# Permit Modification Fact Sheet

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

## 1 General Information

| | |
|---|---|
| Permit Number: | WI-0037842-10-1 |
| Permittee Name: | Neenah Inc., Neenah Mill |
| Address: | 135 N. Commercial Street |
| City/State/Zip: | Neenah, WI 54956 |
| Discharge Location: | Via Outfall 001 at 44.1879111ºN, -88.4590111ºW. On the south bank approximately 50 feet downstream from the Commercial Street bridge. |
| Receiving Water: | Neenah Channel of the Lower Fox River |
| StreamFlow ($Q_{7,10}$): | 465 cfs |
| Stream Classification: | Warm Water Sportfish and Public Water Supply |

## 2 Facility Description

Neenah Mill obtains over 90% of water from the Fox River through the Neenah Mill Process Water Intake #005, which was installed in 1947. The other 10% of the water source is purchased from the city of Neenah. Neenah Mill operates two paper making machines, machine #3 and machine #8. Wastewater from the Research and Development facility Kimberly Clark Experimental Mill ("X Mill"), both paper machines, along with storm water, boiler blowdown and landfill leachate are treated using screening, grit removal, sedimentation, activated sludge, and final sedimentation. Treated effluent is discharged to the Fox River via the Neenah Channel.

X Mill wastewater makes up less than 10% of total influent into the Wastewater Treatment Plant (WWTP), and primarily comes from small scale research production of natural and synthetic fibers. This waste stream typically has low BOD. Solids are removed in the headworks or in primary clarifications.

Neenah Mill wastewater comes from the production of writing, printing, and packaging papers from two Fourdrinier paper machines. Purchased pulp is mixed with filtered river water and heated with steam in pulpers. This pulp mixture is then screened and refined and pumped to the paper machines to be dewatered. The drainage from the paper sheet is the main source of flow for the WWTP. After the draining/forming section of the paper machines, more water is pressed out and the paper sheet is then dried by rolling over cylinders filled with steam. Corn starch is added to the pulp slurry at several points to give the final product additional strength. The starch along with lost fibers make up most of the BOD loading for the WWTP.

The WWTP uses a screw press to dewater sludge that settles at the bottom of the clarifiers. The water that comes out of the press, called landfill leachate, is piped back to the start of the treatment plant. It is effectively an internal recirculation line within the treatment plant. The sludge is pressed and dewatered to approximately 50/50 water/solids. The sludge is applied as beneficial daily cover at the Winnebago, Brown and Outagamie County landfills. The sludge is periodically tested using a TCLP or Toxicity Characteristic Leaching Procedure to ensure it meets specifications for landfill disposal.

Storm water runoff from most of the driveway and rooftop space of the mill property is diverted to the WWTP. This minimizes risk of untreated stormwater pollution from the site.

The mill operates three gas fired steam boilers. The boilers are used for building heat, heating process water, and drying paper. The boilers operate using water supplied by the City of Neenah which is treated in zeolite softeners prior to being fed into the boilers.

## 2.1 Substantial Compliance Determination

**Enforcement During Last Permit:** Towards the end of January 2022, Neenah Inc., Neenah Mill experienced a significant treatment plant upset at its wastewater treatment facility. The discharge monitoring reports show both daily maximum and monthly average violations for total suspended solids and biochemical oxygen demand (BOD). Elevated BOD results continued at the beginning of February 2022, resulting in a daily maximum violation and a slight exceedance of the monthly average limit. The cause of the plant upset was due to mechanical equipment failures and an overdose of chlorine of the return activated sludge. The facility returned to full compliance quickly and the details of the treatment plant upset are documented in the Departments database. Corrective actions, including equipment replacement have been implemented.

