-0	
Permittee Name:	Village of Oostburg	
Address:	816 N 10th St	
City/State/Zip:	Oostburg, WI 53070-1189	
Discharge Location:	North bank of the Black River, upstream of the County Road A bridge.	
Receiving Water:	Black River (Black River Watershed, Sheboygan River Basin) in Sheboygan County	
StreamFlow ($Q_{7,10}$):	0 cfs	
Stream Classification:	Limited Aquatic Life (LAL) from outfall to Wilson-Lima Road; at Wilson-Lima road, warmwater sport fish community	
Discharge Type:	Existing, continuous	
Design Flow	Annual Average	0.437 MGD
Significant Industrial Loading?	None	
Operator at Proper Grade?	Yes, Oostburg is a basic plant with subclasses A1, B, C, L, P, and SS	
Approved Pretreatment Program?	N/A	

Facility Description

The Village of Oostburg operates a traditional carrousel oxidation ditch wastewater treatment facility with an annual average design flow of 0.437 MGD. The plant serves approximately 3,500 residents with no significant industrial loading. Treatment consists of fine screening, grit removal, 2 carrousel oxidation ditches with vertical brushes, 3 final clarifiers, and final step aeration at the effluent channel. Alum is added at the head of the oxidation ditch for phosphorus removal. Treated effluent is discharged to the headwaters of the Black River. Sludge is aerobically digested and then thickened by a screw press. Solids are hauled to another permitted facility for further treatment.

Substantial Compliance Determination

Enforcement During Last Permit: There was no formal enforcement actions taken during the last permit term. After a desk top review of all discharge monitoring reports, CMARs, compliance schedule items, and a site inspection on May 20, 2024, conducted by Curt Nickels, DNR Wastewater Engineer, 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, Waste Type/Sample Contents and Treatment Description (as applicable)**
701	0.39 MGD (1/1/2020 – 5/31/2024)	INFLUENT: 24-hr flow proportional composite samples shall be collected from the raw wastewater wet well prior to grit chamber.
001	0.36 MGD (1/1/2020 – 5/31/2024)	EFFLUENT: 24-hr flow proportional composite samples and grab samples shall be collected after final effluent aeration steps.
002	Did not land apply during the previous permit term.	SLUDGE: Class B, Aerobically digested liquid sludge. Representative composite samples shall be collected prior to hauling at the outfall of the screw press.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, 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 flow rate sample frequency was changed to daily from continuous.

Explanation of Limits and Monitoring Requirements

BOD_5 and Total Suspended Solids (TSS) – Monitoring and reporting of BOD_5 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	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total	Weekly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD5, 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	
Suspended Solids, Total	Weekly Avg	152 lbs/day	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	108 lbs/day	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		lbs/month	Monthly	Blank	Calculate the Total Monthly Discharge of TSS and report on the last day of the month on the DMR. See TMDL Calculations permit section.
Suspended Solids, Total		lbs/yr	Monthly	Blank	Calculate the 12-month rolling sum of total monthly mass of TSS discharged and report on the last day of the month on the DMR. 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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					the DMR on the last day of the month.
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	0.8 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim MDV limit effective through June 30, 2027. See the MDV/Phosphorus sections and phosphorus schedules.
Phosphorus, Total	Monthly Avg	0.6 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim MDV limit effective on July 1, 2027. See the MDV/Phosphorus sections and phosphorus schedules.
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly phosphorus discharged in lbs/month on the last day of the month on the DMR. See Standard Requirements in the permit for 'Appropriate Formulas' to calculate the Total Monthly Discharge in lbs/month.
Phosphorus, Total		lbs/yr	Annual	Calculated	Report the sum of the total monthly discharges (for the months that the MDV is in effect) for the calendar year on the Annual report form.
Chloride	Weekly Avg	470 mg/L	4/Month	24-Hr Flow Prop Comp	This is an interim limit. Sampling shall be conducted on four consecutive days one week per month. See Chloride Variance and Schedules sections for applicable target value.
Chloride		lbs/day	4/Month	Calculated	
Nitrogen, Total Kjeldahl		mg/L	Annual	24-Hr Flow Prop Comp	Annual in rotating quarters. See 'Nitrogen Series Monitoring' permit section.
Nitrogen, Nitrite +		mg/L	Annual	24-Hr Flow	Annual in rotating quarters. See 'Nitrogen Series

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrate Total				Prop Comp	Monitoring' permit section.
Nitrogen, Total		mg/L	Annual	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.
PFOS		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule in permit.
PFOA		ng/L	1/ 2 Months	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule in permit.
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing permit section.

Changes from Previous Permit

- **E. coli:** Addition of Escherichia coli (E. coli) monitoring and limits, to become effective per the Effluent Limitations for E. coli Schedule.
- **Total Nitrogen:** Addition of annual total nitrogen monitoring (TKN, NO_2+NO_3 and Total N) in rotating quarters throughout the permit term.
- **PFOS and PFOA:** Bi-monthly monitoring is included in accordance with s. NR 106,98(2)(a), Wis. Adm. Code.
- **Chloride:** Weekly average limit changed from 570 mg/L to 470 mg/L.
- **Chronic WET**: tests reduced from three tests to two tests during permit term.
- **TSS:** Addition of TMDL-based mass limits for TSS.
- **Phosphorus MDV:** The permittee has applied for a multi-discharger variance (MDV) for phosphorus for this permit term and the application has been approved by the Department. An MDV interim limit of 0.8 mg/L has been added that goes into effect at permit reissuance with an MDV interim limit of 0.6 mg/L that goes into effect July 1, 2027. The permittee is now required to report the total amount of phosphorus discharged in lbs/month and lbs/year. By March 1 of each year the permittee shall make a payment(s) to participating county(s) of $64.75 per pound of phosphorus discharged during the previous year in excess of the target value of 0.2 mg/L.
- **Flow Rate:** Flow rate sample frequency changed to daily from continuous.

Explanation of Limits and Monitoring Requirements

Monitoring Frequencies: Taking into consideration guidance and requirements in administrative code, effluent monitoring frequencies for the Village of Oostburg's permit were determined to be appropriate for pollutants that have final effluent limits in effect during this permit term.

Categorical Limits

BOD_5, 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. Tracking of BOD_5 and total suspended solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the Standard Requirements section of the permit. Chapter NR 102, Wis. Adm. Code, 'Water Quality Standards for Surface Waters' also specifies requirements for pH and dissolved oxygen for fish and aquatic life streams.

Water Quality Based Limits and Disinfection
Refer to the "Water Quality-Based Effluent Limitations for the Village of Oostburg dated July 19, 2024 and updated October 14, 2024 and prepared by Nicole Krueger, which was used for this reissuance.

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.

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.

TMDL Derived Limits for TSS: Northeast Lakeshore Total Maximum Daily Load (TMDL): The permitted facility is located within the Northeast Lakeshore Total Maximum Daily Load (NEL TMDL), which was approved by EPA October 30, 2023. The TMDL establishes Waste Load Allocations (WLAs) for point source dischargers and determines the maximum amounts of phosphorus and total suspended solids that can be discharged and still protect water quality. The final effluent limits and monitoring expressed in the permit were derived from and comply with the applicable water quality criterion and are consistent with the assumptions and requirements of the EPA-approved WLAs in the TMDL, which are 198 lbs/yr for phosphorus and 26,824 lbs/yr for TSS for the permitted facility.

For TSS, continuously discharging municipal facilities covered by the NEL TMDL are given monthly average and weekly average mass limits.

Phosphorus: Phosphorus rules became effective December 1, 2010 per NR 217, Wis. Adm. Code, that required the permittee to comply with water quality based effluent limits (WQBELs) for total phosphorous. The final phosphorus WQBELs are TMDL-based mass limits monthly (1.9lbs/day) and 6-month (0.63 lbs/day) and were to become effective as scheduled unless a variance was granted. For this permit term, the permittee has applied for the Multi-Discharger Variance (MDV) for phosphorus as provided for in s. 283.16, Wis. Stats., and approved by USEPA on February 6, 2017 for a 10-year duration. The permittee qualifies for the MDV because it is an existing source and a major facility upgrade is needed to comply with the applicable phosphorus WQBELs, thereby creating a financial burden. The interim effluent limit for total phosphorus is 0.8 mg/L as an average monthly limit effective through June 30, 207 and 0.6 mg/L as an average monthly limit effect on July 1, 2027, The limit was derived using DMR data from 01/07/2020 to 08/30/2024.

Conditions of the MDV require the permittee to optimize phosphorus removal throughout the proposed permit term, comply with interim limits and make annual payments to participating county(s) by March 1 of each year based on the pounds of phosphorus discharged during the previous year in excess of the specified target value. A reopener clause is included in the permit to address the current MDV's expiration date, as a permit action may be required to update or remove variance provisions if the MDV is altered or unavailable after February 6, 2027.

