

Permit Fact Sheet

General Information

Permit Number:	WI-0026085-10-0	
Permittee Name:	Neenah-Menasha Sewerage Commission	
Mailing Address:	101 Garfield Avenue, Menasha, WI 54952-3397	
Facility Address:	101 Garfield Avenue, Menasha, WI 54952-3397	
Discharge Location:	101 Garfield Avenue, Menasha, WI 54952-3397 SW ¼, NW ¼ of Section 22, Township 20 North, Range 17 East, City of Menasha, Winnebago County, WI	
Receiving Water:	The Menasha Channel of the Fox River (WBIC 129800), in the Little Lake Butte des Morts Watershed (LF06), in the Lower Fox River Basin, in Winnebago County and land application in Winnebago County.	
StreamFlow (Q _{7,10}):	465 cfs	
Stream Classification:	Warm Water Sport Fish (WWSF) community and public water supply	
Discharge Type:	Existing Continuous Discharge	
Design Flow(s)	Daily Maximum	43 MGD
	Weekly Maximum	Not determined
	Monthly Maximum	20 MGD
	Annual Average	13 MGD
Significant Industrial Loading?	Yes, the facility design flow is greater than 5 MGD and is classified as an Approved EPA Pretreatment Program. There are 3 categorical contributors and 8 other significant industrial contributors in the sewer service area.	
Operator at Proper Grade?	<p>Facility Subclasses & Classification: Facility is classified at the advanced level for the following subclasses: A1 (Suspended Growth Processes), B (Solids Separation), C (Biological Solids/Sludges), D (Disinfection) and P (Total Phosphorus); and at the basic level for L (Laboratory) and SS (Sanitary Sewage Collection System).</p> <p>OIC Subclasses & Classification: Paul Much is certified at the advanced level for the following subclasses: A1 (Suspended Growth Processes), A2 (Attached Growth Processes), A4 (Ponds, Lagoons, and Natural Systems), B (Solids Separation), C (Biological Solids/Sludge Handling, Processing, & Reuse), D (Disinfection), and P (Total Phosphorus); basic level for SS (Sanitary Sewage Collection System); and OIT for U (Unique Treatment Systems).</p> <p>Emily Franklin is the OIC for the laboratory and is certified at the basic level in the L (Laboratory) subclass.</p>	
Approved Pretreatment Program?	Original Approval: January 31, 1985 Modified Approval: November 15, 1993	

Facility Description

The Neenah Menasha Sewerage Commission (NMSC) owns and operates the NMSC Wastewater Treatment Facility that treats residential, commercial, and industrial wastewater from the sanitary sewage collection systems owned and operated

by the cities of Neenah and Menasha, the Villages of Fox Crossing and Harrison, and Town of Neenah Sanitary District 2. The NMSC wastewater treatment facility has an annual average design flow rate of 13 MGD. The paragraphs below describe the liquid and solids treatment train of the NMSC Wastewater Treatment Facility.

Liquid Treatment Train: Influent is conveyed by two main interceptor sewers from Menasha and Neenah to a main influent lift station at wastewater treatment facility. Each interceptor sewer has an ultrasonic flow meter and Parshall flume to measure the influent flow rates from each sewer service area. Influent wastewater samples are also collected from each interceptor sewer after the Parshall flume using a 24-hour flow proportional composite sampler. From the main lift station, the combined influent wastewater is then lifted by 4 parallel screw pumps to the preliminary treatment. The preliminary treatment includes fine screening and grit removal. The fine screening includes 3 parallel mechanical fine screens. The screened solids are captured and sent through a washer/compacter system to remove liquid then deposited into dumpsters. The screened wastewater then passes through the channel into the grit removal system. The grit removal system consists of two parallel vortex grit removal chambers, grit pumps, grit concentrators, grit dewatering screw conveyor, and a container for removed grit. The primary influent then flows to a diversion box where the flow can either be sent to the primary clarifier splitter box or bypass the primary, biological and secondary treatment processes prior to disinfection during high flow events when blending occurs. At the primary clarifier splitter box, the primary influent is can be split between 4 parallel primary clarifiers. Also at the primary clarifier splitter box, the facility has the ability to add alum for phosphorus removal. After the primary clarifiers, primary effluent is sent to the aeration basin splitter box where it is mixed with return activated sludge (RAS) from the secondary clarifiers. The primary effluent/RAS can be split between 9 aeration basins running in parallel. After the aeration basins, the mixed liquor from the aeration basins flows to an aerated channel and is conveyed to the secondary clarifier splitter box. In the aerated channel, the facility has the ability to add alum for phosphorus removal. At the secondary clarifier splitter box, the mixed liquor can be split between 4 parallel secondary clarifiers. Following the secondary clarifier, the secondary effluent is sent to the chlorine contact tank. Effluent wastewater samples are collected on the secondary effluent prior to the chlorine contact tank using a 24-hour flow proportional composite sampler. At the chlorine contact tank, the facility adds sodium hypochlorite for disinfection. The facility has a sodium hypochlorite generator that can generate sodium hypochlorite from a salt. Near the end of the chlorine contact tank, the facility doses sodium bisulfite for dechlorination. The final effluent from the dechlorination tank then flows into an outlet structure that exits by gravity discharge to the Menasha Channel of the Fox River via Outfall 001. The facility has the ability to pump the effluent to the Menasha Channel of the Fox River if river flows are high. If bending does occur, the facility has an automatic sampler to collect effluent samples after the chlorine contact tank.

Solids Treatment Train: Primary sludge is sent to a two-stage anaerobic digester system. The waste activated sludge from the secondary clarifiers is treated through a gravity belt thickener system prior to being sent to the two-stage anaerobic digester system. The filtrate from the gravity belt thickeners is conveyed to a drain well where it can either flow so the aeration splitter box or primary clarifier splitter box. The two-stage anaerobic digester system includes two parallel primary anaerobic digestors and two secondary anaerobic digestors. The primary anaerobic digestors operate in the thermophilic stage (120°F to 135°F). The two secondary anaerobic digestors operate in the mesophilic stage (90°F and 100°F). The digested sludge is then sent to two parallel centrifuges for further dewatering. The centrate from the centrifuges is sent to the main influent lift station. The centrifuged sludge is then put on a conveyor to be loaded onto trucks and where it can be sent to offsite storage, another permitted facility, or land applied on department approved sites via Outfall 002. The sludge at the off-site storage can also be land applied on department approved sites via Outfall 002. The facility does have a high strength food waste receiving station to be feed to the two-stage anaerobic digester system. However, this receiving station has been taken offline and is not currently in use.

Substantial Compliance Determination

Enforcement During Last Permit: The facility has experienced repeated exceedances of effluent limitations for BOD wasteload allocations and total suspended solids. The facility is currently taking corrective actions for BOD wasteload allocation and total suspended solids effluent limitation exceedances. NMSC continues to work with industrial contributors to reduce high organic loadings to the wastewater treatment facility and other communities in the collection system to reduce the high influent flows due to infiltration and inflow. Also during the permit term, the facility is planning an upgrade to the wastewater treatment facility.

After a desk top review of all discharge monitoring reports, compliance maintenance annual reports, land application reports, compliance schedule items, and a site visit on February 15, 2023, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Mark Stanek, Wastewater Compliance Engineer, on October 30, 2024.

Fact Sheet Organization

This fact sheet explains the rationale and assumptions used in deriving the conditions and requirements set forth in this permit. Additionally, this fact sheet highlights changes in permit conditions that the department proposes to make when reissuing the WPDES permit. This fact sheet compares conditions in the previous permit to those in the reissued permit. The previous permit remains in effect until the permit is reissued. The tables that follow were taken from the permit and are numbered in this fact sheet as they are numbered in the permit. Bolded and highlighted text and cells within tables indicate permit conditions that are new or different from those found in the previous 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	Daily Average: 10.73 MGD (July 2017 to July 2024)	INFLUENT - At Sampling Point 701, the permittee shall collect representative samples of the influent from the automatic composite samplers drawing 24-hour flow proportional composite samples from each of the Neenah and Menasha influent channels in the head works (before sidestreams). The permittee shall measure the total combined influent flow rate using continuous flow recording devices on the Neenah and Menasha influent channels in the head works (before sidestreams).
112	Not applicable	FIELD BLANK - At Sampling Point 112, the permittee shall collect a field blank for each day a mercury sample is collected. The permittee shall report the field blank concentrations when reporting mercury sample results for Total Recoverable Mercury at sample points 701 and 001.
113	Number of Blending Events: 32 (July 2017 to July 2024) Average Flow: 2.05 MGD	BLENDING - At Sampling Point 113, the permittee shall report the diverted flow which bypasses the primary, biological and secondary treatment processes prior to disinfection during high flow events when blending occurs. The permittee shall notify the department when blending occurs. See Blending requirements in the Standard Requirements section of the 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)
001	No effluent flow meter. Flows reported were the same as Sampling Point 701.	EFFLUENT - At Sampling Point 001, the permittee shall collect representative samples of effluent samples from the automatic composite sampler drawing 24-hour flow proportional composites from the channel between the final clarifiers and the chlorine contact tank except that grab samples for pH, total residual chlorine, fecal coliform, E. coli shall be collected from the discharge chamber of the chlorine contact tank prior to being discharged to the Menasha Channel of the Fox River via Outfall 001. The permittee shall collect representative samples for whole effluent toxicity testing from the automatic composite sampler drawing 24-hour flow proportional composites from the discharge chamber of the chlorine contact tank prior to being discharged to the Menasha Channel of the Fox River via Outfall 001. During blending events, the permittee shall collect representative samples of effluent samples from the automatic composite sampler drawing 24-hour flow proportional composites from the discharge chamber of the chlorine contact tank prior to being discharged to the Menasha Channel of the Fox River via Outfall 001. Starting on January 1, 2030, the permittee shall measure the effluent flow rate using a continuous flow recording device prior to the disinfection system.
002	Average Annual Sludge Generated: 1441 metric tons (2017 to 2023) Average Annual Sludge Land Applied: 1373 metric tons (2017 to 2023)	CAKE SLUDGE - Class B cake sludge from the treatment of primary sludge, gravity thickened waste activated sludge, and high strength food waste that is anaerobically digested, centrifuged, and loaded onto trucks and then stored off-site. At Sampling Point 002, the permittee shall collect representative grab and/or composite samples of cake sludge prior to being loaded onto trucks and either sent to off-site cake storage, land applied on department approved sites via Outfall 002, or hauled to another permitted facility.
005	Not applicable	BOD5 WLA COMPLIANCE - At Sampling Point 005, the permittee shall calculate and report the BOD wasteload values as specified based on daily effluent BOD mass discharged from Sampling Point 001 and river monitoring data from Sampling Point 601 to determinate compliance with the daily maximum variable BOD5 wasteload allocations. These requirements are applicable from May 1 through October 31, each year. This is a compliance evaluation sampling point and it is not a discharge outfall to the Menasha Channel of the Fox River.
601	Not applicable	RIVER MONITORING - At Sampling Point 601, The permittee shall collect Lower Fox River data at the Appleton Lutz Park-USGS/ACOE Gauge Station as reported by the Lower Fox River Discharger's Association to be used in the determination of the daily BOD5 wasteload allocation.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT

100

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Lead, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	

Changes from Previous Permit:

- No changes from the previous permit.