After a desk top review of all discharge monitoring reports and compliance inspections performed on 6/14/2022, 7/23/2020 and 10/16/2018, this facility has been found to be in substantial compliance.

| **Sample Point Designation** | | |
|---|---|---|
| **Sample Point Number** | **Discharge Flow, Units, and Averaging Period** | **Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)** |
| 701 | 1.55 MGD maximum annual average from January 2017 to January 2022. | INTAKE: Water intake located on the Neenah Canal of the Lower Fox River, above the Neenah Dam, 630 Feet southeast of the Commercial Street Bridge and 65 feet southeast of the railroad bridge. Identified by Neenah Paper Inc as Neenah Mill Process Water Intake #005. Flow is measured by an inline magnetic flow meter located at the outer wall of the water filtration plant room on the first floor. |
| 001 | 1.63 MGD maximum annual average from January 2017 to January 2022. | OUTFALL: The treated process wastewater from the activated sludge treatment system is sampled prior to discharge to the Fox River via Outfall 001. Composite samples are collected from the 24-hour flow proportional peristaltic meter pump system located on the first floor of the wastewater treatment plant (WWTP) room. Grab samples are collected from the 24-hour flow proportional dipper system installed as a backup. Flow is continuously measured using the magnetic flow meter located in the WWTP room on the first floor. Temperature and pH measured with a continuous inline meter in the WWTP room. |
| 005 | 1.63 MGD maximum annual average from January 2017 to January 2022. | WLA: WLA Requirements for treated wastewater discharge via Outfall 001. Mass based parameters calculated using concentrations reported at sample point 001. Flow is measured with a magnetic flow meter located in the WWTP room on the first floor. Temperature is measured with a continuous inline meter located on the first floor of the wastewater treatment plant room. |
| 101 | N/A | FIELD BLANK: In-plant Sample Point 101 is included in the permit to satisfy the need for a field blank when mercury monitoring is conducted for Outfall 001. |

# 3 Influent – Cooling Water Intake Structure - Proposed Monitoring

## 3.1 Sample Point Number: 701- Water Intake

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow Rate | | MGD | Daily | Continuous | |
| Intake Water Used Exclusively For Cooling | | % Flow | Annual | Calculated | |

### 3.1.1 Changes from Previous Permit

Influent monitoring requirements were re-evaluated for the proposed permit term and the following changes were made from the previous permit;

**Flow Rate:** Sample type corrected from estimated to continuous.

**Intake Water Used Exclusively For Cooling:** Annual percentage reporting for intake water used exclusively for cooling has been added.

**Cooling Water Intake Structure (CWIS):** The Influent section includes the CWIS description, authorization for use, and BTA (Best Technology Available) determination. The permittee is authorized to use the cooling water intake structure which consists of the following:

- Location: Located on Fox River, 50 feet west of Commercial St Bridge. SW/SW Sec 22 T20N R17E.
- Source Waterbody Information Lower Fox River, $Q_{7,10}$ Flow of 465 cfs and Mean Annual Harmonic Flow Rate of 924 cfs.
- General Description: Installed in 1947. Dimensions is 48" x 48" with 21 vertical bars.
- Major Components: 21 vertical 0.375" bars and a plastic barrier surrounding the intake to prevent debris from entering.
- Maximum Design Intake Flow (DIF): The maximum design intake flow (DIF) is 3.99 MGD (6.17 cfs), which is equivalent to 1.33 % of the $Q_{7,10}$. This is based upon the intake's pump capacity, not counting redundant or emergency pumps.
- Maximum Velocity at Intake Point: 0.46 feet/second.

### 3.1.2 Explanation of Limits and Monitoring Requirements

**Intake Water Used Exclusively For Cooling:** Annual percentage reporting for intake water used exclusively for cooling has been added to analyze applicability criteria in s. NR 111.02, Wis. Adm. Code. See fact sheet's Appendix F: Fox River Intake Structure Evaluation for an evaluation of intake structure.

#### 3.1.2.1 Future BTA

Refer to Appendix F of the fact sheet and the WPDES permit for more information.

#### 3.1.2.2 Intake Screen Discharges and Removed Substances

Floating debris and accumulated trash collected on the cooling water intake trash rack shall be removed and disposed of in a manner to prevent any pollutant from the material from entering the waters of the State pursuant to s. NR 205.07 (3) (a), Wis. Adm. Code.