The "price per pound" value is $50.00 adjusted for CPI annually during the first quarter as defined by s. 283.16(8)(a)2, Wis. Stats and takes effect for reissued permits with effective dates starting April 1. This may differ from the "price per pound" that is public noticed; however, the "price per pound" is set upon reissuance and is applicable for the entire permit term. The participating county(s) uses these payments to implement non-point source phosphorus control strategies at the watershed level. By March 1 of each year the permittee shall make a payment(s) to participating county(s) of $64.75 per pound of phosphorus discharged during the previous year in excess of the target value of 0.2 mg/L.

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 July 19, 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. The Village of Oostburg 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. An interim limit of 470 mg/L is included. As a condition of this, variance target values of 420 mg/L and the implementation of chloride source reduction measures, intended to lead to compliance with the target value by the end of the permit term, are also included in the proposed permit. See the schedules section for the chloride compliance schedule.

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 2025; April – June 2026; July – September 2027; January – March 2028; October – December 2029.

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 previous PFOS sample result were within 1/5 of the standards under s. NR 102.04(8)(d)1, Wis. Adm. Code.

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.

Whole Effluent Toxicity (Chronic): Whole effluent toxicity (WET) testing requirements are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). Two chronic WET tests during the permit term are required based on the WET Checklist Summary and NR 106.08.

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	N/A	N/A	Hauled to another facility	550
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

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	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2027.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2027.
PFOA + PFOS		ug/kg	Once	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Once	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Sampling frequencies were reduced from quarterly to annual.

Addition of monitoring once during the permit term pursuant to s. NR 204.06(2)(b)9., Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5).

Limitations for PCBs are addressed in s. NR 204.07(3)(k).

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 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
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: 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; 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 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. The first annual chloride progress report is to be submitted by the Date Due.	09/30/2025
Annual Chloride Progress Report #2: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.	09/30/2026
Annual Chloride Progress Report #3: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.	09/30/2027
Annual Chloride Progress Report #4: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.	09/30/2028
Final Chloride Report: Submit the final chloride report documenting the success in meeting the chloride target value of 420 mg/L, as well as the anticipated future reduction in chloride sources and chloride effluent concentrations. The report shall: 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; 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; 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 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. If the permittee intends to reapply for a chloride variance, for the reissued permit, proposed target	09/30/2030

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: Include an explanation of why or how each source reduction measure will result in reduced discharge of the target pollutant; and Evaluate any available information on pollutant sources, timing, and concentration to update the mass balance assumptions and expected sources of the pollutant, and Identify any information needs that would help to better determine pollutant sources and make plans to collect that information. 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.	
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.	

4.2 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.	07/01/2026
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	07/01/2027

permit.	

4.3 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
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.	12/31/2025
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

4.4 Phosphorus Schedule – Continued Optimization

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

Required Action	Due Date
Optimization: The permittee shall continue to implement the Optimization Plan as previously approved to optimize performance to control phosphorus discharges. Submit a progress report on optimizing removal of phosphorus by the Due Date.	03/31/2026
Progress Report #1: Submit a progress report on optimizing removal of phosphorus.	03/31/2027
Progress Report #2: Submit a progress report on optimizing removal of phosphorus.	03/31/2028
Progress Report #3: Submit a progress report on optimizing removal of phosphorus. See "MDV Reopener Clause" in the Surface Water section of this permit.	03/31/2029
Progress Report #4: Submit a progress report on optimizing removal of phosphorus. This schedule	03/31/2030

item is contingent upon continued federal authorization of the MDV. See "MDV Reopener Clause" in the Surface Water section of this permit.	

4.5 Phosphorus Payment per Pound to County

The permittee is required to make annual payments for phosphorus reductions to the participating county or counties in accordance with s. 283.16(8), Wis. Stats, and the following schedule. The price per pound will be set at the time of permit reissuance and will apply for the duration of the permit.

Required Action	Due Date
Annual Verification of Phosphorus Payment to County: The permittee shall make a total payment to the participating county or counties approved by the Department by March 1 of each calendar year. The amount due is equal to the following: [(lbs of phosphorus discharged minus the permittee's target value) times ($64.75)] per pound or $640,000, whichever is less. See the payment calculation steps in the Surface Water section. The permittee shall submit Form 3200-151 to the Department by March 1 of each calendar year indicating total amount remitted to the participating counties to verify that the correct payment was made. The first payment verification form is due by the specified Due Date. Note: The applicable Target Value is 0.2 mg/L as defined by s. 283.16(1)(h), Wis. Stats. The "per pound" value is $50.00 adjusted for CPI.	03/01/2026
Annual Verification of Payment #2: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2027
Annual Verification of Payment #3: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2028
Annual Verification of Payment #4: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2029
Annual Verification of Payment #5: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2030
Continued Coverage: If the permittee intends to seek a renewed variance, an application for the MDV (Multi Discharger Variance) shall be submitted as part of the application for permit reissuance in accordance with s. 283.16(4)(b), Wis. Stats.	
Annual Verification of Payment After Permit Expiration: In the event that this permit is not reissued prior to the expiration date, the permittee shall continue to submit Form 3200-151 to the Department indicating total amount remitted to the participating counties by March 1 each year.	

4.6 Phosphorus Multi-Discharger Variance Interim Limit (0.6 mg/L)

This compliance schedule requires the permittee to achieve compliance with the specified MDV interim effluent limit in accordance with s. 283.16(6), Wis. Stats., by the due date.

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent discharges of phosphorus with conclusions regarding compliance.	01/01/2026
Action Plan: Submit an action plan for complying with the specified interim effluent limit (0.6 mg/L). If construction is required, include plans and specifications with the submittal.	07/01/2026

Initiate Actions: Initiate actions identified in the plan.	01/01/2027
Complete Actions: Complete actions identified in the plan and achieve compliance with the specified interim effluent limit (0.6 mg/L).	07/01/2027

Explanation of Schedules

4.1: Chloride Source Reduction Measures (Target Value)

This compliance schedule is a condition of receiving a variance from the chronic water quality-based chloride limit of 395 mg/L. Since a compliance schedule is being granted, an interim limit is required, and for Oostburg the limits are established as 470mg/L (as a weekly average). The schedule requires that annual reports shall indicate which source reduction measures Oostburg 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 420mg/L by the end of the permit term.

4.2: 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.

4.3: 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 to s. NR 210.06, Wis. Adm. Code.

4.4: Phosphorus Schedule – Continued Optimization

Per s. 283.16(6)(a), Wis. Stats., the Department may include a requirement that the permittee optimize the performance of a point source in controlling phosphorus discharges, which may be necessary to achieve compliance with multi-discharger variance interim limits. This compliance schedule requires the permittee to continue to implement the optimization plan that was approved during the previous permit term.

4.5: Phosphorus Payment per Pound to County

Subsection 283.16(6)(b), Wis. Stats., requires permittees that have received approval for the multi-discharger variance (MDV) to implement a watershed project that is designed to reduce non-point sources of phosphorus within the HUC 8 watershed in which the permittee is located. The permittee has selected the "Payment to Counties" watershed option described in s. 283.16(8), Wis. Stats. Under this option the permittee shall make annual payment(s) to participating county(s) that are calculated based on the amount of phosphorus actually discharged during a calendar year in pounds per year less the amount of phosphorus that would have been discharged had the permittee discharged phosphorus at a target value concentration of 0.2 mg/L. The pounds of phosphorus discharged in excess of the target value is multiplied by a per pound phosphorus charge that will equal $ 64.75 per pound. This schedule requires the permittee to submit Form 3200-151 to the Department indicating the total amount remitted to the participating county(s).

4.6: Phosphorus Multi-Discharger Variance Interim Limit (0.6 mg/L)

Subsection 283.16(6), Wis. Stats., establishes required interim phosphorus effluent limits that must be met for multi-discharger variance (MDV) eligibility. This schedule provides the permittee with two years to comply with that limit.

Special Reporting Requirements

N/A

Other Comments:

N/A

Attachments:

Water Quality Based Effluent Limits dated July 19, 2024 and updated 10/14/24, prepared by Nicole Krueger
MDV Evaluation Checklist
MDV Approval
Chloride Variance Documents
    EPA Datasheet
    SRM Plan Dated: December 9, 2024

Expiration Date:

March 31, 2030

Justification Of Any Waivers From Permit Application Requirements

No waivers were requested or approved.