Explanation of Limits and Monitoring Requirements

Flow Rate, BOD5, and TSS Monitoring: Influent monitoring is needed to assess loading to the facility and treatment performance. Requirements for flow, BOD5, and TSS are established in accordance with s. NR 210.04(2), Wis. Adm. Code. Influent monitoring for flow, BOD5, and TSS remains unchanged from the previous permit.

Metals Monitoring: Monitoring for metals is required because the design flow is greater than 5 MGD and this facility operates an industrial pretreatment program as required under ch. NR 211, Wis. Adm. Code. Influent monitoring for metals remains unchanged from the previous permit. Additionally, as part of the previous variance for mercury, the department continues to require quarterly influent monitoring for mercury to characterize the mercury loading coming into the wastewater treatment facility and better assess mercury reductions.

Sampling Frequency: The department shall determine on a case-by-case basis the monitoring frequency to be required for each parameter in a permit pursuant to s. NR 205.066, Wis. Adm. Code. The Monitoring Frequencies for Individual

Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual WPDES permits based on the size and type of the facility, in order to characterize influent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. Previously permitted monitoring frequencies for influent flow, BOD5 and TSS are consistent with the standard monitoring frequency outlined in guidance. The sampling frequencies for influent flow, BOD5 and TSS remain unchanged from the previous permit.

Sample Type: The department shall require the use of 24-hour flow proportional samplers for monitoring influent wastewater quality except where the department determines through the permit issuance process that other sample types may adequately characterize the influent quality pursuant to s. NR 210.04(4), Wis. Adm. Code. The 24-hour flow-proportional sampling is the most representative method of collecting wastewater samples for wastewater coming into and being discharged from a wastewater treatment plant on a continuous basis. The sample type for BOD₅, TSS, and metals remains unchanged from the previous permit. For municipal waste at a treatment facility, methods of flow measurement shall include a continuous recording device pursuant to s. NR 218.05(1), Wis. Adm. Code. The sample type of flow rate remains unchanged from the previous permit.

2 Inplant - Monitoring and Limitations

Sample Point Number: 112- FIELD BLANK

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Quarterly	Blank	

Changes from Previous Permit:

- No changes from previous permit.

Explanation of Limits and Monitoring Requirements

Field Blank Monitoring: Collection of a field blank during mercury sampling events is required to satisfy the sampling requirements of s. NR 106.145(9)(c), Wis. Adm. Code.

Sample Point Number: 113- IN-PLANT DIVERSION

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Per Occurrence	Continuous	See Blending Flow section in the permit.
Time		hours	Per Occurrence	Calculated	Report the total duration of blending within a given day (12:00am - 11:59pm) in which blending occurs. See Blending Flow section in the permit.

Changes from Previous Permit:

- Time duration monitoring has been added to the permit.

Explanation of Limits and Monitoring Requirements

Blending Monitoring: Section NR 205.07(1)(u), Wis. Adm. Code, requires that the department approve all blending and comply with requirements of s. NR 210.12, Wis. Adm. Code. The facility submitted a request for blending approval with supporting documentation on January 24, 2024 with permit reissuance application. The department determined the submitted documentation demonstrates that the facility complies with the general provisions to justify blending under s. NR 210.12(1) and (2), Wis. Adm. Code, and has the physical capability and necessary equipment in place to practice

blending. The department approved the blending request on August 8, 2024. See the attached “Approval of The Request for Blending Approval – Checklist” letter dated August 8, 2024.

The department included this sampling point to constitute permitting and approval of the blending provided the blending monitoring requirements and conditions are followed. The reporting and monitoring requirements are based on s. NR 210.12(6), Wis. Adm. Code. Any blending shall be reported to the department by telephone, fax or email no later than 24 hours from the time each blending operation ceases at the sewage treatment facility. Permittees shall also report the time, duration, and volume of wastewater routed around the biological treatment process or routed through an alternative treatment process on the wastewater discharge monitoring report forms required by the permit. A bypass that is defined as a controlled diversion in s. NR 205.07(1)(v), Wis. Adm. Code, is not covered under this sample point.

3 Surface Water - Monitoring and Limitations

Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	The Flow Rate shall be reported starting January 1, 2030. See the Install Continuous Flow Recording Device Schedule in the permit.
BOD5, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	Sample frequency applies November 1st through April 30th, each year.
BOD5, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	Sample frequency applies November 1st through April 30th, each year.
BOD5, Total	Weekly Avg	45 mg/L	Daily	24-Hr Flow Prop Comp	Sample frequency applies May 1st through October 31st, each year.
BOD5, Total	Monthly Avg	30 mg/L	Daily	24-Hr Flow Prop Comp	Sample frequency applies May 1st through October 31st, each year.
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Monitoring and limit effective May 1st through September 30th each year.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Monitoring and limit effective May 1st through September 30th each year. See the E. coli Percent Limit section in the permit. Enter the result in the DMR on the last day of the month.
Chlorine, Total Residual	Daily Max	38 ug/L	5/Week	Grab	Monitoring and limit applies May 1st through September 30th each year.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Chlorine, Total Residual	Weekly Avg	38 ug/L	5/Week	Grab	Monitoring and limit applies May 1st through September 30th each year.
Chlorine, Total Residual	Monthly Avg	38 ug/L	5/Week	Grab	Monitoring and limit applies May 1st through September 30th each year.
Suspended Solids, Total	Weekly Avg	45 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	2,524 lbs/day	5/Week	Calculated	See the TMDL Limitations section in the permit.
Suspended Solids, Total	Monthly Avg	1,373 lbs/day	5/Week	Calculated	See the TMDL Limitations section in the permit.
Suspended Solids, Total		lbs/month	Monthly	Calculated	Calculate and report the total monthly mass of TSS discharged in lbs/month on the last day of the month on the eDMR.
Suspended Solids, Total		lbs/yr	Monthly	Calculated	Calculate and report the 12-month rolling sum of the total monthly mass of TSS on the last day of the month on the eDMR.
Phosphorus, Total	Monthly Avg	0.8 mg/L	5/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	58 lbs/day	5/Week	Calculated	Limit effective on April 1, 2027. See the TMDL Limitations section and Total Phosphorus - TMDL Derived WQBELs for TP compliance schedule in the permit.
Phosphorus, Total	6-Month Avg	19 lbs/day	5/Week	Calculated	Limit effective on May 1, 2027. See the TMDL Limitations section and Total Phosphorus - TMDL Derived WQBELs for TP compliance schedule in the permit.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Phosphorus, Total		lbs/month	Monthly	Calculated	Calculate and report the total monthly mass of TP discharged in lbs/month on the last day of the month on the eDMR.
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate and report the 12-month rolling sum of the total monthly mass of TP on the last day of the month on the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max	27 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies November 1st through April 30th each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	27 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies November 1st through April 30th each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	29 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies May 1st through May 30th each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	11 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies June 1st through September 30th each year.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	47 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies October 1st through October 31st each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies January 1st through March 31st each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	11 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies April 1st through May 30th each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.4 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies June 1st through September 30th each year.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	18 mg/L	5/Week	24-Hr Flow Prop Comp	Limit applies October 1st through December 31st each year.

Monitoring Requirements and Limitations

Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Temperature Maximum		deg F	Daily	Continuous	Monitoring only required from January 1st, 2027 to December 31st, 2027. See the Effluent Temperature Monitoring section in the permit.
Cadmium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Chromium, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Lead, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Nickel, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Zinc, Total Recoverable		ug/L	Monthly	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See Mercury Monitoring and Mercury Continued Implementation of Pollutant Minimization Program sections in the permit.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	See Nitrogen Series Monitoring section in the permit.
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	See Nitrogen Series Monitoring section in the permit.
Nitrogen, Total		mg/L	Quarterly	Calculated	See Nitrogen Series Monitoring section in the permit. Total Nitrogen = Total Kjeldahl Nitrogen (mg/L) + Total (Nitrite + Nitrate) Nitrogen (mg/L).

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
PFOS		ng/L	Monthly	Grab	Monitoring only. See PFOS/PFOA Sampling and Reporting Requirements section and PFOS/PFOA Minimization Plan Determination of Need section and compliance schedule in the permit.
PFOA		ng/L	Monthly	Grab	Monitoring only. See PFOS/PFOA Sampling and Reporting Requirements section and PFOS/PFOA Minimization Plan Determination of Need section and compliance schedule in the permit.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See the Whole Effluent Toxicity Testing section in the permit.
Chronic WET	Monthly Avg	6.7 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See the Whole Effluent Toxicity Testing section in the permit.

Changes from Previous Permit

- The permit requires effluent flow rate monitoring and will become effective per a compliance schedule.
- Escherichia coli (E. coli) monitoring and limits have been added and replaced fecal coliform monitoring and limits.
- Additional monthly reporting requirements for lbs/month and lbs/yr have been added to the permit. The lbs/month will be used to calculate the facility's 12-month rolling sum of total monthly discharge, which can be compared directly to the facility's designated WLAs for total phosphorus and TSS. The department modified the note language for reporting monthly and annual total phosphorus loadings.
- TMDL derived total phosphorus mass effluent limitations has been added to the permit and will become effective per a compliance schedule.
- An ammonia nitrogen weekly average limit of 27 mg/L now applies November through April each year.
- An ammonia nitrogen weekly average limit of 29 mg/L now only applies in May each year.
- An ammonia nitrogen weekly average limit of 47 mg/L now only applies in October each year.
- Daily continuous temperature monitoring for 2027 has been added to the permit.
- Effluent limitations for total recoverable mercury are no longer required but quarterly monitoring will continue throughout the permit.

- Quarterly nitrogen series monitoring has been added to the permit.
- Monthly PFOA and PFOS monitoring has been added to the permit.
- A chronic WET monthly average limit of 6.7 TUc has been added to the permit.

Explanation of Limits and Monitoring Requirements

More information and explanation about the proposed water quality-based effluent limits (WQBELs) is found in the “Water Quality-Based Effluent Limitations for Neenah Menasha Sewer Commission WWTF (WI-002-10)” memo dated April 15, 2022 and updated on August 30, 2024.

Flow Rate Monitoring: For municipal waste at a treatment facility, methods of flow measurement shall include a continuous recording device pursuant to s. NR 218.05(1), Wis. Adm. Code. The permittee does not currently have an effluent flow meter installed so the department has included a schedule to allow the permittee time to install one.

Secondary Treatment Limits for BOD5, TSS, and pH: Publicly owned treatment works with a discharge to a surface water classified as a fish and aquatic life water shall meet the secondary treatment effluent limits specified for BOD5, TSS, and pH in s. NR 210.05(1), Wis. Adm. Code. The permittee discharges to the Menasha Channel of the Fox River which is classified as a fish and aquatic life water. Therefore, effluent limitations in s. NR 210.05(1), Wis. Adm. Code apply. The concentration limits for BOD5, TSS, and pH remain unchanged from the previous permit.

For the months of May through October, the permittee must comply with both the BOD WLA and the secondary treatment limits.

