

# Permit Modification Fact Sheet

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

## General Information

Permit Number:	WI-0003077-10-1
Permittee Name:	Cascades Tissue Group Wisconsin Inc
Address:	1200 Forest St
City/State/Zip:	Eau Claire WI 54703
Discharge Location:	East bank of the Chippewa River at the Xcel Energy Dam Lat/Lon: 44°49'40.5"N 91°30'39.9"W
Receiving Water:	Chippewa River (Muddy and Elk Creek Watershed in the Lower Chippewa Basin)
Stream Flow (Q <sub>7,10</sub> ):	830 cfs
Stream Classification:	Warm Water Sport Fish (WWSF) community and non-public water supply

## Facility Description

The Cascades Tissue Group Wisconsin Inc. (hereafter Cascades Tissue) manufacturing plant in Eau Claire produces paper towels, napkins, and bath tissue from recycled paper fibers. The mill consists of a river water intake structure, a deink mill with a rated production of 250 tons/day, two paper machines and associated converting equipment, one boiler system, a primary and secondary wastewater treatment facility, and finished product shipping and handling operations.

The recycled paper is processed at the mill by a paper fiber and pulp recovery process. First, pre-consumer and post-consumer wastepaper bundles are hydrated into a slurry, and then centrifuges, screens and dissolved air flotation units are used to separate contaminants and recover useable paper fibers. Following paper fiber recovery, a two-stage whitening process can be used as needed to brighten the paper fibers. The initial whitening stage is a reductive step (sodium bisulfite and hydrosulfite) to whiten the fibers and neutralize any dyes and inks. Following the reductive step, the recovered fibers are treated with an oxidant (hydrogen peroxide) to preserve the gain in whitening, neutralize excess reductive chemistries, and finish the pulp recovery process. Cascades Tissue then produces tissue, napkins and paper towels from the recycled paper fibers on their two paper machines.

The process wastewater from the pulp recovery and other papermaking activities is treated at the Cascades Tissue primary and secondary wastewater treatment facility (WWTF). The wastewaters are treated by gravity settling in a primary clarifier, aerated biological treatment, and final settling in the secondary clarifier. The papermaking wastewaters and filtrate from the sludge belt presses are the other two main loads to the WWTF. Approximately 10,000 gallons per day of boiler blowdown and about 10,000 gallons per day of boiler water treatment wastewater and landfill leachate are minor additional loads to the WWTF. All spent cooling water is rerouted back into the WWTF or the deinking or paper making process. The final treated wastewater is either discharged through the Dells Dam (Outfall 001) to the Chippewa River or routed back into the deinking or papermaking process for reuse. The sanitary wastewater from the factory restrooms is conveyed to the Eau Claire Municipal Wastewater Treatment Plant. The wastewater treatment plant primarily uses city water and primary effluent in their dewatering process of sludge. All sludge produced from the dissolved air flotation, primary clarifier and secondary clarifier is land spread year-round on Wisconsin Department of Natural Resources (hereafter Department) approved sites (Outfall 002).

## Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, land app reports, compliance schedule items, and a site visit on September 21, 2022, this facility has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)
701	3 MGD Maximum Design Intake <sup>1</sup>	INTAKE: Chippewa River water drawn into the mill for process and cooling water.
001	1.947 MGD Maximum Day <sup>1</sup> 1.485 MGD Maximum 7-day Average <sup>1</sup> 1.260 MGD Maximum 30-day Average <sup>1</sup> 0.855 MGD Maximum Annual Average <sup>1</sup>	EFFLUENT: Discharge to the Chippewa River of storm water and process wastewater from wastepaper deinking and manufacturing of tissue paper products. Grab and 24-hr Flow Prop Comp samples taken from the water hole.
002	25,000 Dry Tons Per Year <sup>1</sup>	The mixture of dissolved air flotation deink sludge, primary settling sludge, and secondary clarification biomass sludge to be landspread year-round on department approved sites.
101	5 overflow events <sup>2</sup> 10,049 gpd Maximum Day <sup>2</sup>	BYPASS: Excess wastewater from the paper mill main collection sump (which bypasses the wastewater treatment facility) to be sampled from the overflowing wastewater prior to mixing with treatment plant effluent in the 001 discharge channel.
102	N/A	BLANK: Field blank sample to confirm good quality mercury sample collection procedures

## 1 Influent – Water Intake Structure - Proposed Monitoring

### 1.1 Sample Point Number: 701- CHIPPEWA RIVER 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	Estimated	
Mercury, Total Recoverable		ng/L	Quarterly	Grab	See Influent Mercury Sampling and Mercury Monitoring sections for more detail.

<sup>1</sup> Data submitted on “Wisconsin Pollutant Discharge Elimination System (WPDES) Wastewater Discharge Individual Permit Application” (Form 3400-178) by Cascades Tissue

<sup>2</sup> Events reported on the discharge monitoring reports for the period of May 2017 to August 2022

### 1.1.1 Changes from Previous Permit

**Flow Rate** – Sample type changed from estimated to continuous.

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

- **Location:** The river water intake is located on the east bank of the Chippewa River just north of the Xcel Energy Dam at approximately 44° 49' 44" N and 91° 30' 37" W.
- **Source Waterbody Information:**  
7-Q<sub>10</sub> = 830 cfs  
Mean Harmonic Flow Rate = 2849 cfs
- **General Description:** Chippewa River water first passes through a 6 foot by 19.5-foot bar screen with 0.5 inch bars and 1.5 inch spacing. Debris and litter found on the bar screen is removed and disposed of by the mill. After the bar screen the flow is split between two 20-inch pipes. Next the river water is pumped up and circulated across a 100 mesh (0.149 mm) AES (Albany Engineered Systems) gravity strainer to remove fine particles. Following that the river water is then split and distributed for use in various processes throughout the mill. There are no emergency intake structures.
- **Maximum Design Intake Flow (DIF):** The maximum design intake flow (DIF) is 3 MGD (5 cfs), which is equivalent to 0.6 % of the Q<sub>7,10</sub>. This is based upon the intake's pump capacity, not counting redundant or emergency pumps.
- **Maximum Design Intake Velocity:** The design intake velocity is 4 feet/second =  $Q/(n \times A \times P)$ ; Q = DIF, n = number of screens, A = area of the screen, P = the proportion of the screen that is open area (as a decimal) (5 cfs /  $2 \text{ screens} \times \pi \times (0.83 \text{ ft screen radius})^2 \times 0.3 \text{ open area proportion}$ ).
- **Actual Intake Flow:** The actual intake flow is 0.6 MGD (0.9 cfs), which is equivalent to 0.09% of the Q<sub>7,10</sub>.
- **Actual Intake Velocity:** The actual intake velocity is 0.7 feet/second (0.9 cfs /  $2 \text{ screens} \times \pi \times (0.83 \text{ ft screen radius})^2 \times 0.3 \text{ open area proportion}$ ). These figures are based on the average withdrawal rate between 10/1/2017 and 9/30/2022.
- **Percent Used for Cooling:** 0 percent used exclusively for cooling

### 1.1.2 Explanation of Limits and Monitoring Requirements

#### **Flow Rate and Intake Water Used Exclusively for Cooling:**

Monitoring for flow rate and intake water used exclusively for cooling are required to determine compliance with section 316(b) of the Clean Water Act. The permittee's pump is capable of pumping more than 2 MGD with a maximum design inflow of 3 MGD. The mill operates at an average intake flow of 0.4 to 0.8 MGD. Intake water is used primarily as process water and the remaining is non-contact cooling water, however, the cooling water is reused as process water. Since no intake water is being used exclusively for cooling purposes, the permittee must meet the requirements of 316(b) of the Clean Water Act on a case by case, best professional judgment basis.