Prepared By: Victoria ZieglerWastewater Specialist Date: August 21, 2024

Updated based on Fact Check comments 10/17/2024 and 12/13/2024

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 07/19/2024 updated 10/14/2024 for MDV limits

TO: Victoria Ziegler – SER

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for Oostburg Wastewater Treatment Plant
WPDES Permit No. WI-0022233-08

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 Oostburg in Sheboygan County. This municipal wastewater treatment facility (WWTF) discharges to the Black River, located in the Black River Watershed in the Sheboygan 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
Flow Rate						1,2
BOD_5			30 mg/L	20 mg/L		1,3
TSS			30 mg/L 152 lbs/day	20 mg/L 108 lbs/day		3,4
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		4.0 mg/L				1,3
Bacteria						5
Final Limit *E. coli*				126 #/100 mL geometric mean		
Ammonia Nitrogen						1,2
Phosphorus LCA Interim Limit HAC Interim Limit TMDL				 0.8 mg/L 0.6 mg/L 1.9 lbs/day	 0.63 lbs/day	4,6
Chloride			395 mg/L			7
TKN, Nitrate+Nitrite, and Total Nitrogen						8
PFOS and PFOA						9
Chronic WET						10,11

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. 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.
4. The phosphorus mass limit is based on the Total Maximum Daily Load (TMDL) for the Northeast Lakeshore to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA on in October 2023.

5. 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.
6. Under the phosphorus MDV, a level currently achievable (LCA) interim limit of 0.8 mg/L should be effective upon permit reissuance. A compliance schedule may be included in the permit until the highest attainable condition (HAC) limit of 0.6 mg/L can be met. The final WQBELs remain as the TMDL limits.
7. This is the WQBEL for chloride. An alternative effluent limitation of 470 mg/L, equal to the 4-day P_{99}, as a weekly average 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.
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 minor municipal permittees. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (TKN) (all expressed as N).
9. Once every two months monitoring is required in accordance with s. NR 106.98(2), Wis. Adm. Code.
10. 2 tests per permit term 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 the Black River, upstream of the discharge.
11. 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).

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

Attachments (2) – Narrative and Outfall Map

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Curt Nickels, Wastewater Engineer – SER
Bryan Hartsook, Regional Wastewater Supervisor – SER
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Oostburg Wastewater Treatment Plant

WPDES Permit No. WI-0022233-08

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

The Village of Oostburg operates a traditional carrousel oxidation ditch wastewater treatment facility with an annual average design flow of 0.437 MGD. The plant serves approximately 3,500 residents with no significant industrial loading. Treatment consists of fine screening, grit removal, 2 carrousel oxidation ditches with vertical brushes, 3 final clarifiers, and final step aeration at the effluent channel. Alum is added at the head of the oxidation ditch for phosphorus removal. Treated effluent is discharged to the headwaters of the Black River. Sludge is aerobically digested and then thickened by a screw press. Solids are hauled to another permitted facility for further treatment.

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

Existing Permit Limitations

The current permit, expiring on 12/31/2024, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD_5			30 mg/L	20 mg/L		2,3
TSS			30 mg/L	20 mg/L		2
pH	9.0 s.u.	6.0 s.u.				2
Dissolved Oxygen		4.0 mg/L				2,3
Ammonia Nitrogen						1
Phosphorus Interim Final				 1.0 mg/L 0.225 mg/L	 0.075 mg/L 0.273 lbs/day	4
Chloride			570 mg/L			5
Chronic WET						6

Footnotes:

1. Monitoring only.
2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
3. 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.
4. A compliance schedule is in the current permit to meet the final WQBEL by 09/30/2028.
5. This is an interim variance limit for the WQBEL of 395 mg/L.

6. Chronic WET testing is required every other year. The IWC is 100%.

Receiving Water Information

- Name: Black River
- Waterbody Identification Code (WBIC): 50300
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: The Black River is classified as a Limited Aquatic Life (LAL) community from the outfall to Wilson-Lima Road (approximately 4 miles downstream). At Wilson-Lima Road, the Black River is classified as a warmwater sport fish community. Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are estimates from USGS, where Outfall 001 is located.

  Black River (immediate receiving water)
  7-Q_{10} = 0 cfs (cubic feet per second)
  7-Q_2 = 0 cfs

  Black River (4 miles downstream, at the WWSF classification)
  7-Q_{10} = 0 cfs
  7-Q_2 = 0 cfs

  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).
- Hardness = 309 mg/L as $CaCO_3$. This value represents the geometric mean of data from chronic WET testing from 03/11/2008 – 10/10/2017.
- % 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 Black River, approximately 4 miles downstream of Outfall 001, is 303(d) listed as impaired for total phosphorus.

Effluent Information

- Design flow rate(s):
  Annual average = 0.437 MGD (Million Gallons per Day)
  For reference, the actual average flow from 01/01/2020 – 05/31/2024 was 0.38 MGD.
- Hardness = 400 mg/L as $CaCO_3$. This value represents the geometric mean of data from the permit reissuance application from 02/04/2024 – 02/27/2024.
- 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: Alum is used for phosphorus removal.
- 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
02/08/2024	<3.2	03/06/2024	<3.2	04/02/2024	<3.2
02/13/2024	<3.2	03/13/2024	<3.2	04/09/2024	<3.2
02/20/2024	<3.2	03/19/2024	<3.2	04/16/2024	3.3
02/27/2024	<3.2	03/27/2024	<3.2		
Average = 0.30 µg/L					

"<" means that the pollutant was not detected at the indicated level of detection. The mean concentration was calculated using zero in place of the non-detected results.

Chloride Effluent

	Chloride mg/L
1-day P_{99}	574
4-day P_{99}	468
30-day P_{99}	409
Mean	377
Std	71.5
Sample size	212
Range	191 - 532

The following table presents the average concentrations and loadings at Outfall 001 from 01/01/2020 – 05/31/2024 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	Average Mass Discharged
BOD_5	0.58 mg/L*	
TSS	1.84 mg/L*	
pH field	7.5 s.u.	
Phosphorus	0.33 mg/L*	1.0 lbs/day
Chloride	377 mg/L	
Dissolved Oxygen	8.3 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 P_{99}) 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-Q_{10}

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-Q_{10} 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.

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

Where:

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

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

Qe = 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

Cs = 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-Q_{10} 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 Oostburg.

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	1.7		
Cadmium	400	142		142	28.3	<0.098		
Chromium	301	4446		4446	889	<3.3		
Copper	400	57.4		57.4	11.5	0.30		
Lead	356	365		365	72.9	<5.4		
Nickel	268	1080		1080	216	<4.7		

Attachment #1

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.
Zinc	333	345		345	68.9	25		
Chloride (mg/L)		757		757			574	532

* 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-Q_{10} 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	1.7	
Cadmium	175	3.82		3.82	0.76	<0.098	
Chromium	301	326		326	65.2	<3.3	
Copper	309	27.2		27.2	5.44	0.30	
Lead	309	83.3		83.3	16.7	<5.4	
Nickel	268	169		169	33.8	<4.7	
Zinc	309	323		323	64.6	25	
Chloride (mg/L)		395		395			**468**

* 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	<0.098
Chromium (+3)	8400000		8400000	1680000	<3.3
Lead	2240		2240	448	<5.4
Nickel	110000		110000	22000	<4.7

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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	8.0	1.7

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 (01/11/2020 – 05/09/2024), the 1-day P_{99} chloride concentration is 574 mg/L, and the 4-day P_{99} of effluent data is 468 mg/L.

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 Oostburg has requested such a variance. That variance may be granted subject to the following conditions:

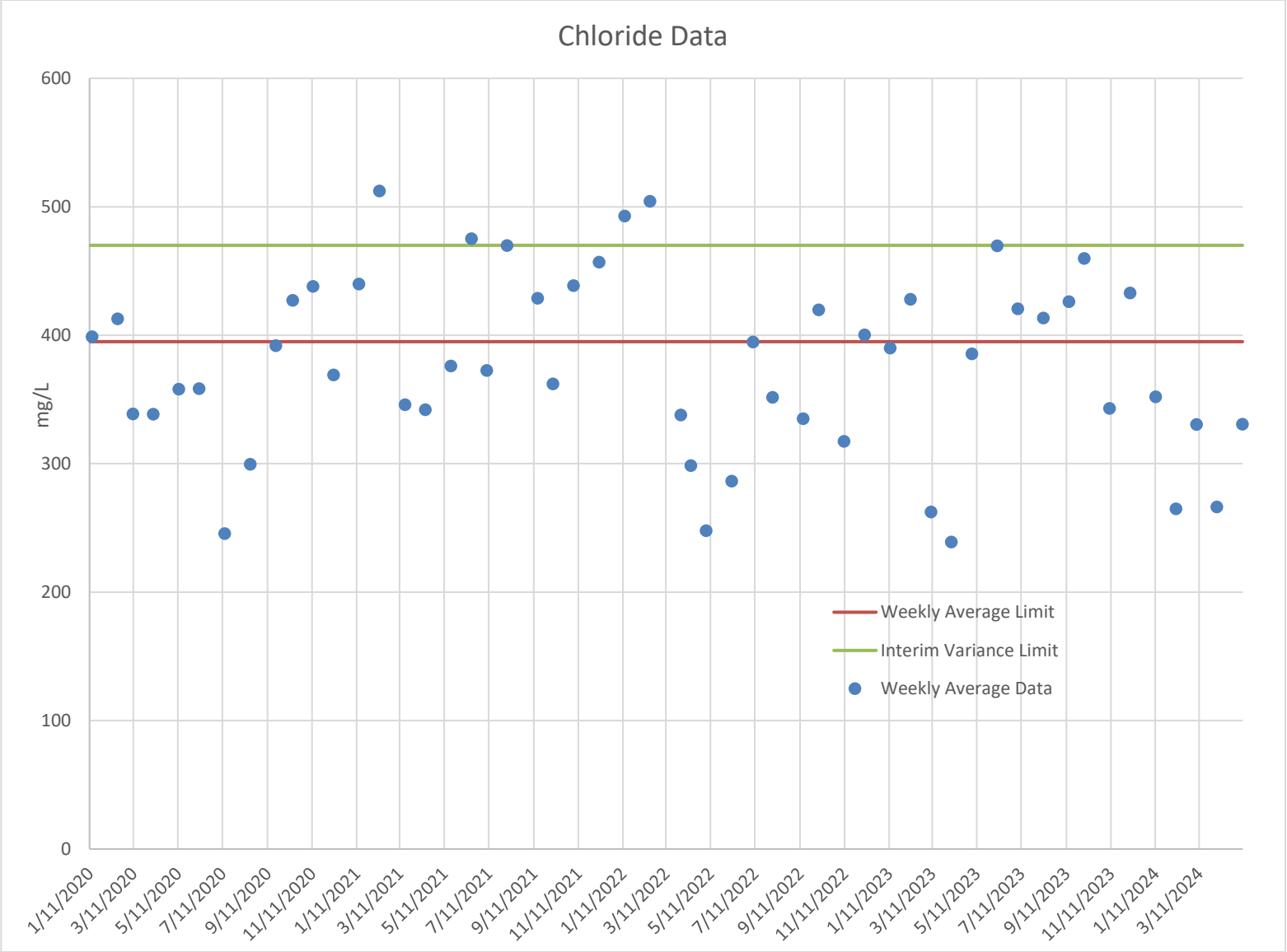
1) The permit shall include an "Interim" limitation intended to prevent an increase in the discharge of Chloride;
2) The permit shall specify "Source Reduction Measures" to be implemented during the permit term, with periodic progress reports; and
3) The permit shall include a "Target Limit" or "Target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

Should a variance be approved, an interim limit of 470 mg/L, as a weekly average, equivalent to the 4-day P_{99} is recommended in the reissued permit. The graph below shows the weekly average data from the current permit term compared to the WQBEL of 395 mg/L and the recommended interim limit.

Attachment #1



A target limit and permit language for Source Reduction Measures are not recommended as part of this evaluation. These should follow contact with Oostburg. Though if the Department and Oostburg 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, Oostburg would be subject to the WQBEL of 395 mg/L as a weekly average; the weekly average mass limit of 1,440 lbs/day (395 mg/L × 0.437 MGD × 8.34); and an alternative wet weather mass limit.

Mercury – The permit application did not require monitoring for mercury because Oostburg 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. The average concentration in the sludge from 06/04/2020 – 04/15/2024 was 0.16 mg/kg, with a maximum reported concentration of 0.95 mg/kg. 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. Previous monitoring produced a PFOS result of 3.49 ng/L and a PFOA result of 6.53 ng/L. The PFOS result is greater than one fifth of the criteria. Based on the available PFOS/PFOA monitoring data, PFOS and PFOA monitoring is recommended at a once every two months frequency.

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 Oostburg does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

The effluent data from the permit application are summarized below for the three outfalls prior to discharge to the receiving water from the permit application.

Ammonia Nitrogen Effluent Data

Date	Ammonia mg/L
03/10/2020	0.13
09/02/2020	0.15
11/04/2020	0.17
12/02/2020	0.16
01/06/2021	0.37
03/04/2021	0.272
07/06/2021	0.112
08/01/2023	0.137
01/14/2020 – 05/07/2024	46 nondetects
Mean*	0.028

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

Theses concentrations are low, and well below any of the applicable criteria or acute water quality-based effluent limits for the receiving water. Therefore, **no water quality-based effluent limits or monitoring for ammonia nitrogen are recommended in the reissued permit.**

No limits are needed; however, monitoring is recommended.

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.

Oostburg had previously been exempted from disinfection based on the limited aquatic life or limited forage fish 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 the Black River 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 Oostburg 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:

$$\text{TP Equivalent Effluent Concentration} = \text{WLA} \div (365 \text{ days/yr} * \text{Flow Rate} * \text{Conversion Factor})$$
$$= 198 \text{ lbs/yr} \div (365 \text{ days/yr} * 0.437 \text{ MGD} * 8.34)$$
$$= 0.15 \text{ mg/L}$$

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.

$$\text{TP 6-Month Average Permit Limit} = \text{WLA} \div 365 \text{ days/yr} * \text{multiplier}$$
$$= (198 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.17$$
$$= 0.63 \text{ lbs/day}$$

$$\text{TP Monthly Average Permit Limit} = \text{TP 6-Month Average Permit Limit} * 3$$
$$= 0.63 \text{ lbs/day} * 3$$
$$= 1.9 \text{ lbs/day}$$

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 0.6. This is the standard deviation divided by the mean of mass data. 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 0.17 mg/L and 0.52 mg/L, respectively, at the facility design flow of 0.437 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

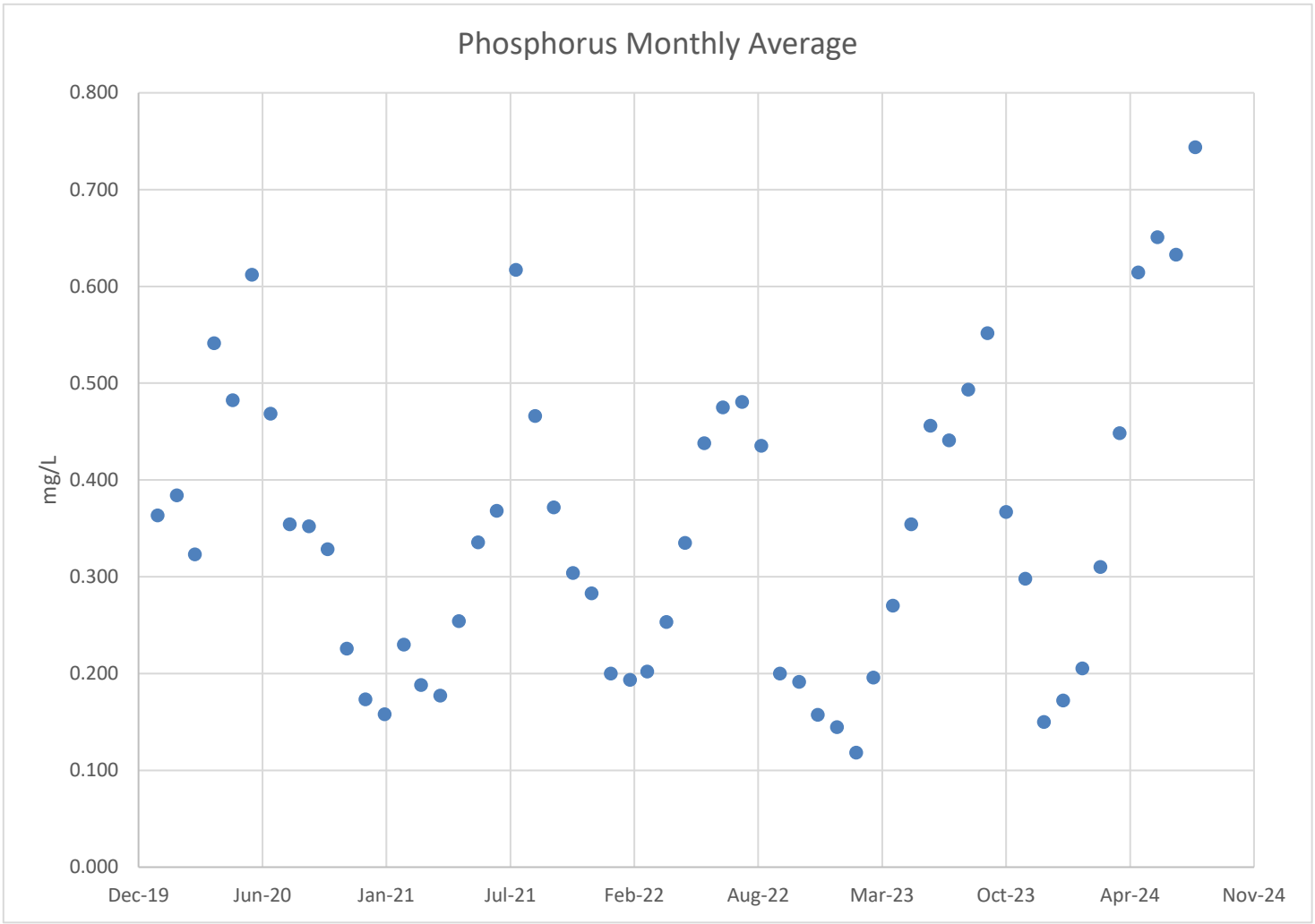
The following table summarizes effluent total phosphorus monitoring data from 01/07/2020 – 08/30/2024.