### 3.1.2.3 Endangered Species Act

This permit does not authorize take of threatened or endangered species. 40 CFR §125.98 (b) (1) requires the inclusion of this provision in all permits subject to 316(b) requirements. Contact the state Natural Heritage Inventory (NHI) staff with inquiries regarding incidental take of state-listed threatened and endangered species and the US Fish and Wildlife Service with inquiries regarding incidental take of federally-listed threatened and endangered species.

# 4 Inplant - Proposed Monitoring and Limitations

## 4.1 Sample Point Number: 101- Mercury Field Blank Results

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Mercury, Total Recoverable | | ng/L | Quarterly | Blank | See permit subsection 2.2.1.1 |

### 4.1.1 Changes from Previous Permit:

Inplant Mercury Field Blank monitoring requirements were re-evaluated for the proposed permit term and no changes are needed from the previous permit.

### 4.1.2 Explanation of Limits and Monitoring Requirements

**Mercury:** The standard requirements for mercury sample collection and analysis states at least one field blank for each set of mercury samples shall be collected. Only one sampling point is needed to report the data.

# 5 Surface Water - Proposed Monitoring and Limitations

## 5.1 Sample Point Number: 001- Treated Process Wastewater

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow Rate | | MGD | Daily | Continuous | |
| Temperature | | deg F | Daily | Continuous | See permit subsection 3.2.1.2 |
| BOD5, Total | | mg/L | Daily | 24-Hr Flow Prop Comp | ELG limits |
| BOD5, Total | Daily Max | 1,703 lbs/day | Daily | Calculated | |
| BOD5, Total | Monthly Avg | 895 lbs/day | Daily | Calculated | |
| Suspended Solids, Total | | mg/L | Daily | 24-Hr Flow Prop Comp | See permit TMDL section |
| Suspended Solids, Total | Daily Max | 1,091 lbs/day | Daily | Calculated | |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Suspended Solids, Total | Monthly Avg | 334 lbs/day | Daily | Calculated | |
| Copper, Total Recoverable | Daily Max | 61 ug/L | Weekly | 24-Hr Flow Prop Comp | |
| Copper, Total Recoverable | Monthly Avg | 61 ug/L | Weekly | 24-Hr Flow Prop Comp | |
| Copper, Total Recoverable | Daily Max | 1.76 lbs/day | Weekly | Calculated | |
| Phosphorus, Total | Rolling 12 Month Avg | 1.0 mg/L | Weekly | 24-Hr Flow Prop Comp | Existing concentration limits that are already in effect (Interim, TBEL, WQBELs dictated by s. NR 217.13, Wis. Adm. Code) will be maintained to prevent backsliding. |
| Phosphorus, Total | 6-Month Avg | 4.8 lbs/day | Weekly | Calculated | See permit Phosphorus section(s). |
| Phosphorus, Total | Monthly Avg | 14.5 lbs/day | Weekly | Calculated | See permit TMDL section. |
| Phosphorus, Total | | lbs/month | Monthly | Calculated | Calculate the Total Monthly Discharge of phosphorus and report on the last day of the month on the DMR. See permit TMDL section. |
| Phosphorus, Total | | lbs/yr | Monthly | Calculated | Calculate the 12-month rolling sum of total monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See permit TMDL section. |
| Mercury, Total Recoverable | | ng/L | Quarterly | Grab | Monitoring for the last 24 months of permit term. See permit subsection 3.2.1.1. |
| Hardness, Total as $CaCO_3$ | | mg/L | Quarterly | 24-Hr Flow Prop Comp | |
| PFOS | | ng/L | 1/ 2 Months | Grab | Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule and permit subsection 3.2.1.8 and |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| | | | | | 3.2.1.9 |
| PFOA | | ng/L | 1/ 2 Months | Grab | Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule and permit subsection 3.2.1.8 and 3.2.1.9 |
| pH (Minimum) | Daily Min | 5.0 su | Daily | Continuous | See "Continuous pH Monitoring" subsection in permit for pH limits and allowed excursions. |
| pH (Maximum) | Daily Max | 9.0 su | Daily | Continuous | See "Continuous pH Monitoring" subsection in permit for pH limits and allowed excursions. |
| pH Total Exceedance Time Minutes | Monthly Total | 446 minutes | Daily | Continuous | See "Continuous pH Monitoring" subsection in permit for pH limits and allowed excursions. |
| pH Exceedances Greater Than 60 Minutes | Daily Max | 0 Number | Daily | Continuous | See "Continuous pH Monitoring" subsection in permit for pH limits and allowed excursions. |
| Acute WET | | TUa | See Listed Qtr(s) | 24-Hr Flow Prop Comp | See permit subsection 3.2.1.8. |