The monitoring frequency for Intake Water Used Exclusively for Cooling was set to annual as no intake water is being used exclusively for cooling purposes. The Department expects that the amount on a daily basis would be approximately zero if the facility continues to reuse all cooling water as process water. Therefore, annual monitoring will satisfy this requirement to avoid repetitive result reporting.

#### **Mercury:**

The Department is requiring that the permittee collect quarterly samples that are representative of the intake water from the river and have it analyzed for low level mercury. This sampling will help the permittee determine the intake mercury contribution to the effluent discharge and measure the effectiveness of their reductions through the pollutant minimization program. Additionally, this data will assist the Department in establishing an alternative mercury effluent limitation in future permit reissuances.

## Water Intake Structure:

Best professional judgment BTA determinations are made using the Department's 2020 *Guidance for Evaluating Intake Structures Using Best Professional Judgment*. For existing intake structures, the guidance advises that intakes deemed BTA should fulfill at least one of the following eight criteria:

- Each water intake structure has a maximum design intake velocity of 0.5 feet per second (fps) OR a maximum actual intake velocity of 0.5 fps, demonstrated via measured or calculated values which show the maximum intake velocity as water passes through the intake system, measured perpendicular to the opening, does not exceed 0.5 fps at any point up until the first screen of mesh size 3/8" (or equivalent) or less.
- The facility operates a closed-cycle recirculating system that only requires make-up water with > 3 cycles of concentration on at least a daily basis. Cycles of concentration can be measured as the ratio of chloride levels in the recirculated water or blowdown relative to the chloride levels in the source water, or makeup water; or the make-up water volume divided by the blowdown volume (provided there aren't other water losses); or the blowdown water conductivity divided by the make-up water conductivity. (The facility does not operate a closed-cycle recirculating system)
- The facility operates an intake structure that minimizes impingement rates by nature of its location (e.g. offshore velocity cap). (The facility does not operate an intake structure that minimizes impingement rates by nature of its location)
- The facility employs a system of technologies (e.g. wedge-wire screens, barrier nets; acoustic, light, or pH deterrent systems; variable speed pumps, etc.) that minimize impingement mortality rates.
- The facility operates a modified traveling screen in an optimal manner that does not promote re-impingement or predation of returned organisms. (The facility does not operate a modified traveling screen)
- The facility's intake withdraws water at > 0.25 fps less than or equal to 16% of the time.
- There is data indicating that the impingement mortality rate has been/will be reduced 80-95% compared to a once-through cooling system with 3/8" traveling screens; (There is not data that indicates this)
- There is biological data that affirmatively demonstrates that: 1) the source water body does not include threatened or endangered species in the vicinity of the intake, and 2) there are no aquatic life and water quality problems partly or solely due to the presence or operation of the intake structure.

And at least one of the following five criteria:

- **The total water withdrawn (actual intake flow) is  $\leq$  5% of the mean annual flow of the river on which the intake is located (if on a river or stream) OR the total quantity of the water withdrawn is restricted to a level necessary to maintain the natural thermal stratification or turnover patterns (where present) except in cases where the disruption is beneficial (if on a lake or reservoir) (The actual intake flow is 0.03% of the mean annual flow)**
- The facility operates at < 8% capacity utilization rate (with pumps turned off or, if variable frequency drives exist, down substantially during periods of non-operation) or at full capacity only for portions of days during a few months or less on an annual basis. If located in a spawning area, the period of water intake operation should not correspond with times when spawning, peak egg/larval abundance, or larval recruitment is occurring (depending on species present, usually between April – October). (The facility does not operate at < 8% capacity utilization rate or at full capacity only for portions of days during a few months or less on an annual basis)
- The facility operates a closed-cycle recirculating system that only requires make-up water with  $\geq$  3 cycles of concentration on at least a daily basis. Cycles of concentration can be measured as the ratio of chloride levels in the recirculated water or blowdown relative to the chloride levels in the source water, or makeup water; or the make-up water volume divided by the blowdown volume (provided there aren't other water losses); or the blowdown water conductivity divided by the make-up water conductivity. (The facility does not operate a closed-cycle recirculating system)
- **The facility utilizes other means such as variable speed pumps, unit retirements, etc. to decrease entrainment rates by greater than or equal to 60% compared to a once-through cooling system with 3/8"**

**traveling screens. Flow rate may be used as a surrogate for entrainment rates when determining percent reduction. (The facility minimizes water usage by reusing all spent cooling water)**

- There is biological data that affirmatively demonstrates that: 1) the source water body does not include threatened or endangered species in the vicinity of the intake, 2) there are no aquatic life and water quality problems partly or solely due to the presence or operation of the intake structure, and 3) the department biologist concurs that operation of the intake during periods of spawning, peak egg/larval abundance, and larval recruitment will not substantially impact populations or prey bases for the fishery. (The department biologist concurred that operation of the intake during periods of spawning, peak egg/larval abundance, and larval recruitment will not substantially impact populations or prey bases for the fishery.)

And the following criteria:

- **The facility-wide design intake flow (DIF) for all water intake structures is  $\leq 2$  MGD (all intake water, cooling and non-cooling, is included in the determination of whether this DIF threshold is met) OR  $< 25\%$  of the total water withdrawn is used exclusively for cooling purposes (water from a public water system, treated effluents, process water, gray water, wastewater, reclaimed water, or water used in a manufacturing process before or after it is used for cooling is not considered cooling water for the purposes of this determination) (The facility uses less than 25% of the water withdrawn exclusively for cooling purposes).**

The facility meets the bolded criteria above but does not meet one of the initial eight criteria which therefore not meeting BTA. The Department therefore does not believe that the facility’s intake structure represents BTA for minimizing adverse environmental impact in accordance with the requirements in section 283.31 (6), Wis. Stats. and section 316 (b) of the Clean Water Act. To be considered BTA for minimizing adverse environmental impacts the facility must meet at least one of the first eight criteria.

### **Intake Screen Discharges and Removed Substances**

Floating debris and accumulated trash collected on the 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.

### **Endangered Species Act**

This permit does not authorize take of threatened or endangered species. 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.