Total Phosphorus Effluent Data

	Phosphorus mg/L	Phosphorus lbs/day
1-day P_{99}	0.94	3.59
4-day P_{99}	0.61	2.17
30-day P_{99}	0.43	1.43
Mean*	0.35	1.10
Std	0.18	0.70
Sample size	729	730
Range	<0.022 – 1.1	0 – 7.99

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

The graph below shows the effluent monthly average phosphorus data from the current permit term.



Multi-Discharge Variance Interim Limit

With the permit application, Oostburg has applied for the phosphorus multi-discharger variance (MDV). Conditions of the phosphorus MDV require the facility to comply with an interim phosphorus limit in lieu of meeting the final WQBEL. Section 283.16 (6) 1, Wis. Stats. requires an interim limit of 0.8 mg/L as a monthly average for the first permit term under the MDV. However, if 0.8 mg/L does not represent the highest attainable condition (HAC), a more stringent limit should be met by the end of the permit term pursuant s. 283.16 (7), Wis. Stats.

The effluent phosphorus concentration varies seasonally, with concentrations being higher during the warmer months and lower during the cooler months. The data statistics are split below between May – October and November – April:

Total Phosphorus Effluent Data

	Phosphorus mg/L May – October	**Phosphorus mg/L November – April**
1-day P_{99}	0.91	0.70
4-day P_{99}	0.66	0.44
30-day P_{99}	0.52	0.31
Mean*	0.46	0.25
Std	0.15	0.13
Sample size	363	359
Range	<0.011 – 0.91	<0.011 – 1.1

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

During coverage of the MDV variance, permittees are responsible for making improvements that work towards compliance with the final WQBELs. **The recommended interim HAC limit is 0.6 mg/L as a monthly average** (equal to the 4-day P_{99} of all data, rounded). This limit was exceeded 6 months out of 56 months so a compliance schedule is appropriate to meet this limit but compliance with 0.6 mg/L shall be no later than the end of the reissued permit. All of the monthly exceedances of 0.6 mg/L happened during the warmer months.

It is recommended that the interim limit be set equal to 0.8 mg/L as the level currently achievable (LCA) for permit reissuance along with requirements for optimization of phosphorus removal to achieve the HAC limit of 0.6 mg/L. Oostburg has been able to meet a monthly average of 0.8 mg/L consistently during the entire permit term.

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.

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

TSS Monthly Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (26,824 lbs/yr ÷ 365 days/yr) * 1.47
= 108 lbs/day

TSS Weekly Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (26,824 lbs/yr ÷ 365 days/yr) * 2.07
= 152 lbs/day

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 0.86. 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 of 42 mg/L and 30 mg/L, respectively, at the facility design flow of 0.437 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 01/01/2020 – 05/30/2024.

Total Suspended Solids Effluent Data

	TSS mg/L	**TSS lbs/day**
1-day P_{99}	4.95	25.9
4-day P_{99}	3.45	15.1
30-day P_{99}	2.35	8.84
Mean*	1.84	6.16
Std	0.91	5.3

Attachment #1

	TSS mg/L	TSS lbs/day
Sample size	686	686
Range	<1.0 - 9.2	0 – 82

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

Oostburg can currently meet the TSS mass limits and a compliance schedule is not needed.

PART 7 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in Chapters NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. 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 a wetland in ch. NR 104, Wis. Adm. Code.

Reasonable Potential

Based on the available discharge temperature data from 04/01/2011 – 03/31/2012 shown below, the maximum daily effluent temperature reported was 71 °F; therefore, no reasonable potential for exceeding the daily maximum limit exists, and **no limits or monitoring are recommended**.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	51	53	-	86
FEB	50	51	-	86
MAR	52	54	-	86
APR	50	50	-	86
MAY	55	57	-	86
JUN	61	63	-	86
JUL	70	71	-	86
AUG	69	71	-	86
SEP	68	71	-	86
OCT	66	67	-	86
NOV	59	61	-	86
DEC	54	56	-	86

Attachment #1

PART 8 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022).*

- 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 LC_{50} (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 IC_{25} (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:

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

Where:

Q_e = annual average flow = 0.437 MGD = 0.676 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 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 collected before July 1, 2005 is excluded in this evaluation.

Attachment #1

WET Data History

Date Test Initiated	Chronic Results IC_{25} %					Footnotes or Comments
	C. dubia	Fathead Minnow	Algae (IC_{50})	Pass or Fail?	Use in RP?	
12/11/2007	75.1	>100		Fail	No	1
03/11/2008	82.5	>100	>100	Fail	No	1
06/24/2008	>100	>100	>100	Pass	No	1
08/13/2013	94.5	>100		Fail	No	1
10/10/2017	>100	>100		Pass	Yes	
01/09/2018	>100	>100		Pass	Yes	
04/14/2020	>100	>100		Pass	Yes	
09/20/2022	>100	>100		Pass	Yes	
03/05/2024	>100	>100		Pass	Yes	

Footnotes:

1. *Data Not Representative.* WWTP, industrial processes or contributions, or other significant changes have occurred which renders data unrepresentative. Completion of a successful TRE, which found and fixed the source of toxicity, caused data prior to the TRE to no longer be representative of the discharge.

- 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.**

  Chronic Reasonable Potential = [(TUc effluent) (B)(IWC)]

  According to s. NR 106.08(6)(d), Wis. Adm. Code, TUa and TUc effluent values are equal to zero whenever toxicity is not detected (i.e. when the LC_{50}, IC_{25} or $IC_{50} \geq 100\%$).

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

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

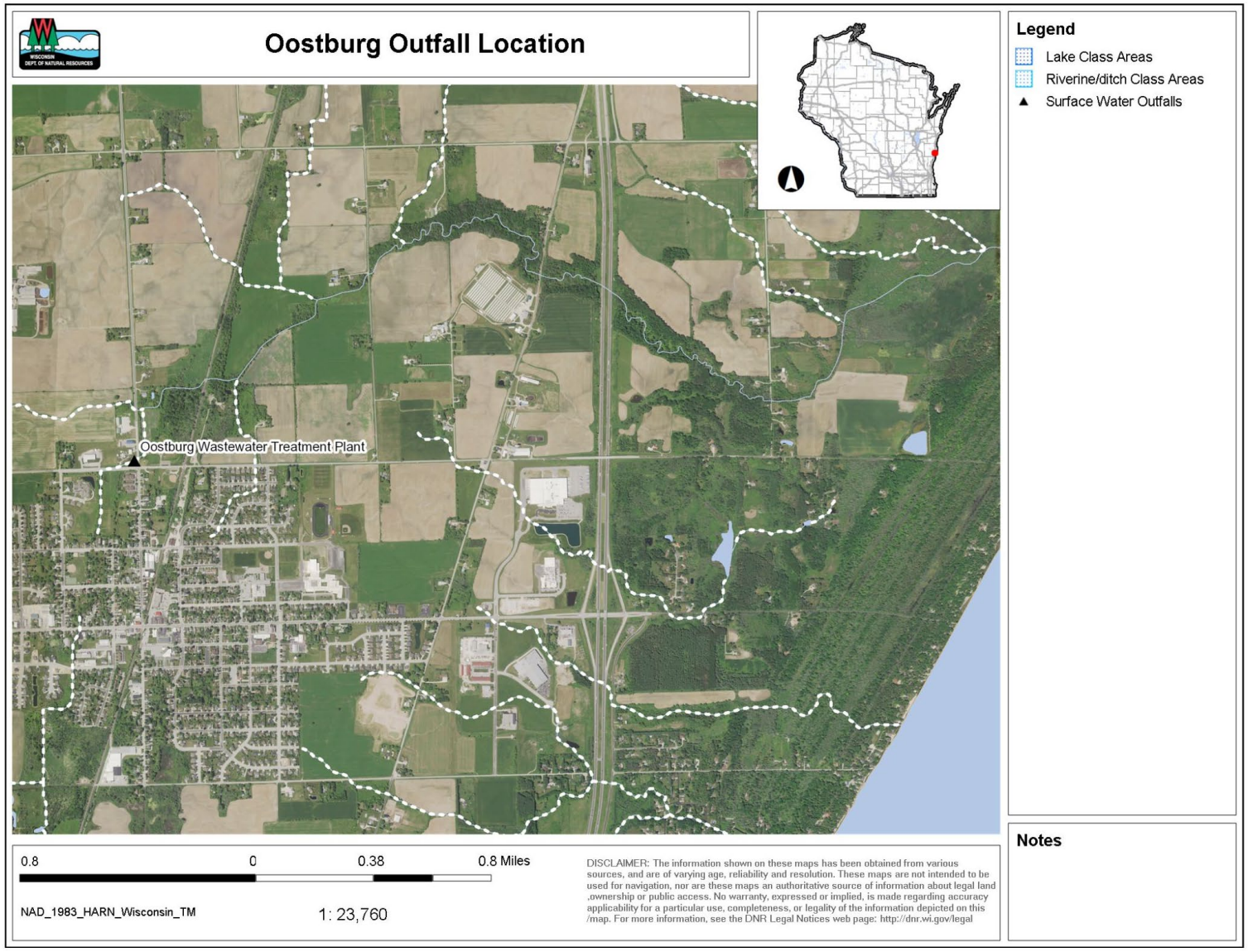
	Acute	Chronic
AMZ/IWC	Not Applicable.	IWC = 100%.