E. coli: Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying E. coli WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for E. coli while facilities are disinfecting during the recreation period and establish effluent limitations for E. coli established in s. NR 210.06(2), Wis. Adm. Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to E. coli to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code; revised permit requirements for publicly owned sewage treatment works in ch. NR 210, Wis. Adm. Code; and, updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.

The permittee discharges to the Menasha Channel of the Fox River which the permittee must ensure the receiving water is suitable for supporting recreational use and protect humans from illness caused by fecal contamination due to recreational contact with surface water. The Menasha Channel of the Fox River is not classified as a public water supply with regard to disinfection. Therefore, the permittee is required to disinfect during the recreation season pursuant to s. NR 210.06(1)(a), Wis. Adm. Code. 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 in order to protect recreation season (May to September): The geometric mean of E. coli bacteria in effluent samples collected in any calendar month cannot exceed 126 counts/100 mL. No more than 10% of E. coli bacteria samples collected in any calendar month can exceed 410 counts/100 mL.

The permittee had monitored effluent E. coli weekly from 05/04/2022 – 008/27/2021 with a total of 20 results. The geometric mean monthly limit of 126 #/100 mL was exceeded 1 of 5 months during this period with a maximum monthly geometric mean of 226 #/100 mL. The maximum limit of 410 #/100 mL was exceeded 4 times during this period (approximately 20% of total sample results). The maximum reported value was 1760 #/100 mL. Based on the effluent E. coli monitoring data, the permittee has demonstrated that the final E. coli limits can be met immediately with the existing disinfection system.

Total Residual Chlorine: The permittee currently uses sodium hypochlorite to disinfect the final effluent prior to discharge to the Menasha Channel of the Fox River. Therefore, the department must evaluate effluent limitations to assure proper operation of the dechlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states that when chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L. However, the department must also evaluate WQBELs for total residual chlorine. Chlorine effluent limits were calculated using current acute and chronic chlorine toxicity criteria for the protection of aquatic life included in Tables 1 and 5 of ch.

NR 105, Wis. Adm. Code. The QBELs were determined to be more restrictive than the technology based effluent limitations in s. NR 210.06(2)(b), Wis. Adm. Code. The effluent limits for total residual chlorine remain unchanged from the previous permit.

TMDL derived TSS Mass Effluent Limitations: If the department determines a limitation is necessary, effluent limitation shall be also consistent with a total maximum daily load (TMDL) if a TMDL has been approved by the U.S. Environmental Protection Agency (USEPA) for the receiving waterbody consistent with s. NR 205.067(3)(a), Wis. Adm. Code. The discharge to the Menasha Channel of the Fox River which is within the Lower Fox River Basin TMDL area. The Lower Fox River Basin TMDL for total phosphorus and total suspended solids was approved by the USEPA in March 2012. The department has determined that TSS effluent limitations are necessary. Therefore, the department must also calculate TMDL derived TSS limits to be consistent with the Lower Fox River Basin TMDL. The approved total suspended solids waste load allocation (WLA) for the permittee is 180,258 lbs/year which results in calculated total suspended solids mass limits of 2,524 lbs/day as a weekly average and 1,373 lbs/day as a monthly average. Since the TSS WLA is expressed as an annual load (lbs/yr), the permittee must also calculate and report the rolling 12-month sums of total monthly loads for TSS. Rolling 12-month sums can be compared directly to the annual wasteload allocation. The TMDL derived TSS mass effluent limitations remain unchanged from the previous permit.

Total Phosphorus: Phosphorus requirements are based on the Phosphorus Rules as detailed in chs. NR 102 (water quality standards) and NR 217, Wis. Adm. Code (effluent standards and limitations for phosphorus). Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. Currently, there are three types of limit calculations used to determine if a phosphorus limit is needed: a technology based effluent limit (TBEL), a QBEL determined by stream criteria and an effluent limit based on a TMDL allocation.

- A TBEL of 1.0 mg/L is needed if a facility discharges more than the threshold of 150 pounds per month (s. NR 217.04(1)(a)1., Wis. Adm. Code). The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month. However, the current permit has a monthly average limit of 0.8 mg/L that served as an interim limit. This limit remains applicable unless a more stringent QBEL is given.
- The department has determined to include the total phosphorus TMDL derived limitations in lieu of the QBELs calculated under s. NR 217.13, Wis. Adm. Code pursuant to s. NR 217.16, Wis. Adm. Code.
- The discharge to the Menasha Channel of the Fox River which is within the Lower Fox River Basin TMDL area. The Lower Fox River Basin TMDL for total phosphorus and total suspended solids was approved by the USEPA in March 2012. If the department determines a QBEL is necessary, limitations shall be consistent with a TMDL if a TMDL has been approved by the USEPA for the receiving waterbody consistent with s. NR 205.067(3)(a), Wis. Adm. Code. The department has determined that total phosphorus QBELs are necessary. Therefore, the department must also calculate TMDL derived total phosphorus limits to be consistent with the Lower Fox River Basin TMDL. The approved total phosphorus WLA for the permittee is 6,275 lbs/year which results in calculated total phosphorus mass limits of 58 lbs/day as a monthly average and 19 lbs/day as a six-month average.

Based on the effluent total phosphorus data submitted on eDMRs from July 2017 to July 2024, the department has reasons to believe that permittee cannot currently meet the TMDL derived total phosphorus mass limits, so a compliance schedule is included.

Since the total phosphorus WLA is expressed as an annual load (lbs/yr), the permittee must also calculate and report the rolling 12-month sums of total monthly loads for total phosphorus. Rolling 12-month sums can be compared directly to the annual wasteload allocation.

Ammonia Nitrogen: Ammonia limits were calculated using current acute and chronic ammonia toxicity criteria for the protection of aquatic life included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating QBELs for ammonia. The department has determined that the daily maximum limit of 27 mg/L for November – March is more restrictive than the weekly average limit for these months. Therefore, the weekly average limits for these months were set equal to 27 mg/L. All other daily maximum, weekly average, and monthly average limits remain unchanged from the previous permit.

Temperature: The department has determined that there is no reasonable potential to exceed calculated temperature limits. However, the department has included daily continuous temperature monitoring in 2027 to ensure that representative temperature data are available at the next permit reissuance to meet the reasonable potential data requirements of s. NR 106.56, Wis. Adm. Code. The facility has inline temperature probes to be able to measure the temperature of the effluent continuously.

Metals Monitoring: Monitoring for metals is required because the design flow is greater than 5 MGD and this facility operates an industrial pretreatment program as required under ch. NR 211, Wis. Adm. Code. Effluent monitoring for metals remains unchanged from the previous permit.

Mercury: Through implementation of the mercury pollutant minimization program via variance in the previous permit, the facility has significantly reduced the sources of mercury. As a result, the department has determined that there is no longer reasonable potential to exceed calculated WQBELs for mercury and limits are no longer required. Nevertheless, the permittee shall continue to implement the mercury pollutant minimization measures as a part of the pollutant minimization program to ensure effluent quality is maintained at or below mercury water quality standards. Also, the department has continued quarterly monitoring during the permit term to evaluate reasonable potential and need for limits in the next permit reissuance.

Arsenic: The sample that was collected for the permit reissuance application had a limit of detection (LOD) of 8.3 µg/L which is greater than 1/5th of the most stringent calculated WQBEL of 0.8 µg/L based on the human cancer criteria. Because the LOD is greater than the most stringent calculated limit, reasonable potential cannot be determined. However, the facility submitted 4 additional effluent arsenic sample results on October 29, 2024, to have a total 11 samples to calculate the 99th percentile of effluent results and determine reasonable potential to exceed the arsenic WQBELs. The department determined that there is no reasonable potential to exceed the calculated arsenic WQBELs and arsenic monitoring is not recommended during the permit term.

Nitrogen Series Monitoring (NO₂+NO₃, TKN and Total N): The department has included quarterly effluent monitoring for total nitrogen since the permittee is a major discharge (>1 MGD) in the permit through the authority under s. 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source. 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.

PFOA and PFOS: NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for major municipal dischargers, with an average flow rate greater than or equal to 5 MGD, at a minimum sample effluent on a monthly basis for PFOS and PFOA pursuant s. NR 106.98(2)(a), Wis. Adm. Code. 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 Testing: Whole effluent toxicity (WET) testing requirements and limits are determined in accordance with ss. NR 106.08 and NR 106.09, Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at <http://dnr.wisconsin.gov/topic/wastewater/wet.html>).

Major municipal discharger with a design flow greater than 1.0 MGD and/or with approved pretreatment program must at a minimum perform annual WET testing pursuant to 40 CFR Part 122.21(j)(5).

After consideration of the guidance provided in the Department's WET Program Guidance Document (2019) and other information described above, 1 x yearly acute and chronic WET tests were 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).

The department has determined that due to the available chronic WET testing data and requirements specified in ss. NR 106.08 and NR 106.09, Wis. Adm. Code, a chronic WET limit is required in the permit and shall be 6.7 TUC expressed as a monthly average.

Sample Type: The department shall require the use of 24-hour flow proportional samplers for monitoring effluent wastewater quality except where the department determines through the permit issuance process that other sample types may adequately characterize the effluent quality pursuant to s. NR 210.04(4), Wis. Adm. Code. The 24-hour flow-proportional sampling is the most representative method of collecting wastewater samples for wastewater coming into and being discharged from a wastewater treatment plant on a continuous basis. Grab samples for pH, TRC, fecal coliform, and E. coli are required as compositing and holding such samples would change the test results and is noncompliant with maximum holding times specified in ch. NR 219, Wis. Adm. Code. The sample type for all parameters remains unchanged from the previous permit.

Sampling Frequency: The department shall determine on a case-by-case basis the monitoring frequency to be required for each parameter in a permit pursuant to s. NR 205.066, Wis. Adm. Code. The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual WPDES permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

Previously permitted monitoring frequencies for all parameters are consistent with the standard monitoring frequency outlined in the guidance. These sampling frequencies remain unchanged from the previous permit. If performance levels begin to vary during the permitted term, the department may re-evaluate current sampling frequencies and implement more frequent monitoring via permit modification or at permit reissuance.

Sample Point Number: 601- RIVER MONITORING FOR BOD WLA

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
WLA Previous Day River Temp		deg F	Daily	Measure	Monitoring applies May 1st through October 31st each year.
WLA Previous Day River Flow		cfs	Daily	Gauge Station	Monitoring applies May 1st through October 31st each year.
WLA Previous 4 Day Avg River Flow		cfs	Daily	Gauge Station	Monitoring applies May 1st through October 31st each year.

Changes from Previous Permit

- No changes from previous permit.

Explanation of Limits and Monitoring Requirements

River Monitoring: Section NR 212.40(7), Wis. Adm. Code, requires that the flow and temperature conditions of the Fox River are used to determine compliance with the total maximum daily variable BOD₅ loads and be the representative measurements of the flow averaged over the previous 4 days and temperature of the previous day. The permittee shall collect Lower Fox River data at the Appleton Lutz Park-USGS/ACOE Gauge Station as reported by the Lower Fox River Discharger's Association to be used in the determination of the daily BOD₅ wasteload allocation. The river monitoring only needs to occur from May 1 to October 31 annually when the total maximum daily variable BOD₅ loads are effective. The river monitoring requirements remain unchanged from the previous permit.