## **2 Inplant - Proposed Monitoring and Limitations**

### **2.1 Sample Point Number: 101- EMERGENCY BYPASS TO 001**

<b>Monitoring Requirements and Limitations</b>					
<b>Parameter</b>	<b>Limit Type</b>	<b>Limit and Units</b>	<b>Sample Frequency</b>	<b>Sample Type</b>	<b>Notes</b>
Flow Rate		gpd	Per Occurrence	Estimated	Estimated based on pump run time.
BOD5, Total		mg/L	Per Occurrence	Grab	See Sampling of Mill Sump Bypasses section below for more details.
BOD5, Total		lbs/day	Per Occurrence	Calculated	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total		mg/L	Per Occurrence	Grab	See Sampling of Mill Sump Bypasses section below for more details.
Suspended Solids, Total		lbs/day	Per Occurrence	Calculated	
pH Field		su	Per Occurrence	Grab	See Sampling of Mill Sump Bypasses section below for more details.
Phosphorus, Total		mg/L	Per Occurrence	Grab	See Sampling of Mill Sump Bypasses section below for more details.
Phosphorus, Total		lbs/day	Per Occurrence	Calculated	
Mercury, Total Recoverable		ng/L	Per Occurrence	Grab	See Sampling of Mill Sump Bypasses section below for more details.

### 2.1.1 Changes from Previous Permit:

**BOD5, Suspended Solids, and Phosphorus** – Concentration monitoring added and sample types for mass monitoring changed from estimated to calculated

**pH Field** – Sample type changed from estimated to grab

### 2.1.2 Explanation of Limits and Monitoring Requirements

#### Mill Sump Bypass Requirements:

In previous permit terms, this facility has had instances where raw wastewater bypasses to the Chippewa River from the main mill wastewater collection sump ("the water hole") or leaks from the pipeline from the collection sump to up to the treatment system. Previous bypasses were caused by: a faulty lift pump starter, a lift pump wiring short, an unexpected overflow during startup of a dissolved air flotation treatment unit, a break in the river water intake pipe, and a storm water surge into the mill basement. When the mill raw wastewater sump bypasses, the water can enter the adjoining treated wastewater discharge channel to the river (outfall 001). Due to this arrangement, any raw wastewater or storm water bypassing the mill sump is mixed with the treated wastewater in the open effluent channel. Since raw wastewater overflows could contain deink pollutants, paper fibers, and other process contaminants (that are usually removed or degraded in the treatment process), the permit requires reporting under sample point 101 of the concentrations of BOD, TSS, mercury, and phosphorus as well as the pH of the water discharged to the river. Samples for these parameters should be collected as grab samples unless the event is shorter than 15 minutes long and nobody is able to sample before the end of the bypass event. For an event shorter than 15 minutes where nobody is able to sample before the end of the bypass event the values can be estimated. The permit also requires reporting of the pounds/day for BOD, TSS, and phosphorus. The pounds/day for these parameters should be calculated based on the concentration, flow rate, and length of the event. The Parshall flume located beneath the sampler can measure combined flows in the effluent channel prior to outfall 001. The permittee shall estimate the amount of untreated wastewater being discharged through outfall 001 based on the pump run time. All samples shall be used to show that any discharge through outfall 001 would comply with permit limits.

**BOD5, Suspended Solids, and Phosphorus:**

Concentration monitoring is added in accordance with s. NR 205.07(1)(r)2, Wis. Adm. Code. This monitoring requirement will allow the permittee to calculate lbs/day. Sample types on mass monitoring changed in order to clarify how samples are to be taken.

**pH:**

Sample type changed to grab in order to clarify how samples are to be taken.

**Mercury:**

Mercury monitoring requirements are in place in order to track the concentration of mercury entering the treated effluent discharge channel from overflow events. This monitoring will aid the facility in identifying actions to reduce potential and actual mercury discharges as a part of the pollutant minimization program plan.

**2.2 Sample Point Number: 102- EFFLUENT FIELD BLANK**

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Mercury, Total Recoverable		ng/L	Quarterly	Blank	See Mercury Monitoring section below for more detail.

**2.2.1 Changes from Previous Permit:**

The department concluded that no changes were needed.

**2.2.2 Explanation of Limits and Monitoring Requirements**

**Mercury:**

A field blank must be collected each day that a sample is collected for mercury. This mercury field blank fulfills the data quality requirements for ss. NR 106.145(9) and (10), Wis. Adm. Code. Therefore, the permit retains the sampling of a field blank for total recoverable mercury for this purpose

**3 Surface Water - Proposed Monitoring and Limitations**

**3.1 Sample Point Number: 001- EFFLUENT TO CHIPPEWA RIVER**

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
BOD5, Total	Daily Max	5,292 lbs/day	5/Week	Calculated	
BOD5, Total	Monthly Avg	2,749 lbs/day	5/Week	Calculated	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Daily Max	7,032 lbs/day	5/Week	Calculated	
Suspended Solids, Total	Monthly Avg	3,787 lbs/day	5/Week	Calculated	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	5.0 su	Daily	Grab	
Phosphorus, Total	Rolling 12 Month Avg	1.0 mg/L	2/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	11 mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	11 mg/L	Weekly	24-Hr Flow Prop Comp	
Chlorine, Total Residual	Daily Max	38 ug/L	Per Occurrence	Grab	
Chlorine, Total Residual	Monthly Avg	38 ug/L	Per Occurrence	Grab	
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing section below for listed quarters and more detail.
Temperature Maximum		deg F	Daily	Continuous	
Mercury, Total Recoverable	Daily Max	12 ng/L	Quarterly	Grab	This is an interim limit. See Mercury Monitoring and Mercury Pollutant Minimization Plan sections of the permit for more detail.
PFOS		ng/L	Monthly	Grab	Monitoring only. See the PFOS Minimization Plan Requirements section and the PFOS Minimization Plan Schedule.
PFOA		ng/L	Monthly	Grab	Monitoring only. See the PFOS Minimization Plan Requirements section and the PFOS Minimization Plan Schedule.

### 3.1.1 Changes from Previous Permit

**Ammonia** – The permit changes sample frequency to weekly

**Chlorine** – The permit adds daily max and monthly average limits with a sample frequency of per occurrence

**Temperature** – The permit changes sampling frequency to daily and sample type to continuous

**PFOS and PFOA** – Monthly monitoring is included in the permit in accordance with s. NR 106.98(2)(d), Wis. Adm. Code. Language requiring the implementation of a PFOS Minimization Plan has been added to the permit.

### 3.1.2 Explanation of Limits and Monitoring Requirements

#### Water Quality Based Limits and WET Requirements:

Refer to the **WQBEL memo for the detailed calculations, prepared by the Water Quality Bureau dated September 6, 2022 used for this reissuance.**

#### Phosphorus Rules:

As stated in the WQBEL memo the calculated WQBEL for phosphorous was 16.8 mg/L. This calculated WQBEL is less stringent than the current rolling 12-month average limit of 1.0 mg/L and there is not reasonable potential for this WQBEL. Because of these factors the phosphorus limit in this permit is set as a TBEL and thus does not need to be expressed as a daily maximum and monthly average.