Attachment #1

	Acute	Chronic
	0 Points	**15 Points**
Historical Data	0 tests used to calculate RP. **5 Points**	5 tests used to calculate RP. No tests failed. **0 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	Variance water, approximately 4 miles to a WWSF classification. **0 Points**	Same as Acute. **0 Points**
Chemical-Specific Data	No reasonable potential for limits based on ATC; Ammonia, copper, zinc, and chloride detected. Additional Compounds of Concern: None. **0 Points**	Reasonable potential for limits for chloride based on CTC; Copper, zinc, and chloride detected. Additional Compounds of Concern: None. **0 Points**
Additives	0 Biocides and 1 Water Quality Conditioners added: Alum is used for phosphorus removal. Permittee has proper P chemical SOPs in place. **1 Point**	All additives used more than once per 4 days. **1 Point**
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**
Total Checklist Points:	**9 Points**	**24 Points**
Recommended Monitoring Frequency (from Checklist):	No tests recommended	2 tests during permit term
Limit Required?	No	No
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, 2 tests/permit term 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).

Attachment #2



State of Wisconsin
Department of Natural Resources
Bureau of Water Quality
Permits Section - WQ/3

Multi-Discharger Variance Application Evaluation Checklist

Form 3200-145 (R 5/16)

Notice: This checklist is meant to be a tool to help Department of Natural Resources (DNR) staff review municipal and industrial multi-discharger variance (MDV) applications (Forms 3200-149 and 3200-150). Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31-19.39, Wis. Stats.).

Permittee Name

Village of Oostburg

WPDES Permit Number	County
WI- 0 | 0 | 2 | 2 | 2 | 3 | 3	Sheboygan

1. Did the point source apply for the MDV at the appropriate time?	(•) Yes ( ) No. *STOP- facility not eligible at this time.*	*See Questions 1-3.*
2. This operation is (check one):	( ) New or relocated outfall. *STOP- facility not eligible.* (•) Existing outfall	*See Questions 5-6.*
3. Is the point source is located in an MDV eligible area?	(•) Yes ( ) No. *STOP- facility not eligible.*	*Apply County information to Appendix H. Additional information provided in Q7 on municipal form & Q7-8 on industrial form.*
4. The secondary indicator score for the county (counties) the discharge is located is:	4	*See Appendices A-F. If the score is less than 2, stop; the facility is not eligible. See Q23 on municipal form & Q28 on industrial form.*
5. Is a major facility upgrade required to comply with phosphorus limits?	(•) Yes ( ) No. *STOP- facility not eligible.*	*See Q8 on municipal form/Q9 on industrial form.*
6. List the months where phosphorus limits cannot be achieved during the permit term:	☒ All ☒ Jan ☒ Apr ☒ Jul ☒ Oct ☒ Feb ☒ May ☒ Aug ☒ Nov ☒ Mar ☒ Jun ☒ Sep ☒ Dec	*Consider checking with limit calculator. If this does not match information in application, the application should be updated prior to approval.*

7. What is the current effluent level achievable?

Outfall Number(s)	Conc. (mg/L)	Method for calculation:	Does this concur with application?	
001	0.39	(•) 30-day P99 ( ) Other, specify:	( ) Yes (•) No, why not: Application used larger date range	*DNR staff should verify the effluent concentration value(s) provided. See Q11 on municipal form & Q12 on industrial form.*

Save

8. What is the appropriate interim limitation(s) for the permit term?

0.5 mg/L as a monthly average, pursuant to s. 283.16(7), Wis. Stats.
Target Value = 0.2 mg/L

Provide Rationale:

Effluent total phosphorus data from the prior three years (5/1/2021 - 4/30/2024, n= 469) yields a 30-day p99 value of 0.39 mg/L. This value could be considered a level currently achievable, however treatment appears to slightly diminish in late summer / early fall to the point where a 0.4 mg/L interim limit would typically be exceeded. Oostburg may work to address this issue during the next permit term. If MDV is requested for a subsequent permit term, the interim limit would be reevaluated.

Note: See description in Section 2.02 of the MDV implementation guidance. Interim limitations should reflect the "highest attainable condition" for the permittee in question pursuant to s. 283.16(7), Wis. Stat.

9. *For Industries Only-* Where does the phosphorus in the effluent come from? (check all that apply)	☐ Process ☐ Additive Usage ☐ Water supply *Can intake credits be given or can the facility use an alternative water supply?* ◯ Not feasible ◯ Possibly, but further analysis needed ◯ Not evaluated at this time	*See Q14-15 & 19 on industrial form. If the answer is "possibly" or "not evaluated", the schedule section of the MDV permit should contain a requirement to perform this analysis.*
10. Has this facility optimized?	◉ Yes ◯ In progress ◯ No	*See Q14 on municipal form & Q16 & 20 on industrial form. Facility must optimize and operate at an optimize treatment level (s. 283.16(6)(a), Wis. Stat.)If no will need compliance schedule.*
11. Has a facility plan/compliance alternative plan been completed for the facility?	◉ Yes ◯ In progress ◯ No	*See Q15 on municipal form & Q17 on industrial form.*
12. What is the projected cost for complying with phosphorus? Source:	$ 11,500,000.00 20-year NPV from 2023 Final Compliance Alternatives Plan	*Facility must submit site-specific compliance costs. If cost projections are used from EIA, the permittee must certify that these costs are reasonable for the facility in question. See "projected compliance costs" in Section 2.02 of the MDV Implementation Guidance for details.*

Comments on planning efforts:

Preliminary and final phosphorus compliance alternatives plans were submitted in 2022 and 2023. These documents evaluated a range of options for meeting phosphorus limits. It was determined that minor upgrades including biological and chemical treatment would not achieve the effluent limit. Watershed-based compliance was evaluated and indicated that the facility is not eligible for adaptive management (effluent dominated system) and has a small hydrologic area for water quality trading (no WQT partners are identified). The 2023 report provides a site-specific cost estimate for continuiously backwashed sand filters as the lowest cost treatment option to achieve the phosphorus limit. These costs are used in the economic demonstration below.

13. Are adaptive management and water quality trading viable?	◯ Yes ◯ Perhaps. Additional analysis required. ◉ No	*See Q18-21 on municipal form & Q22-25 on industrial form. If additional analyses required, the applicant may need to complete this analysis during the MDV permit term.*
14. Has the point source met the appropriate primary screener?	◉ Yes ◯ No. *STOP- facility not eligible.*	*See Q4 of this form in addition to the "eligibility" guidance in Section 2.01 of the MDV Implementation Guidance.*

Save

Comments on economic demonstration:

Tertiary sand filtration was estimated to cost $8,347,000 (capital) and $124,382 (annual O&M). These values are generally higher than values generated from cost curves in the statewide EIA analysis, though no specific value was given for Oostburg in this document. Regarding site-specific costs, several items were atypically expensive and no concurrence is being given to the $1.1M brick and block building as well as the additional $45,310 cost of chemicals, as Oostburg currently adds chemical that is covered with current sewer rates. Accordingly, Capital costs for this analysis are $7,240,500 and O&M costs are $79,072. Annual payments on capital costs, assuming a 20-year CWFP loan at 2.1% are $443,668. Total costs with O&M amount to $522,740. At a 91% residential use rate, the resident portion is $475,693.40. Divided amongst 1273 resident users, the per-user rate increase is expected to be $373.68. Current rates are $601.92, and future rates are projected at $975.60. This value is 1.42% of Oostburg's $68,917 median household income. In Sheboygan County with a secondary indicator score of 4, sewer user rates at 1% of MHI meet the primary screener. Oostburg meets the primary screener.