Sample Point Number: 005- BOD5 WLA COMPLIANCE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
WLA BOD5 Value		lbs/day	Daily	See Table	Monitoring applies May 1st through October 31st each year.
WLA Adjusted Value		lbs/day	Daily	Calculated	Monitoring applies May 1st through October 31st each year.
WLA BOD5 Discharged	Daily Max - Variable	lbs/day	Daily	Calculated	Monitoring and limits apply May 1st through October 31st each year.
WLA 7 Day Sum Of WLA Values		lbs/day	Daily	Calculated	Monitoring applies May 1st through October 31st each year.
WLA 7 Day Sum Of BOD5 Discharged	Daily Max - Variable	lbs/day	Daily	Calculated	Monitoring and limits apply May 1st through October 31st each year.

Changes from Previous Permit

- No changes from previous permit.

Explanation of Limits and Monitoring Requirements

BOD₅ WLA: The total maximum daily variable BOD₅ loads assigned to the permittee as shown in the tables of the permit are from the allocations for point sources discharging to the Lower Fox River between milepoints 40.0 and 32.4 in Table 1-a of ch. NR 212, Wis. Adm. Code. These limitations shall apply from May 1 to October 31 annually. The BOD WLA monitoring requirements are based on meeting the conditions of s. NR 212.40(6)(a) and (b)1., Wis. Adm. Code to demonstrate compliance with the assigned total maximum daily variable BOD₅ loads. The BOD WLA monitoring requirements remain unchanged from the previous permit.

4 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
002	B	Cake	Fecal Coliform	Volatile Solids Reduction	Land Application or Landfilling	1373 metric tons (2017 to 2023)
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? Design flow rate is between 5 MGD and 40 MGD. The priority pollutant scan was conducted in 2018. Therefore, a priority pollutant scan is not required this permit term.						

Sample Point Number: 002- CAKE SLUDGE

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

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Selenium Dry Wt	High Quality	100 mg/kg	1/ 2 Months	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	1/ 2 Months	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	1/ 2 Months	Composite	
Nitrogen, Total Kjeldahl		Percent	1/ 2 Months	Composite	
Nitrogen, Ammonium (NH ₄ -N) Total		Percent	1/ 2 Months	Composite	
Phosphorus, Total		Percent	1/ 2 Months	Composite	
Phosphorus, Water Extractable		% of Tot P	1/ 2 Months	Composite	
Potassium, Total Recoverable		Percent	1/ 2 Months	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Monitoring required once in 2026.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Monitoring required once in 2026.
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

- Annual PFAS monitoring has been added to the permit for Outfall 002.

Explanation of Limits and Monitoring Requirements

Metals, Nutrients, Pathogen Control, Vector Attraction Reduction: The parameters to be analyzed in the sludge were determined pursuant to s. NR 204.06(2)(b), Wis. Adm. Code. The ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogen control are specified in s. NR 204.07(6), Wis. Adm. Code and in s. NR 204.07(7), Wis. Adm. Code for vector attraction reduction requirements. Nutrients are required to be analyzed to track that nutrient recommendations for the crop are not exceeded. Specifically, the amount of available nitrogen from sludge and other nitrogen sources applied per growing season may not exceed the nitrogen requirement of the crop pursuant to s. NR 204.07(8)(a), Wis. Adm. Code.

Water extractable phosphorus (WEP) is the coefficient for determining plant available phosphorus from measured total phosphorus. In Wisconsin, the Penn State Method is utilized and is expressed in percent. While a total P may be significant, the WEP may show that only a small percentage of the P is available to plants because of factors such as treatment processes and chemical addition that “tie-up” phosphorus limiting the amount of phosphorus that is plant available. As part of the Wisconsin’s nutrient management plan (NMP) requirements, the accounting of all fertilizers must be included over the NMP cycle. The fertilizer value of the waste needs to be communicated to the farmer and accounted for in the NMP.

The metals and nutrients monitoring, pathogen control, and vector attraction reduction requirements are unchanged from the previous permit.

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 s. NR 204.06(2)(b)9., Wis. Adm. Code.

Sample Frequency: The frequency of monitoring for metals, nutrients, pathogen control, and vector attraction reduction requirements of the sludge is based on the amount of sludge land applied each year pursuant to s. NR 204.06(2)(c)3., Wis. Adm. Code. The facility typically land applies 1,200 to 1,600 dry metric tons of sludge each year (2017 to 2023). This determines a sampling frequency of bimonthly based on Table A in s. NR 204.06(2)(c)3., Wis. Adm. Code. The sludge monitoring frequency for nutrients, metals, pathogen Control, and vector Attraction Reduction remains unchanged from the previous permit.

5 Schedules

5.1 Install Continuous Flow Recording Device

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

Required Action	Due Date
Submit Facility Plan: The permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code for installing a continuous flow recording device at Sampling Point (Outfall) 001.	12/31/2025
Final Plans and Specifications: Submit plans and specifications per ch. NR 108, Wis. Adm. Code, for installing a continuous flow recording device at Sampling Point (Outfall) 001.	12/31/2027
Complete Installation: The permittee shall complete installation of the continuous flow recording device at Sampling Point (Outfall) 001.	12/31/2029

5.2 Total Phosphorus - TMDL Derived WQBELs for TP

The permittee shall comply with the TMDL (Total Maximum Daily Load) derived effluent limitations for TP as specified.

Required Action	Due Date
Submit Facility Plan: The permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code for complying with the final TMDL derived effluent limitations for total phosphorus.	04/30/2025
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	09/30/2025
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.) Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	03/31/2026
Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	09/30/2026
Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2026

Required Action	Due Date
<p>Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	03/31/2027
<p>Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	04/01/2027

5.3 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
<p>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.</p> <p>This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.</p>	12/31/2025
<p>Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan.</p> <p>This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.</p> <p>The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan.</p> <p>If the Department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for Department approval no later than 90 days after written notification was sent from the Department. The Department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued.</p> <p>If, however, the Department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.</p>	12/31/2026

5.4 Sludge Management Plan

A management plan is required for the land application system.

Required Action	Due Date
<p>Sludge Management Plan Submittal: Submit an update to the sludge management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall 1) specify information on pretreatment processes (if any); 2) identify land application sites; 3) describe site limitations; 4) address vegetative cover management and removal; 5) specify availability of storage; 6) describe the type of transporting and spreading vehicle(s); 7) specify monitoring procedures; 8) track site loading; 9) address contingency plans for adverse weather and odor/nuisance abatement; and 10) include any other pertinent information. Once approved, all sludge management activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes.</p>	12/31/2025

Explanation of Schedules

Install Continuous Flow Recording Device: This schedule is included for the facility to install a continuous flow recording device at Outfall 001 pursuant to s. NR 218.05(1), Wis. Adm. Code. Installation of a continuous flow recording device is a reviewable project per ch. NR 108, Wis. Adm. Code, therefore, a facility plan and plans and specifications submittal requirement is included in this schedule.

Total Phosphorus - TMDL Derived WQBELs for TP: This permit includes a compliance schedule to allow a reasonable opportunity for the permittee to attain compliance with the specified TMDL derived TP mass effluent limits for Outfall 001 in accordance with s. NR 106.117, Wis. Adm. Code, by the due dates specified in the permit. This schedule will allow the permittee time to prepare a facility plan, bid/prepare for construction, and to install and initiate the treatment upgrades.

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.

Sludge Management Plan: Per s. NR 204.11(1), Wis. Adm. Code, the department may require the permittee to develop a sludge management plan, submit the plan to the department for approval and operate in compliance with the approved plan. The plan shall include a description of the facility’s sludge management program and how the permittee plans to operate the facility in compliance with the requirements of the permit and ch. NR 204, Wis. Adm. Code. A revised sludge management plan shall be submitted to the department for approval by the due date in the permit.

6 Standard Requirements

The Standard Requirements section contains conditions and requirements that are, for the most part, applicable to all municipal permittees consistent with ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code. Other standard requirements may be added as reminders. Changes to the standard requirements section include:

- Section 6.1.5: The limit of quantitation was updated for TSS for purposes of calculating NR 101 fees. A reminder was added about the reporting requirements when there is no discharge through a permitted outfall for flow related parameters.
- Section 6.4.7: The department has added the reminder about the expression of the E. coli limits and to enter a value of 1 for a result of 0 when calculating the geometric mean.
- Section 6.4.8: The department has updated the seasonal disinfection requirements to reflect the changes in the disinfection rules.
- Section 6.4.9: The department revised the total residual chloride reporting requirements consistent with s. NR 106.07(6), Wis. Adm. Code.
- Section 6.4.12: The department has added the laboratory certification requirements for PFOA and PFOS testing.
- Section 6.6.6: The department has revised the monitoring and calculation requirements for PCB Concentrations in Sludge.
- Sections 6.6.13 to 6.5.15: The department has added all applicable sludge pathogen reduction and vector control requirements that may be applicable when the permittee decides to land apply sludge.

7 Summary of Reports Due

A summary of reports due has been added for informational purposes for the permittee to keep track of the due dates of reports and schedule items.

Other Comments/Changes from Previous Permit:

None.

Justification Of Any Waivers from Permit Application Requirements

No waivers were requested from permit application requirements.

Attachments:

“Approval of The Request for Blending Approval – Checklist” letter dated August 8, 2024

“Water Quality-Based Effluent Limitations for Neenah Menasha Sewer Commission WWTF (WI-002-10)” memo dated April 15, 2022 and updated on August 30, 2024.

Expiration Date:

December 31, 2029

Prepared By:

**Trevor Moen
Wastewater Engineer
Bureau of Water Quality**

Date: 09/27/2024

Post Fact Check Revision Date: 10/30/2024

Post Public Notice Revision Date:



August 8, 2024

Project Number: S-2024-0113

Dale Youngquist, Authorized Representative
Neenah-Menasha Sewerage Commission
101 Garfield Avenue
Menasha, WI 54952

Subject: Approval of The Request for Blending Approval - Checklist

Dear Mr. Youngquist:

The Department of Natural Resources (hereafter Department) has reviewed the documentation titled "Request for Blending Approval - Checklist" as submitted by Chad Olsen, P.E., McMahon Associates, Neenah, Wisconsin, and received for approval on January 24, 2024.

The submitted documentation satisfactorily demonstrates that the Neenah-Menasha Sewerage Commission complies with the general provisions to justify blending under s. NR 210.12(1) and (2), Wis. Adm. Code, and has the physical capability and necessary equipment in place to practice blending. Therefore, the Neenah-Menasha Sewerage Commission is hereby approved for blending.

Please note that this approval does not by itself constitute authorization to practice blending under your current Wisconsin Pollutant Discharge Elimination System (WPDES) discharge permit. Blending is still prohibited unless all the applicable requirements of s. NR 210.12, Wis. Adm. Code, are met and specific authorization for blending is included as a condition in your WPDES discharge permit (subject to the review processes established for permit issuance). This approval is not to be construed as a determination on the reissuance of your WPDES permit to authorize blending nor is it an opinion as to the ability of the treatment facility to comply with the applicable effluent limitations.

If you believe that you have a right to challenge this decision, you should know that the Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed. For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review must name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. All requests for contested case hearings must be made in accordance with s. NR 2.05(5), Wis. Adm. Code, and served on the Secretary in accordance with s. NR 2.03, Wis. Adm. Code. The filing of a request for a contested case hearing does not extend the 30 day period for filing a petition for judicial review.