#### Ammonia:

Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105, Wis. Adm. Code. Subchapter IV of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia. It was determined that the calculated daily maximum effluent limit would be less stringent than the limit that is currently in place, so the limit was set at that of the previous permit. The department has determined at this time that an increase in monitoring frequency is warranted because the previous frequency was below the standard frequency and available data shows that the facility has reasonable potential to exceed the ammonia limit.

#### Total Residual Chlorine:

Based on the available data the total residual chlorine a limit has been added in this permit. Daily maximum limitations were deemed to be protective of the receiving water and as such a weekly average limitation is not necessary. A monthly average limitation is needed in order to comply with requirements for expression of limits in s. NR 106.07(4), Wis. Adm. Code. Chlorine is periodically added in order to control filamentous bacteria so the limits and monitoring requirements for chlorine only apply when it is being added. A compliance schedule has been included and the limits go into effective April 1, 2025.

#### Thermal:

Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. No effluent limits were set based on available data, but monitoring is required in order to determine reasonable potential in future reissuances. Sample frequency and type were changed to reflect how samples are taken and to ensure reasonable potential can be accurately evaluated.

#### 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. Twice a year Acute WET tests have been included in

the proposed permit. (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>)

### **Mercury:**

The background concentration in the receiving water and similar inland streams is known to exceed 1.3 ng/L, so 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. Based on data from June 2017 to May 2021 the 30-day P<sub>99</sub> is 5.03 ng/L, which is above the limit. Therefore, a mercury effluent limit is required for Cascades Tissue.

Eligibility for an alternative mercury effluent limitation is allowed according to s. NR 106.145(4), Wis. Adm. Code, if the permittee applies for an alternative mercury limit. According to s. NR 106.145(5), Wis. Adm. Code, the alternative effluent limit shall equal the 1-day P<sub>99</sub> of the effluent data and shall be expressed as a daily maximum concentration. The 1-day P<sub>99</sub> that was calculated for this permit reissuance was 17.6 ng/L, which is higher than the alternative mercury limit in the previous permit, so the alternative mercury limit in this permit is set at that of the previous permit.

### **PFOS and PFOA:**

NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for 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, the source water has known levels of PFOS/PFOA, and that the previous PFOS/PFOA sample results were within 1/5 of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code. 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.

Language was added to the permit to ensure that the actions outlined in the approved minimization plan are accomplished over the next several years. The determination to require the implementation of a minimization plan will be reevaluated at the next permit reissuance.

Pursuant to s. NR 106.985(1), Wis. Adm. Code, the department notified the permittee on 9/4/2025 of the requirement to develop a PFOS Minimization Plan that satisfies the requirements in s. NR 106.99, Wis. Adm. Code. The permittee submitted a minimization plan on 12/19/2025; this plan was approved by the department on 03/02/2026.

### **Categorical Limits**

**Refer to the Categorical Limits Evaluation included as Attachment #1**

#### **BOD<sub>5</sub> and TSS:**

The mill's current paper production is rated at 250 TPD. Approximately 75-80% of their production is from deinked fiber and the remaining 20-25% is from virgin fiber. This current production rates exceed those used to derive the permit's categorical treatment based effluent limitations. While the Mill is entitled to effluent limits that are based on current production rates and paper sources, Wisconsin's water quality antidegradation requirements must be met before BOD<sub>5</sub> and TSS permit limits may be increased. The available data showed no reason to change the sampling frequency, so the sampling frequency was kept at 5/week. See attached Categorical Limits Evaluation for more details.

#### **Phosphorus:**

Phosphorus requirements are based on the Phosphorus Rules that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. The code categorically limits industrial

dischargers of more than 60 pounds of phosphorus per month and municipal dischargers of more than 150 pounds of phosphorus per month to 1.0 mg/L unless an alternative limit is approved. NR 217 also specifies WQBELs (water quality based effluent limits) for discharges of phosphorus to surface waters of the state from publicly and privately owned wastewater facilities, noncontact cooling water discharges which contain phosphorus, concentrated animal feeding operations that discharge through alternative treatment facilities and a facility/site that is regulated under NR 216 where the standards in NR 151 and 216 are not sufficient to meet phosphorus criteria. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards. There is not reasonable potential to exceed the WQBEL for phosphorus and thus the limit was set at the TBEL.

**pH:**

Requirements for the pH of the effluent for an existing paper or pulp manufacturer are included in Table 1 of s. NR 284. The limit included as part of this permit is a continuation of the pH limit in place in the previous reissuance.

**4 Land Application - Sludge/By-Product Solids (industrial only)**

**4.1 Sample Point Number: 002- SLUDGE**

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Solids, Total		Percent	Quarterly	Grab Comp	
pH Field		su	Quarterly	Grab	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Grab Comp	
Nitrogen, Ammonia (NH3-N) Total		Percent	Quarterly	Grab Comp	
Phosphorus, Total		Percent	1/6 Months	Grab Comp	
Phosphorus, Water Extractable		Percent	1/6 Months	Grab Comp	
Potassium, Total Recoverable		Percent	1/6 Months	Grab Comp	
Chloride		mg/kg	Quarterly	Grab Comp	
Aluminum Dry Wt		mg/kg	See Permit Note	Grab Comp	Monitoring required once per year in calendar years 2024 and 2026 only.
Iron Dry Wt		mg/kg	See Permit Note	Grab Comp	Monitoring required once per year in calendar years 2024 and 2026 only.
Magnesium Dry Wt		mg/kg	See Permit Note	Grab Comp	Monitoring required once per year in calendar years 2024 and 2026 only.

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Sodium Dry Wt		mg/kg	See Permit Note	Grab Comp	Monitoring required once per year in calendar years 2024 and 2026 only.
Calcium Dry Wt		mg/kg	See Permit Note	Grab Comp	Monitoring required once per year in calendar years 2024 and 2026 only.
Cadmium Dry Wt		mg/kg	Annual	Grab Comp	
Copper Dry Wt		mg/kg	Annual	Grab Comp	
Lead Dry Wt		mg/kg	Annual	Grab Comp	
Mercury Dry Wt		mg/kg	Annual	Grab Comp	
Nickel Dry Wt		mg/kg	Annual	Grab Comp	
Zinc Dry Wt		mg/kg	Annual	Grab Comp	
PCB Total Dry Wt		mg/kg	1/ 6 Months	Grab Comp	
Dioxin, 2,3,7,8-TCDD TE		ng/kg	Quarterly	Calculated	Report toxicity equivalent concentration. See Total Dioxin Equivalents (TDE) Limitations section for more detail.
Dioxin, 2,3,7,8-TCDD Dry Wt		ng/kg	Quarterly	Grab Comp	
Furan, 2,3,7,8-TCDF Dry Wt		ng/kg	Quarterly	Grab Comp	
Dioxins & Furans (all congeners)			Annual	Grab Comp	As specified in ch. NR 106.115(2), Table 1, Wis. Adm. Code.
Priority Pollutant Scan			Once	Grab	As specified in ch. NR 215.03(1-6), Wis. Adm. Code (excluding asbestos)

#### 4.1.1 Changes from Previous Permit:

**Total Nitrogen and Ammonia** – Sample frequency changed from 1/6 months to quarterly

**Potassium** – Sample frequency changed from annual to 1/6 months

**Chloride** – Sample frequency changed from annual to quarterly

**Aluminum, Iron, Magnesium, Sodium, and Calcium** – Sample frequency changed from annual to see permit note

#### 4.1.2 Explanation of Limits and Monitoring Requirements

Site Approval:

The land application of biosolids from Cascades Tissue can only be applied to Department approved sites in accordance with ss. NR 214.17(2) and 214.18(2), Wis. Adm. Code. This allows the Department to properly evaluate each land application site for necessary soil and site criteria.