15. What watershed option was selected?

- (•) County project option. *Complete Section 5.*
- ( ) Binding, written agreement with the DNR to construct a project or implement a watershed plan. *Complete Section 4.*
- ( ) Binding, written agreement with another person that is approved by the DNR to construct a project or implement a watershed plan. *Complete Section 4.*

Section 4. Watershed Plan Review

16. MDV Plan Number: *Note: This is for tracking purposes. Contact Statewide Phosphorus Implementation Coordinator for the plan number.*	_____
17. Did the point source complete Form 3200-148?	( ) Yes ( ) No
18. Is the project area in the same HUC 8 watershed as the point of discharge?	( ) Yes ( ) No. *STOP- Watershed plan must be updated.*
19. What is the annual offset required? *See Section 2.03 of the MDV implementation guidance. If this value is different from the offset target provided in form 3200-148, the watershed plan should be amended.*	_____
20. Does the plan ensure that the annual load is offset annually?	( ) Yes ( ) No. *STOP- Watershed plan must be updated.*

21. Are projects occurring on land owned/operated by a CAFO or within a permitted MS4 boundary?

- ( ) Yes. *Work with appropriate DNR staff to ensure projects are not working towards other permit compliance.*
- ( ) No.

22. Are other funding sources being used as part of the MDV watershed project?

- ( ) Yes. *Work with appropriate DNR staff to ensure that funding sources can be appropriately used in the plan area.*
- ( ) No.

23. Do you have any concerns about the watershed project? *Note: Coordinate with other DNR staff as appropriate.*	( ) Yes. *STOP- Watershed plan must be updated.* ( ) No.

Save

Comments:

Section 5. Payment to the County(ies)

24. At this time, the appropriate per pound payment is: $ 64.75

See "Payment Calculator" document at *\\central\water\WQWT_PROJECTS\WY_CW_Phosphorus\MDV*.

Section 6. Determination

Based on the available information, the MDV application is:

- (•) Approved
- ( ) Request for more information
- ( ) Denied

Additional Justification (if needed):

Certification

Preparer Name	Title
Matt Claucherty	Water Resources Management Specialist

Signature of Preparer	Date
Matt Claucherty	7/1/2024

Save

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Tony Evers, Governor

Telephone 608-266-2621
FAX 608-267-3579
TTY Access via relay - 711

7/1/2024

Greg LeMahieu
215 N. 8th Street
Oostburg, WI 53070

Subject: Conditional approval of a multi-discharger phosphorus variance
Receiving Stream: Black River in Sheboygan County
Permittee: Village of Oostburg, WPDES WI-0022233

Dear Mr. LeMahieu:

In accordance with s. 283.16 of the Wisconsin Statutes, you have requested coverage under Wisconsin's multi-discharger phosphorus variance for the Oostburg Wastewater Treatment Facility in an application dated 6/4/2024. Wisconsin's multi-discharger phosphorus variance was approved by EPA on February 6, 2017. Coverage under the multi-discharger phosphorus variance may only be granted to an existing source that demonstrates a major facility upgrade is necessary to achieve phosphorus compliance and the upgrade will result in economic hardship as defined in the federally approved variance. The water quality criterion for which you are seeking a variance is contained in s. NR 102.06, Wis. Adm. Code.

After review of the application materials, the Department is tentatively approving coverage under the phosphorus multi discharger variance because the applicant has demonstrated that a major facility upgrade would be required to comply with the phosphorus water quality based effluent limitation, and the applicant meets the economic hardship eligibility criteria delineated in the federally approved variance. In addition, the permitted facility has agreed to comply with the interim limitations that will be included in the WPDES permit, and has agreed to reduce the amount of phosphorus entering surface waters by making payments to the counties pursuant to s. 283.16(6)(b)1., Wis. Stats.

Public comment on this decision will be solicited at the time of permit reissuance after which a final decision will be made. The Department appreciates your attention and interest in Wisconsin's multi-discharger phosphorus variance. Should you have further questions regarding this matter, please contact me at (608) 400 – 5596 or by email at matthew.claucherty@wisconsin.gov

Sincerely,

Matt Claucherty, MDV Point Source Coordinator
Bureau of Water Quality

e-cc Melanie Burns, WDNR
Curt Nickels, WDNR
Tim Elkins, EPA Region 5
Micah Bennett, EPA Region 5

Village of Oostburg Chloride SRM Action Plan

For 2020-2025 WPDES permit cycle
December 9, 2024

SRM Initiative	Permit Year 1	Permit Year 2	Permit Year 3	Permit Year 4	Permit Year 5
EDUCATION					
Water softener brochure available at Village Hall kiosk	Brochure drafted/printed	Ongoing availability	Ongoing availability	Ongoing availability	Ongoing availability
Water softener info on Village website	Info drafted/listed on website	Ongoing availability	Ongoing availability	Ongoing availability	Ongoing availability
Water softener info in sewer billing	Drafted	Noticed printed monthly on bills	Noticed printed monthly on bills	Noticed printed monthly on bills	Noticed printed monthly on bills
Educate Village DPW and Sheboygan County Highway Dept. drivers on salt use and application*	Yearly By Dec 1st	Yearly By Dec 1st	Yearly By Dec 1st	Yearly By Dec 1st	Yearly By Dec 1st
REGULATIONS					
Ordinance mandating on-demand softeners of new and replacement installations	Drafted/Adopted				
Ordinance mandating outside hose-bibs be non-softened	Drafted/Adopted				
MONITORING					
Survey residents for water softening equipment		Develop survey	Send survey	Analyze data	
CMOM	Continue manhole inspection and rehab as funds allow	Continue manhole inspection and rehab as funds allow	Continue manhole inspection and rehab as funds allow	Continue manhole inspection and rehab as funds allow	Continue manhole inspection and rehab as funds allow

FUNDING					
Working collaboratively with the state, explore potential financing and/or funding sources to assist with SRM actions. If available funding/financing sources are determined to be infeasible, report on why it is infeasible in the final report.					In the final report, identify infrastructure-related grants, loans, or other funding opportunities for infrastructure improvements that may result in achieving compliance with final chloride limitations in the next permit term.

*Email from Greg Lemahieu on Tuesday, October 22, 2024: *Bryan Olson, Sheboygan County, told me he was writing up a memo stating that the county recognized that the DNR is pushing the Village of Oostburg to reduce salt usage on Village streets. The County also recognizes that two major county trunks run through Oostburg and are maintained by the County. They will commit to using only liquid brine when deemed possible to remove snow and ice from their portions of the Village. They will also continue to calibrate salting equipment for optimal salt usage as well as educate the drivers on the Oostburg route to use as little salt as safely possible. The County is also going to try and track the amount of salt used on the Village portion of their roads, which will hopefully become more accurate as technologies improve.*

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: Village of Oostburg

B. Facility Name: Oostburg Wastewater Treatment Plant

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Chloride **Date completed:** December 13, 2024

E. Permit #: 0022233-08-0 **WQSTS #:** (EPA USE ONLY)

F. Duration of Variance **Start Date:** April 1, 2025 **End Date:** March 31, 2030

G. Date of Variance Application: June 4, 2024

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 Oostburg Wastewater Treatment Plant discharges to the Black River in Sheboygan County. The Oostburg Wastewater Treatment Plant seeks a variance to the water quality standard for chloride.

The Department concludes that the Oostburg Wastewater Treatment Plant 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 the Oostburg Wastewater Treatment Plant 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.

Variance for chloride from the water quality based effluent limits of 400 mg/L, expressed as a weekly average limit, to an interim limit of 470 mg/L year-round. The permit will include requirements to implement source reduction measures and a target value of 420 mg/L year-round.

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
Victoria Ziegler	Victoria.Ziegler@wisconsin.gov	**414-391-8946**	**Permit Drafter**
Curt Nickels	Curtis.Nickels@wisconsin.gov	**920-893-8530**	Compliance Staff
Nicole Krueger	Nicole.Krueger@wisconsin.gov	**414-882-1019**	Parts II D-H and J Limits Calculator
Others?			

Section II: Criteria and Variance Information

A. Water Quality Standard from which variance is sought: Chloride

B. List other criteria likely to be affected by variance: No other variances requested.

C. Source of Substance: Water softeners and road salt applications

D. Ambient Substance Concentration: 0 mg/L ☐ **Measured** ☒ **Estimated** ☐ **Default** ☐ **Unknown**

E. If measured or estimated, what was the basis? Include citation. The background flow is 0 cfs so the ambient concentration is assumed to be 0 mg/L.