### 5.1.1 Changes from Previous Permit

Treated Process Wastewater limitations and monitoring requirements were re-evaluated for the proposed permit and the following changes were made from the previous permit;

**Temperature:** Monitoring added.

**$BOD_5$:** Effluent Limitations Guidelines (ELG) limits reduced from a daily max of 1742 lbs/day to 1703 lbs/day and from a monthly average of 916 lbs/day to 895lbs/day. Daily max and monthly average sample type corrected from 24-hour composite to 24-hour flow proportional composite. Concentration reporting added as standard setup for reporting purposes.

**Total Suspended Solids (TSS):** Concentration reporting added as standard setup for reporting purposes. Daily max and monthly average sample type corrected from 24-hour composite to calculated.

**Copper:** Monthly average limit and daily max both reduced from 72 ug/L to 61 ug/L.

**Phosphorus:** Sample frequency for the rolling 12-month average, 6-month average and monthly average has now changed from 2x/month to weekly. Lbs/month and lbs/year reporting added.

**Hardness:** Monitoring for hardness measured quarterly as total $CaCO_3$ added.

**PFOS/PFOA**: ~~Monthly monitoring is included in the permit in accordance with s. NR 106.98(2)(d), Wis. Adm. Code.~~ The monitoring frequency for PFOS and PFOA has been reduced from Monthly to 1/ 2 Months.

**pH:** Limit requirements expanded in the table.

**Acute WET:** Sample type corrected from 24-hour composite to 24-hour flow proportional composite.

## 5.1.2 Explanation of Limits and Monitoring Requirements

**Temperature:** Monitoring for temperature added to ensure limits for these parameters are not needed in future reissuances. WQBEL memo suggests one year of monitoring, however, since there is an existing inline meter continuously gathering data, pursuant s. NR 205.07(1)(r)2 Wis. Adm. Codes, all data collected during the permit term shall be reported. Permit subsection 3.2.1.2 added to elaborate on how measurements shall be recorded.

**$BOD_5$:** $BOD_5$ limits reduced due to production rate changes in the last 5 years. See Calculation of Technology Based Effluent Limits for Effluent Limitations Guidelines (ELG) for more detail. A line for reporting concentration was added for proper tracking.

**Total Suspended Solids (TSS):** Permit subsection 3.2.1.6 added to elaborate on TMDL limits for TSS.

**Copper:** Copper limits reduced based on consideration of available effluent data from the current permit term (07/02/2017 to 12/29/2021) and established to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes. Refer to the WQBEL memo for the detailed calculations, prepared by the Water Quality Bureau dated March 28th, 2022, used for this reissuance.

**Phosphorus:** The department has determined at this time that an increase in monitoring frequency for phosphorus is warranted, based on the variability seen in data reported by the facility and to be consistent with other facilities of the same type, size, and effluent limitations. Phosphorus sample frequency is increased from 2x/month to weekly to better characterize effluent quality. If the permittee believes the facility should be eligible to return to the previously permitted monitoring frequency based on performance during the permitted term, they may request a reduction with their next permit application. Lbs/month and lbs/year reporting added as standard setup for reporting purposes. Permit subsection 3.2.1.5 added to elaborate on TMDL limits for total phosphorus.

**Hardness:** Quarterly hardness monitoring added because of the relationship between effluent hardness and daily maximum limits based on acute toxicity criteria. Refer to the WQBEL memo page 7 of 15 for more detail.