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
For the Secretary



for

Jason R. Knutson, P.E.
Wastewater Section Chief
Bureau of Water Quality

Digitally signed by Nate Willis, P.E.
Date: 2024.08.08 13:25:53 -05'00'



Ben Wacker
Wastewater Engineer
Bureau of Water Quality

e-cc:

Paul Much – MCO
Mark Stanek - DNR Oshkosh
Trevor Moen – DNR Oshkosh
Chad Olsen, P.E. – McMahon Associates

CORRESPONDENCE/MEMORANDUM

DATE: 04/15/2022 – updated 08/30/2024

TO: Trevor Moen – NER

FROM: Nicole Krueger – SER *Nicole Krueger*

SUBJECT: Water Quality-Based Effluent Limitations for Neenah Mensaha Sewer Commission WWTF
WPDES Permit No. WI-0026085-10

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from Neenah Menasha Sewer Commission in Winnebago County. This municipal wastewater treatment facility (WWTF) discharges to the Menasha Channel of the Fox River, located in the Lake Butte des Morts Watershed in the Lower Fox River Basin. This discharge is included in the Lower Fox TMDL as approved by EPA. 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			45 mg/L	30 mg/L		1,3
pH	9.0 s.u.	6.0 s.u.				1
Bacteria						4
Interim Limit Fecal Coliform				400 #/100 mL geometric mean		
Final Limit <i>E. coli</i>				126 #/100 mL geometric mean		
Residual Chlorine May – September	38 µg/L		38 µg/L	38 µg/L		1
TSS			45 mg/L 2,524 lbs/day	30 mg/L 1,373 lbs/day		1,5
Phosphorus Interim Final				0.8 mg/L 58 lbs/day	19 lbs/day	1,5,6
Ammonia Nitrogen January – March April May June – September October November – Dec	27 mg/L 27 mg/L 27 mg/L		27 mg/L 27 mg/L 29 mg/L 11 mg/L 47 mg/L 27 mg/L	10 mg/L 10 mg/L 11 mg/L 4.4 mg/L 18 mg/L 18 mg/L		7
Mercury						2
TKN, Nitrate+Nitrite, and Total Nitrogen						8
Acute WET						9,10
Chronic WET				6.7 TUc		9,10

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Temperature						2
Arsenic						11
PFOS and PFOA						12

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. Additionally, tables of daily mass BOD₅ limits for May through October should be continued in the permit in accordance with Table 1-a of ch. NR 212, Wis. Adm. Code. The permit requires daily river flow rate and temperature monitoring to determine the applicable WLA for each day.
4. Bacteria limits apply during the disinfection season of May through September. The fecal coliform interim limit will apply until the end of the compliance schedule when *E. coli* limits take effect. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
5. The TSS and phosphorus mass limit is based on the Total Maximum Daily Load (TMDL) for the Lower Fox River TMDL to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA on March 2012.
6. The interim phosphorus limit of 0.8 mg/L is recommended to continue after the TMDL mass limits become effective.
7. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
8. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, quarterly total nitrogen monitoring is recommended for all municipal major permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).
9. 1x/yearly acute and 1x/yearly chronic WET tests are recommended. The Instream Waste Concentration (IWC) to assess chronic test results is 15%. 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%, 30%, 10%, 3% & 1% and the dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water.
10. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).
11. Monitoring 4 times during the permit term. LOD should be below 0.8 µg/L.
12. Monthly monitoring is required in accordance with s. NR 106.98(2), Wis. Adm. Code.

Continued monitoring for total recoverable cadmium, chromium, copper, lead, nickel and zinc is also required because Neenah Menasha operates a local pretreatment program for the many industries that discharge to the treatment facility.

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 (4) – Narrative, 2007 Ammonia Limits Calculation, Thermal Table, & Map

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Mark Stanek, Wastewater Engineer – NER
Diane Figiel, Water Resources Engineer – WY/3
Kari Fleming, Environmental Toxicologist – WY/3

Attachment #1
**Water Quality-Based Effluent Limitations for
 Neenah Menasha Sewer Commission WWTF**

WPDES Permit No. WI-0026085-10

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

The Neenah Menasha plant is an activated sludge plant that has nine aeration basins running parallel for BOD and ammonia nitrogen removal, fine bubble diffusers, and an automated DO control system. The plant treatment unit processes include screening, grit removal, primary clarification, activated sludge aeration, secondary clarification, disinfection by sodium hypochlorite and dechlorination by sodium bisulfite.

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

Existing Permit Limitations

The current permit, expiring on 06/30/2022, 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			45 mg/L	30 mg/L		2,3
pH	9.0 s.u.	6.0 s.u.				2
Fecal Coliform May – September			656#/100 mL geometric mean	400#/100 mL geometric mean		
Residual Chlorine May – September	38 µg/L		38 µg/L	38 µg/L		
TSS TMDL			45 mg/L 2,524 lbs/day	30 mg/L 1,373 lbs/day		
Phosphorus Interim Final				0.8 mg/L 58 lbs/day	19 lbs/day	4
Ammonia Nitrogen Jan – March April May June – Sept Oct – Dec	27 mg/L 27 mg/L		28 mg/L 29 mg/L 29 mg/L 11 mg/L 47 mg/L	10 mg/L 11 mg/L 11 mg/L 4.4 mg/L 18 mg/L		
Mercury	6.0 ng/L					5
BHC, alpha						1
WET						6

Footnotes:

1. Monitoring only.

Attachment #1

2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
3. Additionally, tables of daily mass BOD₅ limits for May through October should be continued in the permit in accordance with Table 1-a of ch. NR 212, Wis. Adm. Code. The permit requires daily river flow rate and temperature monitoring to determine the applicable WLA for each day.
4. A compliance schedule is in the current permit to meet the final WQBEL by 04/01/2023.
5. This is an interim variance limit.
6. Acute and chronic WET testing is required 1x annually. The instream waste concentration (IWC) is 17%.

Monitoring for total recoverable cadmium, chromium, copper, lead, nickel and zinc is also required because Neenah Menasha operates a local pretreatment program for the many industries that discharge to the treatment facility.

Receiving Water Information

- Name: Menasha Channel to the Fox River
- Waterbody Identification Code (WBIC): 129800
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, public water supply. Per 104.07(1)(b) Wis Adm Code, the Fox River from Lake Winnebago downstream to the upper dam in the city of Appleton shall meet the public water supply standards. Therefore, the public water supply criteria apply for this discharge. Previously, non-public water supply criteria were used in WQBEL evaluations. Note: Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q₁₀ and 7-Q₂ values are estimated where Outfall 001 is located. They are half of the flow of the Fox River, because the Menasha Channel is considered to carry ½ of the Fox River out of Lake Winnebago.
7-Q₁₀ = 465 cfs (cubic feet per second)
7-Q₂ = 775 cfs
90-Q₁₀ = 660 cfs
- Hardness = 176 mg/L as CaCO₃. This value represents the geometric mean of data from WET testing from 07/18/2017 to 04/21/2020.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: Metals data from the Fox River above the De Pere Dam is used in this evaluation. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: Transcontinental Menasha also discharges to the Menasha Channel, however it is not in the immediate vicinity and the mixing zones do not overlap. Therefore, this discharge does not impact this evaluation.
- Impaired water status: The Fox River is 303(d) listed as impaired for total phosphorus and PCBs.

Effluent Information

- Design flow rate(s):

Attachment #1

Annual average = 13 MGD (Million Gallons per Day)

Peak daily = 50.3 MGD

Peak weekly = 34.8 MGD

Peak monthly = 26.3 MGD

For reference, the actual average flow from 07/01/2017 to 06/30/2024 was 10.7 MGD.

- Hardness = 331 mg/L as CaCO₃. This value represents the geometric mean of data from the permit application for 06/23/2021 to 07/09/2021.
- 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 surface water and wells with 3 categorical and 8 significant industrial users.
- Additives: Sodium hypochlorite for disinfection and sodium bisulfite for dechlorination.
- Effluent characterization: This facility is categorized as a major municipal, so the permit application required effluent sample analyses for all the “priority pollutants” except for the Dioxins and Furans as specified in s. NR 200.065, Table 1, Wis. Adm. Code. The permit-required monitoring for Cd, Cr, Cu, Pb, Ni, Hg and Zn from 07/01/2017 to 06/30/2024 is used in this evaluation.
- 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.

Permit Required Effluent Data

	Chromium µg/L		Copper µg/L
1-day P ₉₉		1-day P ₉₉	34
4-day P ₉₉		4-day P ₉₉	20
30-day P ₉₉		30-day P ₉₉	12
Mean*	0.042	Mean	8.9
Std		Std	6.8
Sample size	85	Sample size	85
Range	<2.5 – 3.6	Range	<3.4 – 61.7
	Lead µg/L		Nickel µg/L
1-day P ₉₉		1-day P ₉₉	6.5
4-day P ₉₉		4-day P ₉₉	4.5
30-day P ₉₉		30-day P ₉₉	2.5
Mean*	0.56	Mean*	1.5
Std	2.2	Std	1.2
Sample size	85	Sample size	85
Range	<4.3 – 10.7	Range	<2.6 – 9.0
	Mercury ng/L**		Zinc µg/L
1-day P ₉₉	2.54	1-day P ₉₉	67
4-day P ₉₉	1.64	4-day P ₉₉	46
30-day P ₉₉	1.18	30-day P ₉₉	33
Mean	0.96	Mean*	27
Std	0.47	Std	12
Sample size	80	Sample size	85
Range	0.32 – 3.2	Range	<11.6 – 80.1

Attachment #1

	Cadmium µg/L
1-day P ₉₉	
4-day P ₉₉	
30-day P ₉₉	
Mean*	0
Std	
Sample size	85
Range	<1.3

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

** The sample from 04/11/2023 was removed in this evaluation due to it being significantly higher than the rest of the data and not representative of normal conditions.

Sample Date	Chloride mg/L	Sample Date	Alpha BHC µg/L	Sample Date	Arsenic µg/L
06/23/2021	274	08/29/2014	<0.0076	03/01/2006	0.84
06/28/2021	155	11/05/2018	<0.0075	02/20/2007	0.69
07/02/2021	213	02/19/2019	<0.0075	02/21/2007	0.72
07/09/2021	169	03/09/2020	<0.0082	02/22/2007	0.66
Average	203	07/27/2021	<0.010	02/23/2007	0.72
		Average*	0.0	02/24/2007	0.64
				01/09/2013	<4.7
				06/23/2021	<8.3
				Average*	0.53

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

The following table presents the average concentrations and loadings at Outfall 001 from 07/01/2017 to 06/11/2024 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	5.05 mg/L*	
TSS	5.81 mg/L*	608 lbs/day
pH field	7.06 s.u.	
Phosphorus	0.26 mg/L	21.9 lbs/day
Ammonia Nitrogen	0.79 mg/L*	
Mercury	0.96 ng/L	

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

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

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

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

- exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
- 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)

Daily Maximum Limit Calculation Method

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. In accordance with s. NR 106.06(3)(b), limitations based on acute toxicity are either set equal to two times the acute criteria (the final acute value) or calculated using the mass balance equation below, whichever is more restrictive.