F. Average effluent discharge rate: 377 mg/L **Maximum effluent discharge rate:** 532 mg/L

G. Effluent Substance Concentration: 1-day P99 = 574 mg/L; 4-day P99 = 468 mg/L; 30-day P99 = 409 mg/L ☒ **Measured** ☐ **Default** ☐ **Estimated** ☐ **Unknown**

H. If measured or estimated, what was the basis? Include Citation. Permit-required monitoring from 01/11/2020 – 05/09/2024.

I. Type of HAC:
☐ **Type 1: HAC reflects waterbody/receiving water conditions**
☐ **Type 2: HAC reflects achievable effluent conditions**
☒ **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 470 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.

K. Variance Limit: 470 mg/L

L. Level currently achievable (LCA): 470 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 is equivalent to the 4-day P_{99} from the current permit term (01/11/2020-05/09/2024).

N. Explain the basis used to determine the variance limit (which must be ≤ LCA). Include citation.

The variance limit = 4-day P_{99}. 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: ☐ **1** ☐ **2** ☐ **3** ☐ **4** ☐ **5** ☒ **6**

The use of a reverse osmosis system was evaluated. The cost of the reverse osmosis treatment system was estimated to result in an average that would be about 3.3% of the MHI. Installing centralized lime softening on the current municipal water supply system was also evaluated, and the estimated cost of doing so would be about 3.8% of the MHI. The 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: Sheboygan County

B. Receiving waterbody at discharge point: Headwaters of the Black River

C. Flows into which stream/river? Lake Michigan **How many miles downstream?** ~10 miles

D. Coordinates of discharge point (UTM or Lat/Long): 43.063090/ Long. -87.79918

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 6 miles downstream of Outfall 001.

F. Provide the equation used to calculate that distance *(Include definitions of all variables, identify the values used for the clarification, and include citation):*

(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.

Interim limit: 470 mg/L and design flow: 0.437 MGD (0.676 cfs)

The estimated 7Q10 of the Black River approximately 6 miles downstream of Outfall 001 is 0.2 cfs which results in a mixed concentration of 363 mg/L which is below the chronic criteria of 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 Black River is classified as a Limited Aquatic Life (LAL) community from the outfall to Wilson-Lima Road (approximately 4 miles downstream). At Wilson-Lima Road, the Black River is classified as a warmwater sport fish community.

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: N/A

Permit Number	Facility Name	Facility Location	Variance Limit [mg/L]
N/A	N/A	N/A	N/A

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

J. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below. ☒ **Yes** ☐ **No** ☐ **Unknown**

River Mile	Pollutant	Impairment
0 – 5.99	Total Phosphorus	Degraded biological community

***K.* Please list any contributors to the POTW in the following categories:**

Food processors (cheese, vegetables, meat, pickles, soy sauce, etc.)	Masters Gallery – Only cheese packaging, no production or curing.
Metal Plating/Metal Finishing	N/A
Car Washes	Two – Kwik Trip and Calrton.
Municipal Maintenance Sheds (salt storage, truck washing, etc.)	N/A
Laundromats	One.
Other presumed commercial or industrial chloride contributors to the POTW	N/A

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.
None.

Section IV: Pretreatment (complete this section only for POTWs with DNR-Approved Pretreatment Programs.

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: Drafter **Date of hearing:** Drafter

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: The immediate receiving water is classified as limited aquatic life per ch. NR 104. Approximately 4 miles downstream, at Wilson Lima Rd, the classification changes to warmwater sport fish.

B. Applicable criteria affected by variance: Chronic toxicity criterion for chloride is 395 mg/L from ch. NR 105, Wis. Adm. Code, applicable in all Wisconsin waters regardless of use designation.

C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:
The proposed weekly average interim limit of 470 mg/L results in an instream concentration of 470 mg/L after the point of discharge because background flow is zero. This concentration only exceeds the genus mean chronic value for one of the 13 species used to derive the 395 mg/L chronic toxicity criteria; the Ceriodaphnia (GMCV; 417 mg/L).

D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations:

County	Species	Status
Sheboygan	Piping Plover	Endangered
Sheboygan	Pitcher's Thistle	Threatened

Citation: 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:
Wastewater treatment processes include fine screening, grit removal, oxidation ditches with vertical brushes, primary clarification, and reaeration. Alum is added for phosphorus removal.

B. What modifications would be necessary to comply with the current limits? Include any citations.
It could be done with some type of electrochemical precipitation with a metal such as copper or silver. Or, by a nanomembrane filtration system. However, both of these methods would be unrealistically expensive.

Upgrades to the WWTF to install reverse osmosis (RO) would be needed to comply with the WQBEL of 400 mg/L. Centralized lime softening is not an option currently due to the cost associated with the installation of centralized softening.

C. How long would it take to implement these changes?
The above treatment methods would be tens of millions of dollars. Putting a timeframe on it is meaningless.

D. Estimate the capital cost *(Citation)*: $495,000 (Chloride Variance Application 6/4/2024)

E. Estimate additional O & M cost *(Citation)*: $160,000 (Chloride Variance Application 6/4/2024)

F. Estimate the impact of treatment on the effluent substance concentration, and include any citations:
Treatment for chlorides at the plant without an RO system would have little impact. Proper implementation of SRMs is anticipated to reduce the current effluent chloride concentrations by 10%.

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 Oostburg Wastewater Treatment Plant 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 WWTP was evaluated; the resulting total cost for sewer user rates was estimated to result in an average cost to households that would be 3.3% of the MHI. An increase of this magnitude would cause substantial and widespread adverse social and economic impacts the area where the discharge is located.

Lime softening treatment of the Oostburg's water supply – in lieu of ion-exchange is technically feasible and would potentially enable the WWTP 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 3.8% of the MHI. An increase of this

magnitude would cause substantial and wide-spread adverse social and economic impacts 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.

End of pipe Reverse Osmosis (RO) treatment could reduce effluent chloride concentrations to chronic toxicity criterion. However, attaining this standard specified in chs. NR 102 to 105, Wis. Adm. Code, may cause substantial and widespread adverse social and economic impacts in the community where the discharge is located.

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 (3.3% of MHI)
Lime Softening - not economically feasible (3.8% of 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.

Information pamphlets distributed to residents informing them of the need to reduce chlorides through water softener replacement and tune ups.
Educating salt truck drivers on proper settings and calibration of spreaders.
Change to the use of brine instead of rock salt.

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.

The 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 permit, (b) implement the chloride source reduction measures specified below, (c) follow the approved Source Reduction Plan (see below) and (d) perform the actions listed in the compliance schedule.

SRM action items

- Water softener brochure available at Village Hall kiosk
- Water softener info on Village website
- Water softener info in sewer billing
- Educate Village DPW and Sheboygan County Highway Dept. drivers on salt use and application
- Ordinance mandating on-demand softeners of new and replacement installations
- Ordinance mandating outside hose-bibs be non-softened
- Survey residents for water softening equipment
- Working collaboratively with the state, explore potential financing and/or funding sources to assist with SRM actions. If available funding/financing sources are determined to be infeasible, report on why it is infeasible in the final report.

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

A. Date of previous submittal: October 9, 20019 **Date of EPA Approval:** November 14, 2019

B. Previous Permit #: 0022233-07-0 **Previous WQSTS #:** (EPA USE ONLY)

C. Effluent substance concentration: 1-day P_{99} 574mg/L
4-day P_{99} 468mg/L
30-day P_{99} 409mg/L
Variance Limit: 570mg/L

D. Target Value(s): 510mg/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**
Water softener brochure available at Village Hall kiosk	☒ **Yes** ☐ **No**
Water softener info in sewer bill mailing	☒ **Yes** ☐ **No**
Water softener info on Village website	☐ **Yes** ☒ **No**
Educate DPW drivers on salt use and efficient application	☒ **Yes** ☐ **No**
Open house at sewer plant (provide tour and educational event)	☐ **Yes** ☒ **No**
Purchase and install brine equipment to be used on any new plow truck purchased	☒ **Yes** ☐ **No**
Ordinance mandating on-demand softeners of new and replacement installations	☐ **Yes** ☒ **No**
Ordinance mandating outside hose-bibs be non-softened	☐ **Yes** ☒ **No**
Water softener tune-up/replacement incentive program	☐ **Yes** ☒ **No**
Monitor Masters Gallery Cheese	☐ **Yes** ☒ **No**
Survey residents for water softening equipment and practices.	☐ **Yes** ☒ **No**
CMOM- increase manhole inspections for I&I. Log data in Inframap Software System	☒ **Yes** ☐ **No**
Investigate chloride contributions from municipal salt storage shed.	☐ **Yes** ☒ **No**