**PFOS/PFOA:** NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for industrial dischargers to be evaluated on a case-by-case basis to determine if monitoring is required pursuant to s. NR 106.98(2)(d), Wis. Adm. Code. The department evaluated the need for PFOS and PFOA monitoring taking into consideration industry type and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, it was identified that the industrial discharger category may be a potential source of PFOS/PFOA.

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

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

After a review of the data submitted with the Year 2 Report on Effluent Discharges, the department has determined that it is warranted to reduce the sampling frequency in this case. The department is requiring continued monitoring of these

compounds to complete the permit term to ensure that the current effluent quality is maintained. At the next permit reissuance, the department will make another determination as to whether further reduction or removal of monitoring is warranted, based on the continued sampling results.

**pH:** ELG limits for pH remain unchanged. Both current and proposed permits specify pH limits of 5.0 minimum and 9.0 maximum pursuant to s. NR 284.12, Wis. Adm. Code, while allowing occasional excursions (see Section 3.2.1.7 of the proposed permit).

**Phosphorus Rules:** For the reasons explained in the April 30, 2012 paper entitled 'Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin', WDNR has determined that it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily or weekly value. The final effluent limit for phosphorus is expressed as a monthly average. This final effluent limit was derived from and complies with the applicable water quality criterion.

**TMDL(Total Maximum Daily Load) Derived Limits:** Waste load allocations specified in TMDLs are expressed as WQBELs (water quality based effluent limits). The waste load allocated-derived WQBELs are consistent with the assumptions and requirements of the approved Lower Fox River Basin TMDL. Permit subsections 3.2.1.3 and 3.2.1.4 added to elaborate on TMDL background, limits and calculations.

**Industrial Effluent Limits:** In accordance with the federal regulation 40 CFR 122.45(d), limits in this permit are to be expressed as daily maximum and monthly average limits whenever practicable.

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

**Categorical Limits:** $BOD_5$, categorical limits reduced. See Calculation of Technology Based Effluent Limits for Effluent Limitations Guidelines (ELG) for details of calculation.

## 5.2 Sample Point Number: 005- WATER QUALITY INFO FOR WLA

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow River | | cfs | Daily | Continuous | |
| BOD5, Total | Daily Max – Variable | lbs/day | Daily | Calculated | |
| WLA Value | | lbs/day | Daily | Calculated | |
| WLA Adjusted Value | | lbs/day | Daily | Calculated | |
| WLA Previous Day River Temp | | deg F | Daily | Continuous | |
| WLA 7 Day Sum Of WLA Values | | lbs/day | Daily | Calculated | |
| WLA Previous 4 Day Avg River Flow | | cfs | Daily | Calculated | |
| WLA 7 Day Sum Of | Daily Max – | lbs/day | Daily | Calculated | |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| BOD5 Discharged | Variable | | | | |

### 5.2.1 Changes from Previous Permit

Water Quality Info for WLA limitations and monitoring requirements were re-evaluated for the proposed permit and the following changes were made from the previous permit;

**$BOD_5$:** Sample type corrected from 24-hour composite to calculated.

### 5.2.2 Explanation of Limits and Monitoring Requirements

**Water Quality Info For WLA:** Monitoring and reporting requirements are established in accordance with ch. NR 212, Wis. Adm Code. Since the permittee discharges to the Wisconsin River and has a Waste Load Allocation (WLA) for $BOD_5$, they are required to calculate the site-specific $BOD_5$ capacity of the receiving waterbody, calculate the variable limits, and report both daily.