**Total Solids:**

Monitoring for total solids is included in accordance with s. NR 214.18(5)(b), Wis. Adm. Code.

**pH:**

Monitoring for pH is required in accordance with s. NR 214.18(4)(e), Wis. Adm. Code to prevent the leaching of metals out of the soil mixture. The pH of sludge and soil mixture shall be 6.5 or higher at the time that the sludge is spread.

**Nitrogen:**

Ch. NR 214, Wis. Adm. Code states that the maximum application rate of nitrogen shall be limited to the nitrogen needs of the crop or cover vegetation minus any other nitrogen, including fertilizer or manure, added to the landspreading site. This standard would then require monitoring for those forms of nitrogen that are readily available for plant uptake (i.e. organic nitrogen, ammonia-nitrogen and nitrate-nitrogen). Cascades Tissue has had detectable levels of Total Kjeldahl Nitrogen (TKN) and ammonia-nitrogen in their sludge from submitted monitoring results. Therefore, the Department recommends continuing monitoring from the previous permit. The maximum application rate of nitrogen shall not exceed 165 pounds of TKN per acre per year (this limit is based on the nitrogen uptake of the most common cover crop – field corn) minus any other nitrogen, including fertilizer or manure, added to the application site unless the Department specifies or accepts an alternate nitrogen loading amount for other cover crop nitrogen needs. Sample frequency has been increased in this reissuance to more accurately reflect the frequency of land application as well as to allow the permittee and farmers to have more accurate information on the nitrogen loading to the fields that are used for land application.

**Phosphorus:**

The Department recommends continued monitoring for total phosphorus and water extractable phosphorus. Monitoring for phosphorus will allow Cascades Tissue to track the nutrient needs of the cover crops at land application sites as specified in s. NR 214.18(4)(d), Wis. Adm. Code.

**Water Extractable Phosphorus:**

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.

**Potassium:**

The Department recommends continued monitoring for percent total recoverable potassium. Monitoring for potassium will allow Cascades Tissue to track the nutrient needs of the cover crops at land application sites as specified in s. NR 214.18(4)(d), Wis. Adm. Code. Sample frequency has been changed in this reissuance to reflect the frequency of land application more accurately and to align the samples with those taken for phosphorus.

**Chloride:**

Monitoring requirements for chloride are retained in the permit and the land application of chloride is limited to 340 pounds per acre per two-year period in accordance with s. NR 214.17(4)(d)7., Wis. Adm. Code. Due to previous underreporting, the variability in available data, and the biennial chloride loading rate the department has increased the sample frequency for this reissuance. This sampling frequency will also allow the permittee to align the samples for TKN, ammonia, and chloride.

**Metals:**

Ch. NR 214, Wis. Adm. Code specifies the maximum application rate of cadmium and the maximum cumulative loading rates of cadmium, copper, lead, nickel, and zinc. Sludges containing these metals must monitor cumulative loading to land application sites/fields. When comparing the metals concentration of Cascades Tissue's sludge to "high quality" concentrations in ch. NR 204, Wis. Adm. Code, these metals concentrations are well below the high quality concentration. Therefore, the Department recommends continued monitoring for cadmium, copper, lead, nickel, and zinc be retained with no limits.

**PCBs:**

The Department has determined that there were detectable levels of total PCBs in Cascades Tissue's sludge, however the average concentration of total PCBs is considerably less than the concentration of 10 mg/kg (DWB) for incorporation of sludge with PCBs. Therefore, the Department determined that the monitoring requirement for PCBs be retained in this reissuance.

**Dioxins and Furans:**

Monitoring requirements for 17 congeners of dioxins and furans will continue in order for the Department to make a more thorough evaluation of the potential toxicity of the sludge. Due to the presence of detectable levels of 2,3,7,8-TCDD and 2,3,7,8-TCDF in Cascades Tissue's sludge, continued monitoring requirements for dioxins and furans remain in the permit.

**Total Dioxin Equivalents Loading Limitation:**

The maximum concentration of 1.2 ng/kg TDE in the soil profile for agricultural sites is based on a human health risk assessment that was undertaken in 1992 by Jay Goldring, Ph.D., Toxicology of the Wisconsin Department of Health and Social Service's Division of Health. In a May 4, 1994 update of the risk assessment, Dr. Goldring established the maximum concentration of 0.5 ng/kg of total dioxin equivalence in the soil profile for sites with grazing livestock. The definitions of agricultural and livestock grazing sites were based on language in these risk assessments. Monitoring for Dioxin, 2,3,7,8-TCDD TE will allow Cascades Tissue to track TDE concentrations to agricultural and livestock grazing sites so that the above limits are exceeded. Therefore, monitoring for Dioxin 2,3,7,8-TCDD TE is retained in the permit.

The addition to the definition of soil profile for sites where livestock will graze, 2 centimeters below the litter soil interface when sludge or sludge mixed with ash are not incorporated, was taken from "Exposure Analysis for Dioxins, Dibenzofurans, and CoPlanar Polychlorinated Biphenyls in Sewage Sludge: Technical Background Document", October 17, 2003, Center for Environmental Analysis, RTI International.

The cumulative loading limit of 0.53 mg TDE per acre for silvicultural sites and the toxicity equivalency factors of 1 and 0.0013 for 2,3,7,8-TCDD and 2,3,7,8-TCDF are taken from a wildlife exposure case study performed by the Department and Nekoosa Paper Company in 1992 ("Establishing Safe Dioxin Criteria for Land Application of sludge (or Other Products): A Wildlife Exposure Case Study," Wisconsin Department of Natural Resources, October 1992). The definition of silvicultural sites was based on language in these studies. Monitoring for 2,3,7,8-TCDD and 2,3,7,8-TCDF will allow Cascades Tissue to calculate and track TDE loadings to silvicultural sites. Therefore, monitoring for 2,3,7,8-TCDD and 2,3,7,8-TCDF is retained in the permit.

The department has the regulatory authority to impose limits on the land application of sludges that contain bioaccumulative organics in s. NR 214.18(4)(i), Wis. Adm. Code.