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

Where:

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

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

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

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

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

In this case, limits set equal to two times the acute criteria are more restrictive and this method is used to calculate the daily maximum limits shown in the table below.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 372 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

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.
Chlorine		19.0		38.1	7.61	<100		
Arsenic		340		680	136	0.53		
Cadmium	331	40.7	0.02	81.4	16.3	<1.3		
Chromium	301	4446	0.79	8892	1778	0.042		
Copper	331	48.0	1.51	96.0			34	61.7
Lead	331	340	0.94	680	136	0.56		
Mercury (ng/L)		830	5.52	1660			2.54	3.18
Nickel	268	1080		2161			6.5	9.0
Zinc	331	343	5.75	686			67	80.1
Chloride (mg/L)		757	26.4	1514	303	203		

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SUBSTANCE	REF. HARD.* mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Cyanide, Amenable		45.8		91.6	18.3	7.5		

* 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.

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 116 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Chlorine		7.28		49.4	9.87	<100	
Arsenic		152		1032	206	0.53	
Cadmium	175	3.82	0.02	25.8	5.16	0.042	
Chromium	176	210	0.79	1418	284	<2.5	
Copper	176	16.8	1.51	105			20
Lead	176	48.4	0.94	322	64.5	056	
Mercury		440	5.52	440			1.64
Nickel	176	84.2		571			4.5
Zinc	176	197	5.75	1305			46
Chloride (mg/L)		395	26.4	2525	505	203	
Cyanide, Amenable		11.47		77.8	15.6	7.5	

* 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)

RECEIVING WATER FLOW = 165 cfs (¼ of the 90-Q₁₀), as specified in s. NR 106.06(4), Wis. Adm. Code

SUBSTANCE	WC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	30-day P ₉₉
Mercury (ng/L)	1.3	5.52	1.3	1.18

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 380 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P ₉₉
Cadmium	4.4	0.02	87	17	<1.3	
Chromium (+3)	100	0.79	1974	395	0.042	
Lead	10	0.94	181	36.2	0.56	
Mercury (ng/L)	1.5		1.5			1.18
Nickel	100		1989			2.5

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 380 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	0.2	4.0	0.80	0.53

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

Conclusions and Recommendations

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

Total Residual Chlorine – Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the de-chlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states, “When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L.” Because the WQBELs are more restrictive, they are recommended instead. Specifically, a daily maximum limit of 38 µg/L is required. The current permit also has weekly and monthly average limits equal to 38 µg/L to meet the expression of limits requirements which are recommended to continue in the reissued permit.

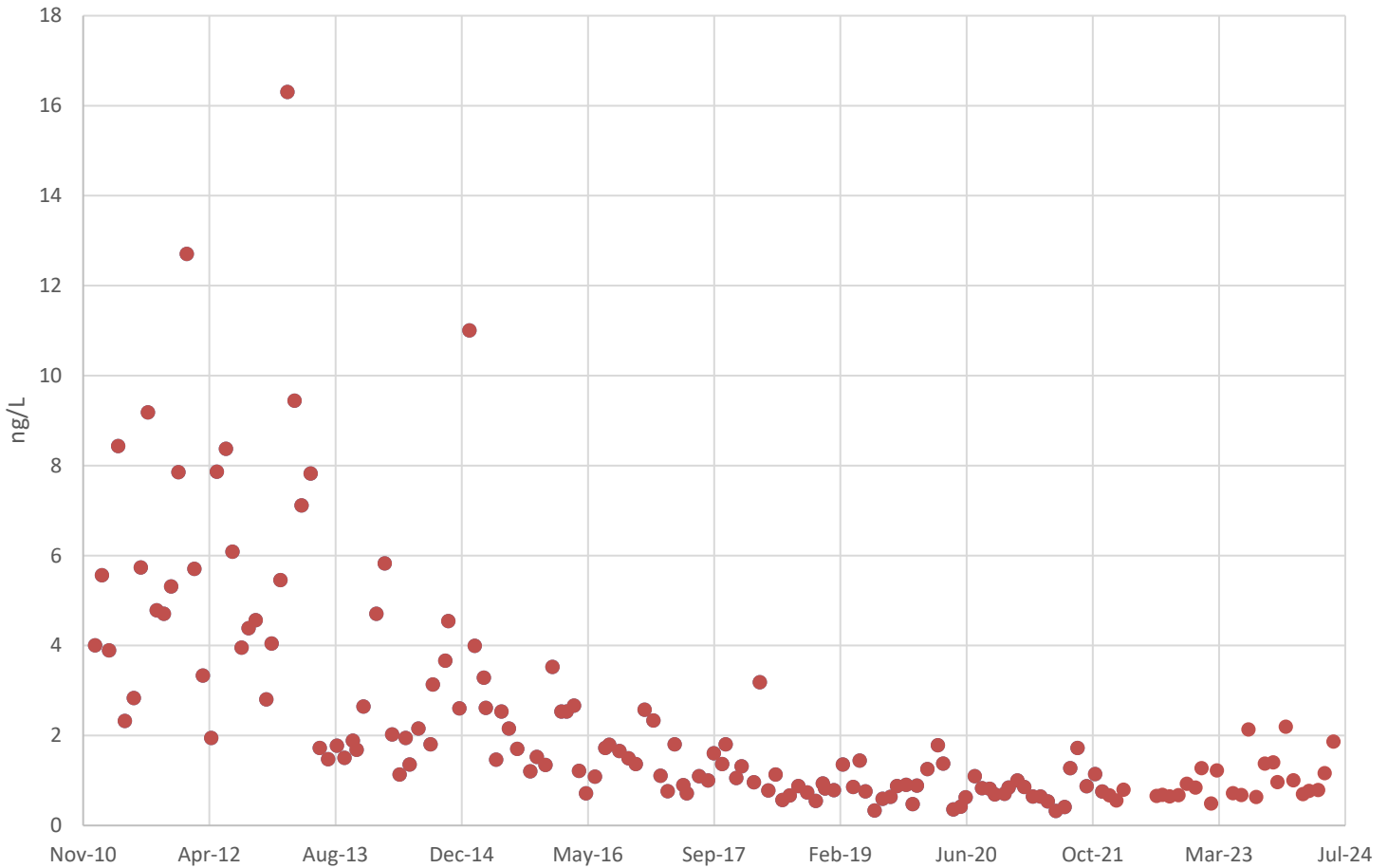
Mercury – The WQBEL for total recoverable mercury is set equal to the most stringent criterion of 1.3 ng/L, according to s. NR 106.06(6), Wis. Adm. Code, because the background concentration in the receiving water and similar inland streams is known to exceed 1.3 ng/L.

The current permit requires quarterly monitoring of the influent and effluent for total recoverable mercury. A total of 84 effluent sampling results are available from 07/25/2017 to 06/11/2024 for total recoverable mercury. The average concentration was 0.95 ng/L, and the maximum was 3.18 ng/L. Because the 30-day P₉₉ of available data (1.17 ng/L) is less than the most stringent WQBEL of 1.3 ng/L, **no WQBEL for mercury is required for permit reissuance.**

Neenah Menasha currently has a mercury variance with an interim limit of 6.0 ng/L as a daily maximum limit. This limit may be removed from the reissued permit per s. NR 207.12(4) Wis. Adm. Code because effluent data has significantly decreased since the previous reissuance due to source reductions. There is not mercury treatment at the facility, so the effluent mercury is not expected to increase with the removal of the limit.

The mercury effluent data is graphed below from 01/05/2011 to 06/11/2024:

Effluent Mercury



Monitoring is recommended to continue to determine if mercury limits would be needed in the next reissuance.

Arsenic – The sample that was collected for the permit reissuance application had a limit of detection (LOD) of 8.3 µg/L which is greater than 1/5th of the most stringent calculated limit of 0.8 µg/L based on the human cancer criteria. All currently available arsenic data is shown below:

Date	Arsenic µg/L
03/01/2006	0.84
02/20/2007	0.69
02/21/2007	0.72
02/22/2007	0.66
02/23/2007	0.72

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02/24/2007	0.64
01/09/2013	<4.7
06/23/2021	<8.3
Average*	0.53

The LODs for the past permit reissuances are below 1/5th of the lowest calculated limit and the samples were all reported as nondetect. Because this data is representative of current conditions, there is not reasonable potential for arsenic limits. **It is recommended that arsenic be monitored 4 times during the permit term using a more sensitive LOD than 0.8 µg/L.**

Cadmium, Chromium, Copper, Lead, Nickel, and Zinc – Monitoring for these metals are recommended to continue in the reissued permit to meet the requirements of their pretreatment program.

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 4.64 ng/L and a PFOA result of 11.2 ng/L. These results are greater than one fifth of the respective criteria for each substance. Based on the effluent flow rate and the available PFOS/PFOA monitoring data, PFOS and PFOA monitoring is recommended at a monthly 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. The current permit has daily maximum, weekly average and monthly average limits. These limits are re-evaluated at this time due to the following changes:

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.
- The maximum expected effluent pH has changed

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

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

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

Where:

A = 0.411 and B = 58.4 for a Warm Water Sport fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 1104 sample results were reported from 07/03/2017 to 06/30/2024. The maximum reported value was 8.34 s.u. (Standard pH Units). The effluent pH was 7.6 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 7.5 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.5 s.u. Therefore, a value of 7.5 s.u. is believed to represent the maximum reasonably expected pH, and therefore

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most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 7.5 s.u. into the equation above yields an ATC = 20 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method

In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are either set equal to two times the acute criteria (the final acute value) or calculated using the mass balance equation in s. NR 106.32(2)(e), Wis. Adm. Code.

In this case, limits calculated set equal to two times the acute criteria are more restrictive. This method is used to calculate the daily maximum limit of **40 mg/L**.

This limit is greater than the current daily maximum limit of 27 mg/L for November – April. If Neenah Menasha would like to request an increase to the existing permit limits an assessment of their effluent data consistent with the requirements of ss. NR 207.04(1)(a) and (c), Wis. Adm. Code, must be provided. This evaluation is on a parameter by parameter basis and includes consideration of operations, maintenance and temporary upsets. Without a demonstration of need for a higher limit in accordance with s. NR 207.04, Wis. Adm. Code, the current limits must be continued in the reissued permit. The Department would be unable to increase the limit due to the lack of need as shown via the antidegradation rule (ch. NR 207, Wis. Adm. Code) because the highest reported concentration was 16.6 mg/L during the previous permit term. No changes are recommended for the daily maximum ammonia limit.

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

The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do **not change** because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in Attachment #3. The previously calculated limits are shown below:

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
January – March	27	28	10
April	27	29	11
May		29	11
June – September		11	4.4
October		47	18
November – December	27	47	18

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from 07/01/2017 to 06/30/2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in Neenah Menasha’s permit for the respective month ranges. That need is determined by calculating 99th upper percentile (or P₉₉) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit.