# 6 Schedules

## 6.1 PFOS/PFOA Minimization Plan Determination of Need

The permittee shall submit a PFOS/PFOA Minimization Plan Determination of Need report as specified by permit subsection 3.2.1.9, in accordance with the following schedule.

| Required Action | Due Date |
|---|---|
| **Report on Effluent Discharge:** Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code.<br><br>This report shall include all PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results. | 01/31/2024 |
| **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.<br><br>This report shall include all PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results.<br><br>The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan.<br><br>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. | 01/31/2025 |

| | |
|---|---|
| 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. | |

## 6.2 Industrial Intake Structure Evaluation

The permittee shall evaluate the design of the current intake structure to determine the maximum design velocity.

| Required Action | Due Date |
|---|---|
| **Submit Status Update:** The permittee shall submit an update of intake evaluation planning. | 06/01/2023 |
| **Submit Status Update:** The permittee shall submit an update of intake evaluation planning. | 06/01/2024 |
| **Intake Structure Evaluation Plan:** The permittee shall submit intake structure engineer drawings. | 01/31/2025 |
| **Maximum Intake Design Velocity Calculation :** The permittee shall submit calculations of the maximum intake design velocity at every point up until the first screen of mesh size 3/8" or less. If the maximum intake design velocity exceeds 0.5 feet per second at any point, permittee shall submit a plan to comply with the 2020 Guidance for Evaluating Intake Structures Using Best Professional Judgement (BPJ). | 01/31/2025 |
| **Submit Status Update:** If applicable, the permittee shall submit an update of intake modification progress. | 01/31/2026 |
| **Complete Modifications to Meet BTA Criteria:** If applicable, the permittee shall complete intake structure modifications as approved by the Department to meet intake criteria found in the 2020 Guidance for Evaluating Intake Structures Using Best Professional Judgement (BPJ). | 10/31/2027 |

## 6.3 Biocide Use Certification

Pursuant NR 284.12(2)(b) Wis. Adm. Code, permittee shall certify that chlorophenolic-containing biocides are not in use at the facility.

| Required Action | Due Date |
|---|---|
| **Biocide Use Certification:** The certification of nonuse of chlorophenolic-containing biocides must be in the form of a notarized affidavit signed by the authorized representative and must state that chlorophenolic-containing biocides are not in use at the facility. | 10/31/2027 |

## 6.4 Explanation of Schedules

**PFOS/PFOA:** 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.

# 7 Special Reporting Requirements

No special requirements.

# 8 Other Comments:

No comments.

# 9 Attachments:

~~Appendix A: Substantial Compliance Determination [June 23, 2022]~~
~~Appendix B: Water Flow Schematic~~
~~Appendix C: Map~~
~~Appendix D: Water Quality Based Effluent Limits [March 28, 2022]~~
~~Appendix E: Calculation of Technology Based Effluent Limits for Effluent Limitations Guidelines (ELG) [July 23, 2022]~~
~~Appendix F: Fox River Intake Structure Evaluation [July 23, 2022]~~
~~Appendix G: Water Quality Based Effluent Limitations Addendum [September 6, 2022]~~

PFOS and PFOA Water Quality-Based Effluent Limitations for Neenah Inc., Neenah Mill - WPDES Permit No. (WI-0037842) in Winnebago County, by Amy Garbe, PE, Wastewater Engineer, dated February 6, 2025

# 10 Justification Of Any Waivers From Permit Application Requirements

No waivers were given from permit application monitoring and reporting requirements.

# 11 Proposed Expiration Date:

**October 31, 2027**

Prepared By:

Laura Rodriguez Alvarez Wastewater Engineer

Date: September 8, 2022

**Revised By:** Sarah Donoughe, Wastewater Specialist-Adv

**Date:** February 11, 2025

# CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: February 6, 2025

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for Neenah Inc., Neenah Mill - WPDES Permit No. (WI-0037842) in Winnebago County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for Neenah Inc., Neenah Mill. The industrial facility discharges effluent to the Fox River, located in the Lower Fox River Basin.

The current permit, effective since November 2022, has monitoring only for PFOS and PFOA. The following review is based on new regulations which are now in effect throughout the state of Wisconsin and recommendations are made in accordance with chapters NR 102, 104, 105, 106, 207, and 217 of the Wisconsin Administrative Code, where applicable.