**Other Metals and Priority Pollutants:**

Section NR 518.06, Wis. Adm. Code requires that industrial facilities that are seeking to land apply wastewater treatment system sludge to test their sludge for nutrients, salts, pH, metals, and the priority pollutants. The permit requires monitoring these parameters to allow, at a minimum, periodic reevaluation of their sludge characteristics. To characterize Cascades Tissue's sludge over time, the current permit requires a minimum of annual monitoring parameters. However, monitoring performed to date reveals that these parameters warrant no further monitoring beyond what was required in the

previous permit. This frequency will still allow the Department to reevaluate sludge characteristics for the next permit reissuance.

## 5 Schedules

### 5.1 Mercury Pollutant Minimization Program

As a condition of the variance to the water quality based effluent limitation(s) for mercury granted in accordance with s. NR 106.145(6), Wis. Adm. Code, the permittee shall perform the following actions.

Required Action	Due Date
<p><b>Annual Mercury Progress Reports:</b> Submit an annual mercury progress report related to the pollutant minimization activities for the previous year. The annual mercury progress report shall:</p> <p>Indicate which mercury pollutant minimization activities or activities outlined in the Pollutant Minimization Program Plan have been implemented and state which, if any, activities from the Pollutant Minimization Program Plan were not pursued and why;</p> <p>Include an assessment of whether each implemented pollutant minimization activity appears to be effective or ineffective at reducing pollutant discharge concentrations and identify actions planned for the upcoming year;</p> <p>Identification of barriers that have limited program effectiveness and adjustments to the program that will be implemented during the next year to help address these barriers;</p> <p>Include an analysis of trends in total effluent mercury concentrations based on mercury sampling; and</p> <p>Include an analysis of how influent and effluent mercury varies with time and with significant loading of mercury.</p> <p>The first annual mercury progress report is to be submitted by the Due Date.</p>	01/31/2024
<p><b>Annual Mercury Progress Report #2:</b> Submit a mercury progress report, related to the pollutant minimization activities for the previous year, as defined above.</p>	01/31/2025
<p><b>Annual Mercury Progress Report #3:</b> Submit a mercury progress report, related to the pollutant minimization activities for the previous year, as defined above.</p>	01/31/2026
<p><b>Annual Mercury Progress Report #4:</b> Submit a mercury progress report, related to the pollutant minimization activities for the previous year, as defined above.</p>	01/31/2027
<p><b>Final Mercury Report:</b> Submit a final report documenting the success in reducing mercury concentrations in the effluent, as well as the anticipated future reduction in mercury sources and mercury effluent concentrations.</p> <p>The report shall:</p> <p>Summarize mercury pollutant minimization activities that have been implemented during the current permit term and state which, if any, activities from the Pollutant Minimization Program Plan were not pursued and why;</p> <p>Include an assessment of which pollutant minimization activities appear to have been effective or ineffective. Evaluate any needed changes to the pollutant reduction strategy accordingly;</p> <p>Identification of barriers that have limited program effectiveness and adjustments to the program that will be implemented during the next variance term (if applicable) to help address these barriers;</p>	09/30/2027

<p>Include an analysis of trends in mercury concentrations based on sampling and data during the current permit term; and</p> <p>Include an analysis of how influent and effluent mercury varies with time and with significant loadings of mercury.</p> <p>If the permittee intends to reapply for a mercury variance per s. NR 106.145, Wis. Adm. Code, for the reissued permit, a detailed Pollutant Minimization Program Plan outlining the pollutant minimization activities proposed for the upcoming permit term shall be submitted along with the final report. An updated pollutant minimization plan shall:</p> <p>Include an explanation of why or how each pollutant minimization activity will result in reduced discharge of the target pollutant;</p> <p>Evaluate any new available information on pollutant sources, timing, and concentration to update the mass balance assumptions and expected sources of the pollutant, and</p> <p>Identify any information needs that would help to better determine pollutant sources and make plans to collect that information.</p>	
<p><b>Annual Mercury Reports After Permit Expiration:</b> In the event that this permit is not reissued by the date the permit expires, the permittee shall continue to submit annual mercury reports for the previous year following the due date of Annual Mercury Progress Reports listed above. Annual Mercury Progress reports shall include the information as defined above.</p>	

## 5.2 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
<b>Land Application Management Plan:</b> Submit an update to the management plan to optimize the land application system performance and demonstrate compliance with Wisconsin Administrative Code NR 214.	11/01/2023

## 5.3 Chlorine Limits Compliance Schedule

This compliance schedule requires the permittee to achieve compliance by the specified date.

Required Action	Due Date
<b>Plans and Specifications:</b> Submit plans and specifications for treatment plant modifications.	08/01/2024
<b>Construction:</b> Complete construction and begin providing dechlorination	08/01/2025

## 5.4 PFOS/PFOA Minimization Plan Determination of Need

Reports on effluent PFOS and PFAS concentrations are needed in order to determine the need for future monitoring or limits for PFOS/PFOA.

Required Action	Due Date
<p><b>Report on Effluent Discharge:</b> 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>	08/01/2024
<p><b>Report on Effluent Discharge and Evaluation of Need:</b> 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>	08/01/2025

## 5.5 Water Intake Structure BTA Schedule

This schedule requires the permittee to achieve compliance by the specified date.

Required Action	Due Date
<p><b>Plans and Specifications:</b> Submit plans and specifications to the department for review in order to determine if proposed changes meet the BTA requirements.</p>	08/01/2024
<p><b>Construction:</b> If construction was deemed necessary in order to comply with the BTA determination, complete construction. This is also the date when compliance with the BTA standards must start being met.</p>	02/01/2026

## 5.6 PFOS Minimization Plan

This compliance schedule requires the permittee to achieve compliance by the Due Date.

Required Action	Due Date
<p><b>Submit Progress Report #1:</b> Submit an annual progress report. The annual progress report shall:</p> <p>Indicate which source reduction measures or activities in the approved PFOS minimization plan have been implemented;</p> <p>Identify which suspected sources have been monitored;</p> <p>Include an analysis of trends in weekly, monthly and annual average PFOS concentrations; and</p> <p>Include an analysis of how influent and effluent concentrations vary with time and with significant loadings of PFAS such as loads from industries or other sources into the collection system.</p>	06/30/2027
<p><b>Submit Progress Report #2 and Re-evaluation:</b> Submit a progress report on the success in the implementation of the PFAS minimization plan. The report shall include a summary of all actions taken and analysis of trends in weekly, monthly, and annual average PFOS effluent concentrations.</p> <p>If initial PMP actions were not successful enough to result in PFOS reductions below the values in s. NR 102.04(8)(d)1., Wis. Adm. Code, the permittee shall submit an updated PMP with the permit application for reissuance. Based on facility and PMP specifics the permittee may be allowed up to 53 additional months after the permit expiration date to implement additional PMP actions before being required to install PFAS treatment technologies. This schedule may be modified to adjust compliance schedule dates to incorporate any changes in minimization plan goals and actions or as new information is made available to the department.</p>	01/31/2028
<p><b>Submit Progress Report #3:</b> Submit the PFOS minimization progress report as defined above.</p>	06/30/2029
<p><b>Submit Progress Report #4:</b> Submit the PFOS minimization progress report as defined above.</p>	06/30/2030
<p><b>Submit Progress Report #5:</b> Submit the PFOS minimization progress report as defined above.</p>	06/30/2031
<p><b>Submit Progress Report #6:</b> Submit the PFOS minimization progress report as defined above.</p>	06/30/2032
<p><b>Submit Final Progress Report and Re-evaluation:</b> Submit a progress report on the success in the implementation of the PFOS minimization plan. The report shall include a summary of all actions taken and analysis of trends in weekly, monthly, and annual average PFOS effluent concentrations.</p> <p>If initial PMP actions were not successful enough to result in PFOS reductions below the values in s. NR 102.04(8)(d)1., Wis. Adm. Code, the permittee shall be required to install PFAS treatment technologies to meet the calculated WQBELs.</p>	12/31/2032
<p><b>Submit Preliminary Engineering Report:</b> The permittee shall submit a report outlining the various options for compliance with the applicable PFOS WQBELs to the Department for review.</p>	12/31/2033
<p><b>Plan and Specification Submittal:</b> The permittee shall submit final construction plans and specifications to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with the applicable PFOS WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below.</p>	12/31/2034
<p><b>Treatment Plant Upgrade to Meet Limitations:</b> The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of final constructions plans and schedule from the Department pursuant to s. 281.41, Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. Upon approval of the final construction</p>	12/31/2035