Ammonia Nitrogen mg/L	January – March	April	May	June – September	October	November – December
1-day P ₉₉	3.70	6.82	3.34	2.94	0.58	2.22
4-day P ₉₉	2.03	3.69	1.93	2.13	0.32	1.40

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Ammonia Nitrogen mg/L	January – March	April	May	June – September	October	November – December
30-day P ₉₉	1.13	1.83	0.83	0.96	0.16	0.58
Mean*	0.75	1.07	0.38	0.22	0.10	0.20
Std	0.76	1.44	0.79	1.10	0.12	0.63
Sample size	60	20	20	582	20	280
Range	<0.038 – 3.21	<0.038 – 10.4	<0.038 – 2.79	<0.038 – 16.6	<0.038 – 0.608	<0.038 – 4.97

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

Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits.

The permit currently has daily maximum limits November – April and weekly and monthly limits year-round. Where there are existing ammonia nitrogen limits in the permit, the limits must be retained regardless of reasonable potential, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

- (b) If a permittee is subject to an ammonia limitation in an existing permit, the limitation shall be included in any reissued permit. Ammonia limitations shall be included in the permit if the permitted facility will be providing treatment for ammonia discharges.

Expression of Limits

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

The methods for calculating limitations for municipal treatment facilities to conform to 40 CFR 122.45(d) are specified in s. NR 106.07(3), Wis. Adm. Code, and are as follows:

Whenever a daily maximum limitation is determined necessary to protect water quality, a weekly and monthly average limitation shall also be included in the permit and set equal to the daily maximum limit unless a more restrictive limit is already determined necessary to protect water quality.

The daily maximum limit of 27 mg/L for November – March is more restrictive than the weekly average limit for these same months. Therefore, the weekly average limits for these months are recommended to be set equal to 27 mg/L.

Conclusions and Recommendations

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

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
January – March	27	27	10
April	27	27	11
May		29	11
June – September		11	4.4
October		47	18
November – December	27	27	18

**PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR BACTERIA**

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Codes, became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. 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.

E. coli monitoring is recommended at the same frequency that fecal coliform monitoring is required in the current permit. Because Neenah Menasha' permit requires weekly monitoring, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit.

These limits are required during May through September. No changes are recommended to the current recreational period and the required disinfection season.

Effluent Data

Neenah Menasha has monitored effluent *E. coli* from 05/04/2021 to 09/27/2021 and a total of 20 results are available. A geometric mean of 126 counts/100 mL was exceeded once out of the 5 months collected in 2021, with a maximum monthly geometric mean of 226 counts/100 mL. Effluent data has exceeded 410 counts/100 mL 4 times (which is 20% of the total sample results). The maximum reported value was 1760 counts/100 mL. Based on this effluent data it appears that the facility can't meet new *E. coli* limits and a compliance schedule may be included in the reissued permit.

Interim Limit

At this time, available *E. Coli* data indicates that the new limitations are not readily attainable. The permit will include a compliance schedule to meet these limits. During the compliance schedule, an interim limit applies to prevent back-sliding from the current level of disinfection during the compliance schedule period. Therefore, the current **fecal coliform limit shall be included in the reissued permit as an interim limit of 400 counts/100 mL as a monthly geometric mean**. Any weekly geometric mean limit which was included in the current permit for expression of limits purposes does not need to be included in the permit as an interim limit.

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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 Neenah Menasha currently has a limit of 0.8 mg/L as a monthly average, this limit should be included in the reissued permit. This limit remains applicable unless a more stringent WQBEL is given.

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 the *Total Maximum Daily Loads and Watershed Management Plan for Total Phosphorus and Total Phosphorus and Total Suspended Solids in the Lower Fox River Basin and Lower Green Bay (LFR TMDL)* report dated March 2012 are expressed as maximum annual loads (lbs/year). The annual WLA for Neenah Menasha is 6,275 lbs/year.

The table below summarizes the effluent mass data from January 2018 to December 2023 compared to the TMDL WLA:

	Total Phosphorus lbs/day
TMDL WLA	6,275
2018	7,531
2019	7,537
2020	9,398
2021	7,848
2022	8,970
2023	8,276

$$\begin{aligned} \text{Total Phosphorus} &= \text{sum for each month of the year} \\ &= \text{Monthly average (mg/L)} \times \text{total flow (MG/month)} \times 8.34 \text{ (lbs/gallon)} \end{aligned}$$

The current permit limits are recommended to continue in the reissued permit because the calculations wouldn't change based on the current effluent data. The current permit limits were calculated as follows:

$$\begin{aligned} \text{TP 6-Month Average Permit Limit} &= \text{WLA} \div 365 \text{ days/yr} * 6\text{-month multiplier} \\ &= (6275 \text{ lbs/yr} \div 365 \text{ days/yr}) * 1.13 \\ &= 19 \text{ lbs/day} \end{aligned}$$

$$\begin{aligned} \text{TP Monthly Average Permit Limit} &= \text{TP 6-Month Average Permit Limit} * 3 \\ &= 19 \text{ lbs/day} * 3 \\ &= 58 \text{ lbs/day} \end{aligned}$$

Six-month average and monthly average mass effluent limits are recommended for this discharge. 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 07/01/2017 to 06/30/2024.

Total Phosphorus Effluent Data

	Phosphorus mg/L	Phosphorus lbs/day
1-day P ₉₉	0.99	92.8
4-day P ₉₉	0.57	52.0
30-day P ₉₉	0.36	31.0
Mean	0.26	21.9
Std	0.20	18.6
Sample size	1709	1709
Range	0.052 – 1.94	4.37 – 242.9

Interim Limit

An interim limit is required per s. NR 217.17, Wis. Adm. Code, when a compliance schedule is needed in the permit to meet the WQBEL. The interim limit should reflect a concentration that the facility is able to meet without investing in additional “temporary” treatment, but also should prevent backsliding from current conditions. Therefore, **it is recommended that the interim limit be retained at 0.8 mg/L for permit reissuance along with requirements for optimization of phosphorus removal.**

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). The annual WLA for Neenah Menasha is 180,258 lbs/year.

Neenah Menasha can currently meet the current TSS monthly mass limit as well as the annual WLA of 180,258 lbs/year, as shown in the table below.

Annual TSS Mass Loading

	TSS lbs/year
TMDL WLA	180,258
2018	184,947
2019	220,043
2020	169,212
2021	156,546
2022	200,997
2023	167,926

Because Neenah Menasha can currently meet the annual WLA with the current weekly and monthly average limits, it is not necessary to recalculate the TMDL limits. Therefore, **no changes are**

recommended for the TSS limits in the reissued permit. It is recommended that the weekly and monthly average limits of 2,524 lbs/day and 1,373 lbs/day be continued in the reissued permit.

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.

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 chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from 07/01/2017 to 06/30/2024.

The table below summarizes the maximum temperatures reported during monitoring from 10/02/2012 to 06/25/2014.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JAN	59	60	119	120
FEB	56	57	NA	120
MAR	55	55	95	120
APR	56	61	74	120
MAY	74	75	82	120
JUN	75	76	118	120
JUL			NA	120
AUG			NA	120
SEP			109	120
OCT	70	76	93	120
NOV	67	67	91	120
DEC	65	65	116	120

Reasonable Potential

Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
 - (a) The highest recorded representative daily maximum effluent temperature
 - (b) The projected 99th percentile of all representative daily maximum effluent temperatures
- A sub-lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
 - (a) The highest weekly average effluent temperature for the month.
 - (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

Based on the available effluent data no effluent limits are recommended for temperature. The complete thermal table used for the limit calculation is attached.

There aren't representative temperature data for the months of July – September. At temperatures above approximately 103° F, conventional biological treatment systems do not function properly and experience upsets. There is no indication that this has ever occurred in this treatment system. Therefore, there is not reasonable potential for the discharge to exceed the limits for these months. No monitoring or effluent limits are recommended for temperature.

Monitoring temperature for one year is recommended in the reissued permit.

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 (October 29, 2019)*.

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC₅₀ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC₂₅ (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of **15%** 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:

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

Where:

- Q_e = annual average flow = 13 MGD = 20 cfs
- f = fraction of the Q_e withdrawn from the receiving water = 0
- Q_s = ¼ of the 7-Q₁₀ = 465 cfs ÷ 4 = 116 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. Therefore, data collected before July 1, 2005 is excluded.

WET Data History

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %				Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Pass or Fail?	Use in RP?	
08/16/2005	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
11/07/2006	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
03/13/2007	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
12/17/2009	>100	>100	Pass	No	>100	>100	Pass	No	1
08/24/2010	>100	>100	Pass	No	>100	>100	Pass	No	1
07/19/2011	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
01/17/2012	>100	>100	Pass	Yes	43.3	>100	Pass	Yes	
04/23/2013	>100	>100	Pass	Yes	32.2	>100	Pass	Yes	
06/04/2013	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
07/18/2017	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
10/23/2018	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
01/15/2019	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
04/21/2020	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
11/14/2023	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
04/23/2024	>100	>100	Pass	Yes	>100	>100	Pass	Yes	

Footnotes:

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1. *Tests done by S-F Analytical, July 2008 – March 2011.* The DNR has reason to believe that WET tests completed by SF Analytical Labs from July 2008 through March 31, 2011 were not performed using proper test methods. Therefore, WET data from this lab during this period has been disqualified and was not included in the analysis.
- 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.**

$$\begin{aligned} \text{Acute Reasonable Potential} &= [(TU_a \text{ effluent}) (B)(AMZ)] \\ \text{Chronic Reasonable Potential} &= [(TU_c \text{ effluent}) (B)(IWC)] \end{aligned}$$

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

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

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

Chronic WET Limit Parameters

TU_c (maximum) 100/IC ₂₅	B (multiplication factor from s. NR 106.08(6)(c), Wis. Adm. Code, Table 4)	IWC
100/32.2 = 3.1	3.8 Based on 2 detects	15%

$$[(TU_c \text{ effluent}) (B)(IWC)] = 1.77 > 1.0$$

Therefore, reasonable potential is shown for chronic WET limits using the procedures in s. NR 106.08(6) and representative data from 08/16/2005 to 04/21/2020.

Expression of WET limits

Chronic WET limit = $[100/IWC] TU_c = 6.7 TU_c$ expressed as a monthly average

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

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WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 15 %. 0 Points
Historical Data	13 tests used to calculate RP. No tests failed. 0 Points	13 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	WWSF 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	Reasonable potential for limits for no substances based on ATC; Ammonia nitrogen limit carried over from the current permit. Copper, lead, mercury, nickel, zinc, chloride, cyanide, and ammonia detected. Additional Compounds of Concern: 3 Points	Reasonable potential limits for no substances based on CTC; Ammonia nitrogen limit carried over from the current permit. Copper, lead, mercury, nickel, zinc, chloride, cyanide, and ammonia detected. Additional Compounds of Concern: 3 Points
Additives	1 Biocide and 1 Water Quality Conditioners added. P treatment chemical other than Ferric Chloride (FeCl), Ferrous Sulfate (FeSO ₄), or alum used: No 4 Points	All additives used more than once per 4 days. 4 Points
Discharge Category	11 Industrial Contributors. 15 Points	Same as Acute. 15 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:	27 Points	27 Points
Recommended Monitoring Frequency (from Checklist):	1x yearly	1x yearly
Limit Required?	No	Yes Limit = 6.7 TU _c
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2019) and other information described above, 1x/yearly acute and 1x/yearly chronic WET tests are recommended in the reissued permit. Tests should be done in rotating quarters to collect seasonal

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information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).