**Receiving Water Information**

- Name: Neenah Channel of the Lower Fox River
- Classification: 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.
- Flow: The following 7-Q10 and 7-Q2 values are from USGS where Outfall 001 is located. The Neenah Channel is approximately ½ of the flow of the Fox River leaving Lake Winnebago. Therefore, the low flows used in this evaluation are half of the flow flows of the Fox River at Appleton.
  7-Q10 = 465 cfs (cubic feet per second)
  7-Q2 = 775 cfs
  Harmonic Mean Flow = 924 cfs using a drainage area of 1820 $mi^2$

  The Harmonic Mean has been estimated based on average flow and the 7-Q10 using an equation from U.S. EPA's Technical Support Document for Water Quality-Based Toxics Control (March 1991, EPA/505/2-90-001, pgs. 88-89).

- % of Flow used to calculate limits: 25%

**Effluent Information**

- Flow rate(s):
  Maximum annual average = 1.64 MGD (Million Gallons per Day)
  For reference, the actual average flow from November 2022 through December 2024 was 1.43 MGD.

- Water source: 90% of the intake water is from the Fox River and 10% is from the City of Neenah.
- Effluent characterization: This facility is categorized as a primary industrial discharge

The following table lists the statistics for effluent PFOS and PFOA levels from April 2021 and November

2022 through December 2024.

| | PFOS ng/L | PFOA ng/L |
|---|---|---|
| 1-day $P_{99}$ | 3.26 | 3.39 |
| 4-day $P_{99}$ | 2.44 | 2.41 |
| 30-day $P_{99}$ | 1.79 | 1.80 |
| Mean* | 1.48 | 1.50 |
| Std | 0.55 | 0.59 |
| Sample Size | 27 | 27 |
| Range | <1.8 – 3.2 | <2.8 – 3.3 |

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

**Water Quality Based Limit – PFOS and PFOA**

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

***PFOS***

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

***PFOA***

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

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

Where:

WQC = 20 ng/L for the Fox River
Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 231 cfs
Cs = background concentration of PFOA in the receiving water pursuant to s. NR 106.06(4)(e), Wis. Adm. Code
Qe = effluent flow rate = 1.64 MGD = 2.54 cfs
f = the fraction of effluent withdrawn from the receiving water = 0.9

After substituting the appropriate variables, the calculated PFOA limit is 1,822 ng/L.

**Reasonable Potential Determination**

In accordance with s. NR 106.98(4)(a), Wis. Adm. Code, **the discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS** because the 30-day $P_{99}$ of reported effluent PFOS data is less than the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is not required.**

**The discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOA** because the 30-day $P_{99}$ of reported effluent PFOA data is less than the calculated WQBEL (1,822 ng/L). Therefore, **a WQBEL is not required.**

**Conclusions**

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

Pursuant to s. NR 205.066, Wis. Adm. Code, the department may specify the monitoring frequency for PFOS and PFOA on a case-by-case basis after the initial 24 months of sampling. **After a review of the available data, the department has determined that it is warranted to reduce the sampling frequency in this case to once every other month (bimonthly).**

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

Attachments (2) – P99 Calculations

PREPARED BY: _____ date: 2/6/25
Amy Garbe, P.E., Wastewater Engineer

cc: Mark Stanek, Basin Engineer – NER/Oshkosh
Nate Willis, P.E., PFAS Implementation Coordinator – CO

Attachment 1 – PFOS P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -

SUBSTANCE:

| NUMBER OF VALUES: | | | |
|---|---|---|---|
| TOTAL | 27 | | |
| DETECTED | 25 | | |
| NON-DETECTED | 2 | | |
| d | 0.074074 | | |
| m | 1.6004 | | |
| mean of all data | 1.481852 | | |
| s | 0.548805 | | |
| n | 1 | 4 | 30 |
| d^n | 0.074074 | 3.01E-05 | 1.23E-34 |
| p | 0.9892 | 0.99 | 0.99 |
| Z_p | 2.297769 | 2.326774 | 2.326785 |
| 1+(s/m)^2 | 1.117592 | 1.117592 | 1.117592 |
| (sigma_d)^2 | 0.111177 | 0.111177 | 0.111177 |
| mu_d | 0.414665 | 0.414665 | 0.414665 |
| (sigma_dn)^2 | 0.111177 | 0.050425 | 0.006876 |
| mu_dn | 0.414665 | 0.36811 | 0.389854 |
| P_99 exponent | 1.180814 | 0.890601 | 0.5828 |
| P_99 | 3.26 | 2.44 | 1.79 |