plans/specifications and schedule by the Department, the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	
<b>Complete Construction:</b> The permittee shall complete construction of the wastewater treatment plant upgrades.	12/31/2036
<b>Achieve Compliance:</b> The permittee shall achieve compliance with the PFOS water quality-based effluent limit of 8 ng/L as a monthly average.	01/31/2037

## 5.7 Explanation of Schedules

### Mercury Pollutant Minimization Program:

An AMEL of 12 ng/L daily maximum for total recoverable mercury is included in this permit. To receive and retain an AMEL for mercury, the permittee must implement a pollutant minimization program (PMP) plan and make annual reports on the progress of implementing the plan pursuant to s. NR 106.145 (7), Wis. Adm. Code. This will be the third reissuance of Cascades Tissue Group Wisconsin Inc’s permit that includes a mercury variance and as such the permittee must continue to demonstrate that actions are being taken to minimize the amount of mercury in their effluent. The Schedules section of the permit specifies the due dates for the annual PMP progress reports.

### Land Application Management Plan:

For each permit reissuance, the permittee is required to update their land application management plan to demonstrate compliance with the conditions in the reissued permit and ch. NR 214, Wis. Adm. Code. The amended land management plan shall be submitted to the department for approval by 07/01/2023.

### Chlorine Limits Compliance Schedule:

A WQBEL for chlorine was added in this permit reissuance due to available monitoring data showing detectable chlorine concentrations in the facility’s effluent. A compliance schedule has therefore been added to ensure that the facility will have adequate time to comply with the new limit.

### 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. Influent or in-plant sampling for PFAS may be necessary if the permittee is required to develop and implement a PFOS and/or PFOA minimization plan.

### Water Intake Structure BTA Schedule:

As part of complying with the BPJ determination for the water intake structure BTA the permittee must modify their water intake structure in a way that fulfills the criteria mentioned in section 1.1.2.

### PFOS Minimization Plan:

The department has made the determination that this facility has reasonable potential to cause or contribute to an exceedance of the PFOS standard in s. NR 102.04(8)(d)1., Wis. Adm. Code, based on the reasonable potential procedures and data collected under s. NR 106.98, Wis. Adm. Code. Pursuant to s. NR 106.985(1), Wis. Adm. Code, the department notified the permittee on 9/4/2025 of the requirement to develop a PFOS Minimization Plan that satisfies the requirements in s. NR 106.99, Wis. Adm. Code. The permittee submitted a minimization plan on 12/19/2025; this plan was approved by the department on 03/02/2026.

The permittee is allowed up to 85 months to implement the minimization plan as outlined above. This schedule may be modified as more data is collected and the success of the proposed minimization plan is further evaluated. The permittee is required to submit annual progress reports every year, with a third progress report required to be submitted with the permit application. If necessary, a final progress report is required at the end of the next permit term.

If the minimization plan actions have not been successful enough to no longer have reasonable potential to cause or contribute to an exceedance of the applicable PFOS standards, then the permittee will be required to install a treatment system or otherwise take steps necessary to come into compliance with the applicable standard(s) by the final Due Date.

## Attachments:

Attachment #1: Categorical Limits Evaluation

Attachment #2: Water Quality Based Effluent Limits

PFOS and PFOA Water Quality-Based Effluent Limitations for the Cascades Tissue Group Wisconsin Inc WPDES Permit No. WI-0003077 in Eau Claire County, by Amy Garbe, PE, Wastewater Engineer, dated September 4, 2025

PFOS Pollutant Minimization Plan, dated 12/19/2025

Approval of PFOS Minimization Plan letter, by Nate Willis, PE, Wastewater Section Manager, dated 03/02/2026

## Proposed Expiration Date:

June 31, 2028

## Justification Of Any Waivers from Permit Application Requirements

No waivers were requested.

Prepared By:



Sawyer Hanson, Wastewater Engineer

Date: 7/19/2023

Revised By: Sarah Donoughe, Wastewater Specialist-Adv

Date: April 10, 2026

DATE: September 4, 2025

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the Cascades Tissue Group Wisconsin Inc WPDES Permit No. WI-0003077 in Eau Claire County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for Cascades Tissue Group Wisconsin Inc. This industrial facility discharges to the Chippewa River, located in the Muddy and Elk Creeks Watershed in the Lower Chippewa Basin.

The current permit, effective since August 2023, has monitoring only for PFOS and PFOA for Outfall 001. 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: Chippewa River
- Classification: Warm water sport fish community, non-public water supply.
- Flow: The following 7-Q10 and 7-Q2 values are from USGS for Station 05365500 (Chippewa River at Chippewa Falls) using gauge data from 1969 to 2022. The Harmonic Mean has been estimated as recommended in State of Wisconsin Water Quality Rules Implementation Plan (Publ. WT-511-98)
  - 7-Q10 = 830 cfs (cubic feet per second)
  - 7-Q2 = 1486 cfs
  - 90-Q10 = 1263 cfs (est. as 85% of 7-Q2)
  - Harmonic Mean Flow = 2849 cfs using data from 2000 to 2022
- % of Flow used to calculate limits: 25%
- Background Receiving Water/Source Water Data: Cascade Tissue sampled their intake (Sample Point 701) from the Chippewa River in addition to Outfall 001 for both PFOS and PFOA. The following table lists the statistics for the intake water PFOS and PFOA levels from August 2023 through July 2025.