- According to the requirements specified in s. NR 106.08, Wis. Adm. Code, a chronic WET limit is required. The chronic WET limit shall be expressed as 6.7 TUC as a monthly average in the effluent limits table of the permit.
- A minimum of annual chronic monitoring is required because a chronic WET limit is required. Federal regulations in 40 CFR Part 122.44(i) require that monitoring occur at least once per year when a limit is present.
- A minimum of annual acute and chronic monitoring is recommended because Neenah Menasha is a major municipal discharger with a design flow greater than 1.0 MGD. Federal regulations at 40 CFR Part 122.21(j) require at least 4 acute and chronic WET tests with each permit application on samples collected since the previous reissuance. Therefore, annual monitoring is recommended in the permit term, so that data will be available for the next permit application.

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:	Neenah Menasha	7-Q₁₀:	465.0 0	cfs	Temp Dates	Flow Dates
Outfall(s):	001	Dilution:	25%		Start:	10/02/12 07/01/17
Date Prepared:	08/30/2024	f:	0		End:	06/25/14 06/30/2024
Design Flow (Q_e):	13.00 MGD	Stream type:	Small warm water sport or forage fish co			
Storm Sewer Dist.	0 ft	Qs:Q_e ratio:	5.8 :1			
		Calculation Needed?	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Qs) (cfs)	Representative Highest Effluent Flow Rate (Q _e)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	T _a (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)		7-day Rolling Average (Q _{esl}) (MGD)	Daily Maximum Flow Rate (Q _{ea}) (MGD)		Weekly Average (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	33	49	76	465.00	17.148	26.911	0	59	60	119	120
FEB	34	50	76	465.00	9.711	12.814	0	56	57	NA	120
MAR	38	52	77	465.00	24.489	37.060	0	55	55	95	120
APR	48	55	79	465.00	27.174	32.468	0	56	61	74	120
MAY	58	65	82	465.00	30.654	48.053	0	74	75	82	120
JUN	66	76	84	465.00	18.029	34.226	0	75	76	118	120
JUL	69	81	85	465.00	20.699	34.554	0			NA	120
AUG	67	81	84	465.00	20.309	34.921	0			NA	120
SEP	60	73	82	465.00	26.903	41.628	0			109	120
OCT	50	61	80	465.00	25.618	35.599	0	70	76	93	120
NOV	40	49	77	465.00	16.103	23.409	0	67	67	91	120
DEC	35	49	76	465.00	15.763	25.568	0	65	65	116	120

10/03/2007 Ammonia Limits Calculation

Weekly Average & Monthly Average Limits based on Chronic Toxicity Criteria (CTC): Weekly average and monthly average limits for Ammonia Nitrogen are based on chronic toxicity criteria. The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warmwater sport fishery is calculated by the following equation.

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

Where:

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

E = 0.854,

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

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

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

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

The 4-Day criterion is simply equal to the 30-Day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 4-Q₃ to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ to derive monthly average limitations. The stream flow value is further adjusted to temperature. 100% of the flow is used if the Temperature ≥ 16 °C. Only 25% of the flow is used if the Temperature < 11 °C. And 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

The rules provide a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are known to be present in the Lower Fox River. So “ELS Absent” criteria apply from October through December, and “ELS Present” criteria will apply from January through September.

The “default” basin assumed values for Temperature that were assembled during development of proposed thermal water quality standards will be used, as tabulated below. Ambient pH data and background ammonia concentration data was assembled from the long-term trends monitoring station at the outlet from Lake Winnebago. Data was sorted and grouped as shown in the table below, with the resulting criteria and effluent limitations.

Effluent Limitations for NH ₃ -N for a discharge to a flowing river classified for WWSF use.		Summer	Winter	Winter	Spring
		June – Sept.	Oct. – Dec.	Jan. – March	April & May
Background Information:	4-Q ₃ (cfs)	395	395	395	395
	30-Q ₅ (cfs)	620	620	620	620
	Ammonia (mg/L)	0.019	0.22	0.12	0.021
	Temperature (°C)	26	7	7	9
	pH (su)	8.63	8.30	8.20	8.39
	% of Flow used	100	25	25	25
	Reference Weekly Flow (cfs)	395	98.75	98.75	98.75
	Reference Monthly Flow (cfs)	620	155	155	155
Criteria mg/L:	4-Day Chronic				
	Early Life Stages Present	1.04	3.81	4.48	3.28
	Early Life Stages Absent	1.04	6.19	7.28	4.68
	30-Day Chronic				
	Early Life Stages Present	0.42	1.52	1.79	1.31

Attachment #3

	Early Life Stages Absent	0.42	2.47	2.91	1.87
Effluent Limitations mg/L:	Weekly Average				
	Early Life Stages Present	20.54		22.31	16.59
	Early Life Stages Absent		30.57		
	Monthly Average				
	Early Life Stages Present	12.52		13.38	10.25
	Early Life Stages Absent		18.09		

However, the discharge from the NMSC WWTF enters Little Lake Butte des Morts a very short distance downstream from Outfall 001. This lake may be viewed as a receiving water which does not exhibit a unidirectional flow, in which case effluent limitations are calculated using a ten-to-one dilution ratio in accordance with s. NR 106.06(4)(b)2. Using the basin “default” assumed values for pH (8.73 su in summer and 8.50 su in winter) and background ammonia concentrations (0.05 mg/L in summer, 0.16 mg/L in winter and 0.07 mg/L in spring) yields the following effluent limitations.

Effluent Limitations for NH₃-N for a discharge to a WWSF lake
(Using basin “default” background conditions)

		Summer	Winter	Winter	Spring
		June – Sept.	Oct. – Dec.	Jan. – March	April & May
Effluent Limitations mg/L:	Weekly Average				
	Early Life Stages Present	9.22		28.36	29.26
	Early Life Stages Absent		47.04		
	Monthly Average				
	Early Life Stages Present	3.39		10.38	11.28
	Early Life Stages Absent		17.86		

As a point of reference, the above limitations for winter and spring were provided as Facilities Planning limitations to the Heart of the Valley Metropolitan Sewerage District, several miles downstream from NMSC. Slightly less restrictive limits had been recommended for summer because a Temperature of 25 °C had been used, instead of 26 °C for the table above. On the other hand, using the background data from the long-term trends monitoring station at the outlet from Lake Winnebago yields the following effluent limitations.

Effluent Limitations for NH₃-N for a discharge to a WWSF lake
(Using long term trends data for background pH and NH₃-N)

		Summer	Winter	Winter	Spring
		June – Sept.	Oct. – Dec.	Jan. – March	April & May
Effluent Limitations mg/L:	Weekly Average				
	Early Life Stages Present	11.28		48.11	35.86
	Early Life Stages Absent		65.85		
	Monthly Average				
	Early Life Stages Present	4.40		18.52	14.22
	Early Life Stages Absent		25.02		

Attachment #3

The limitations immediately above are less stringent than those presented earlier primarily because different ambient pH values – the background ammonia concentration is a very minor factor.

But perhaps more significantly, all of the limitations above fail to account for the other dischargers to this reach of the Lower Fox River. In addition to the dischargers shown on Attachment #4, further downstream are two more POTW's and three more paper mills. Combined these ten dischargers (four POTW's and six mills) have a permitted average discharge flow rate of 91.7 MGD to the Lower Fox River. If the effluent from all ten of these facilities was discharged via a single outfall to the river, using long term trends data for background pH and NH₃-N the following limitations for Ammonia Nitrogen can be calculated.

Effluent Limitations for NH₃-N for a “combined” discharge of 91.7 MGD to the Fox River

		Summer	Winter	Winter	Spring
		June – Sept.	Oct. – Dec.	Jan. – March	April & May
Effluent Limitations mg/L:	Weekly Average				
	Early Life Stages Present	5.72		6.19	4.56
	Early Life Stages Absent		8.53		
	Monthly Average				
	Early Life Stages Present	3.50		3.78	2.84
	Early Life Stages Absent		5.15		

This represents a very conservative approach, and does not consider any decay between outfalls. However, significant decay would normally be expected only when the water temperature is greater than 10 °C. Consequently, the limits above for the months of October through May, with mass limits calculated by multiplying each concentration value by 91.7 MGD and 8.34 lb./gallon, probably represent a reasonable approximation of the total allowable load to the Fox River. From this point, it is necessary to somehow divide or allocate the total allowable load. Ideally computer modeling of the Fox River would be undertaken to more comprehensively determine the assimilative capacity of this segment of the river. Effluent limitations for each individual discharger, expressed as a mass quantity, may be included in WPDES permits to assure that the total allowable load is not exceeded. It's possible that some of the paper mills discharge effluent with much lower concentrations of ammonia nitrogen, so they would not need an allocation based on the relative discharge flow rate, and pollutant trading may be considered, as allowed under federal rules.

But all of that is far beyond the scope of this evaluation, and likely much more time-consuming than practical if WPDES Permit No. WI-0026085 is to be reissued to the NMSC in a timely manner. Consequently, effluent limitations for Ammonia Nitrogen based on chronic toxicity are recommended, calculated for a “lake” discharge, using the upstream background conditions for June through September, but using “default” assumed background conditions for the remainder of the year (shown in the first table on page 10). This recommendation is intended to provide protection of receiving water, based largely upon professional judgment. While the weekly average limitations from January through May are not as restrictive as the limits shown of page 9, the monthly average limitations from January through March are more restrictive and the monthly average limitations for April and May are less restrictive by only one mg/L. In addition, it is a very short distance from the outfall to Little Lake Butte des Morts. Consequently, these limitations are believed to be adequately protective of the resource.

Attachment #3

The limitations may be viewed as “placeholders” for future effluent limitations which may be more stringent. These same limits will be recommended for the other publicly-owned treatment works in this reach of the Fox River, and will be used to ascertain the need for limits for the industrial dischargers in this reach of the river. Effluent limitations based on acute toxicity will be established independently, calculated using the pH from each individual facility.

Conclusions and Recommendations: In summary, after rounding to two significant figures, and taking into account the provisions of s. NR 106.33(2), the following effluent limitations for Ammonia Nitrogen are recommended for the NMSC WWTF. These effluent limitations are recommended because this is a pollutant with current effluent limitations and for which treatment is provided. Limitations are not recommended based on comparison of actual effluent data to the computed limits, in accordance with s. NR 106.05. Consequently, these limits will not be included in evaluating the need for whole effluent toxicity testing later in this narrative. No mass limitations are recommended at this time but ultimately, after wasteload allocated limits are developed, mass limits may be included in accordance with s. NR 106.32(5).

Months Applicable	Daily Maximum	Weekly Average	Monthly Average
January – March	34 mg/L	28 mg/L	10 mg/L
April	34 mg/L	29 mg/L	11 mg/L
May			11 mg/L
June – September		11 mg/L	4.4 mg/L
October			18 mg/L
November & December	34 mg/L		18 mg/L

The lack of weekly average limits in May and October represents limits that are less stringent than the current limits, so it may be viewed as an “increase” in the limits. But the increase to a calculated level greater than 20 mg/L is due to revised criteria, so the increase is not subject to ch. NR 207 Antidegradation requirements.