Data Summary

| | |
|---|---|
| Apr-21 | 0.79 |
| Nov-22 | 1.7 |
| Dec-22 | 3.2 |
| Jan-23 | 2.2 |
| Feb-23 | 1.6 |
| Mar-23 | 1.7 |
| Apr-23 | 2.9 |
| May-23 | 1.1 |
| Jun-23 | 1.8 |
| Jul-23 | 2 |
| Aug-23 | <1.8 |
| Sep-23 | 1.3 |
| Oct-23 | 1.2 |
| Nov-23 | 1.3 |
| Dec-23 | 1.2 |
| Jan-24 | <3.6 |
| Feb-24 | 1.1 |
| Mar-24 | 0.92 |
| Apr-24 | 1.2 |
| May-24 | 1.5 |
| Jun-24 | 1.5 |
| Jul-24 | 1.7 |
| Aug-24 | 1.4 |
| Sep-24 | 1.6 |
| Oct-24 | 1.7 |
| Nov-24 | 1.8 |
| Dec-24 | 1.6 |

Attachment 2 – PFOA P99 Calculation

| EFFLUENT VARIABILITY ANALYSIS - | | | |
|---|---|---|---|
| = | = = | = | = |
| SUBSTANCE: | | | |
| NUMBER OF VALUES: | ------ | | |
| TOTAL | 27 | | |
| DETECTED | 26 | | |
| NON-DETECTED | 1 | | |
| | | | |
| d | 0.037037 | | |
| | | | |
| m | 1.556654 | | |
| | | | |
| mean of all data | 1.499 | | |
| | | | |
| s | 0.588663 | | |
| | | | |
| | ------ | ------ | ------ |
| n | 1 | 4 | 30 |
| | | | |
| d^n | 0.037037 | 1.88E-06 | 1.15E-43 |
| | | | |
| p | 0.989615 | 0.99 | 0.99 |
| | | | |
| Z_p | 2.312592 | 2.326785 | 2.326785 |
| | | | |
| 1+(s/m)^2 | 1.143004 | 1.143004 | 1.143004 |
| | | | |
| (sigma_d)^2 | 0.13366 | 0.13366 | 0.13366 |
| | | | |
| mu_d | 0.375708 | 0.375708 | 0.375708 |
| | | | |
| (sigma_dn)^2 | 0.13366 | 0.04568 | 0.006213 |
| | | | |
| mu_dn | 0.375708 | 0.38196 | 0.401692 |
| | | | |
| P_99 exponent | 1.221182 | 0.879262 | 0.585093 |
| | | | |
| | ------- | ------- | ------- |
| P_99 | 3.39 | 2.41 | 1.80 |
| | ------- | ------- | ------- |

| Data Summary | |
|---|---|
| Apr-21 | 0.843 |
| Nov-22 | 2.1 |
| Dec-22 | 1.9 |
| Jan-23 | 3 |
| Feb-23 | 1.4 |
| Mar-23 | 1.5 |
| Apr-23 | 1.3 |
| May-23 | 1.1 |
| Jun-23 | 1.5 |
| Jul-23 | 1.5 |
| Aug-23 | 3.3 |
| Sep-23 | 1.7 |
| Oct-23 | 1.4 |
| Nov-23 | 1.5 |
| Dec-23 | 1.3 |
| Jan-24 | <2.8 |
| Feb-24 | 0.93 |
| Mar-24 | 0.8 |
| Apr-24 | 1 |
| May-24 | 1.2 |
| Jun-24 | 1.2 |
| Jul-24 | 1.4 |
| Aug-24 | 1.4 |
| Sep-24 | 1.6 |
| Oct-24 | 2.1 |
| Nov-24 | 2.1 |
| Dec-24 | 1.4 |