	PFOS ng/L	PFOA ng/L
1-day P <sub>99</sub>	1.08	11.36
4-day P <sub>99</sub>	1.04	6.14
30-day P <sub>99</sub>	0.70	3.09
Mean*	0.55	1.85
Std	0.14	2.39
Sample Size	24	24
Range	<0.14-0.97	0.89-13

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



**Effluent Information**

- Flow rate(s): Outfall 001  
 Annual average = 0.89 MGD (Million Gallons per Day)  
 Peak daily = 1.95 MGD  
 Peak weekly = 1.48 MGD  
 Peak monthly = 1.32 MGD  
 For reference, the actual average flow from August 2023 through July 2025 was 0.82 MGD.
- Water source: Municipal supply from the City of Eau Claire (~40%) and intake from the Chippewa River (~60%)
- Effluent characterization: This facility is categorized as a primary industrial discharge

The following table lists the statistics for effluent PFOS and PFOA levels for Outfall 001 from April 2021 and August 2023 through July 2025.

	PFOS ng/L	PFOA ng/L
1-day P <sub>99</sub>	43.75	109.92
4-day P <sub>99</sub>	26.32	70.89
30-day P <sub>99</sub>	16.95	51.05
Mean*	12.8	41.6
Std	8.59	20.4
Sample Size	26	26
Range	<0.37-36	14-86

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

**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 = 95 ng/L for the Chippewa River

Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 315 cfs

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

Wis. Adm. Code = 1.85 ng/L  
Qe = effluent flow rate = 0.89 MGD = 1.38 cfs  
f = the fraction of effluent withdrawn from the receiving water = 0.6

After substituting the appropriate variables, the calculated PFOA limit is 21,397 ng/L.

**Reasonable Potential Determination**

In accordance with s. NR 106.98(4)(a), Wis. Adm. Code, **the discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS** because the 30-day P<sub>99</sub> of reported effluent PFOS data is greater than the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is required for Outfall 001.**

**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<sub>99</sub> of reported effluent PFOA data is less than the calculated WQBEL (21,397 ng/L). Therefore, **a WQBEL is not required.**

**Conclusions**

The following is a summary of limits recommended by this evaluation:

- Monthly average PFOS limit of 8 ng/L

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:

  
Amy Garbe, P.E., Wastewater Engineer

date:

9/4/25

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

Attachment 1 – PFOS P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -				
=	=	=	=	=
SUBSTANCE:				Data Summary
NUMBER OF VALUES:	-----			
TOTAL	26			Apr-21 3.31
DETECTED	25			Aug-23 6.4
NON-DETECTED	1			Sep-23 0.53
d	0.038462			Oct-23 21
m	13.2736			Oct-23 13
mean of all data	12.76308			Nov-23 12
s	8.592064			Dec-23 8.3
				Jan-24 30
n	-----	-----	-----	Feb-24 8.5
	1	4	30	Mar-24 36
d^n	0.038462	2.19E-06	3.55E-43	Apr-24 24
p	0.9896	0.99	0.99	May-24 21
Z_p	2.312034	2.326785	2.326785	Jun-24 8
				Jul-24 12
1+(s/m)^2	1.419003	1.419003	1.419003	Aug-24 20
(sigma_d)^2	0.349955	0.349955	0.349955	Sep-24 22
mu_d	2.4108	2.4108	2.4108	Oct-24 9.2
				Nov-24 7.9
(sigma_dn)^2	0.349955	0.11238	0.015734	Dec-24 9
mu_dn	2.4108	2.490368	2.538689	Jan-25 12
				Feb-25 6.5
P_99 exponent	3.778529	3.270381	2.830553	Mar-25 17
				Apr-25 12
P_99	-----	-----	-----	May-25 5
	43.75	26.32	16.95	Jun-25 <0.37
	-----	-----	-----	Jul-25 7.2

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -				
=	=	=	=	=
SUBSTANCE:				Data Summary
NUMBER OF VALUES:				
TOTAL	26			Apr-21 22
DETECTED	26			Aug-23 26
NON-DETECTED	0			Sep-23 26
d	0			Oct-23 29
m	41.65385			Oct-23 36
mean of all data	41.65385			Nov-23 45
s	20.37438			Dec-23 14
n	1	4	30	Jan-24 45
d^n	0	0	0	Feb-24 24
p	0.99	0.99	0.99	Mar-24 91
Z_p	2.326785	2.326785	2.326785	Apr-24 37
1+(s/m)^2	1.239254	1.239254	1.239254	May-24 72
(sigma_d)^2	0.214509	0.214509	0.214509	Jun-24 26
mu_d	3.622139	3.622139	3.622139	Jul-24 28
(sigma_dn)^2	0.214509	0.058093	0.007943	Aug-24 36
mu_dn	3.622139	3.700347	3.725422	Sep-24 53
P_99 exponent	4.699793	4.26116	3.9328	Oct-24 86
P_99	109.92	70.89	51.05	Nov-24 45
				Dec-24 49
				Jan-25 62
				Feb-25 28
				Mar-25 74
				Apr-25 44
				May-25 25
				Jun-25 32
				Jul-25 28



# PFOS Minimization Plan

**Cascades Tissue Group – Wisconsin,  
Permit # WI-0003077-10-0**

December 2025

**Prepared For:**

Cascades Tissue Group - Wisconsin  
1200 Forest Street  
Eau Claire, Wisconsin 54701

**Prepared By:**

TRC  
999 Fourier Dr., Suite 101  
Madison, Wisconsin 53717

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>1</b>
<b>2.0</b>	<b>BACKGROUND</b> .....	<b>2</b>
<b>2.1</b>	WDNR PFAS Minimization Plan Guidance .....	<b>2</b>
<b>2.2</b>	Plan Objectives and Development .....	<b>2</b>
<b>3.0</b>	<b>FACILITY INFORMATION</b> .....	<b>4</b>
<b>3.1</b>	Facility Operations .....	<b>4</b>
<b>3.1.1</b>	Past Industrial Operations .....	<b>4</b>
<b>3.2</b>	Wastewater Treatment Process .....	<b>4</b>
<b>4.0</b>	<b>ACTIVITIES AND EVALUATION COMPLETED TO DATE</b> .....	<b>6</b>
<b>4.1</b>	Results from Previous Sampling .....	<b>6</b>
<b>4.2</b>	Source Identification .....	<b>6</b>
<b>4.3</b>	Source Reduction Activities Already Implemented .....	<b>6</b>
<b>5.0</b>	<b>PFOS MINIMIZATION PLAN IMPLEMENTATION GENERAL APPROACH AND TIMELINE</b> .....	<b>7</b>
<b>5.1</b>	Year 1 .....	<b>7</b>
<b>5.2</b>	Year 2 .....	<b>8</b>
<b>5.3</b>	Subsequent Years .....	<b>8</b>
<b>5.4</b>	Annual Reporting .....	<b>8</b>
<b>6.0</b>	<b>REFERENCES</b> .....	<b>10</b>

## APPENDICES

- Appendix A: Wastewater Treatment Process Flow Diagrams
- Appendix B: Final PFOA/PFOS Effluent Discharge Report dated August 1, 2025
- Appendix C: Wisconsin Department of Natural Resources PFOA-PFOS Effluent Discharge Report Approval Letter and Memo dated September 4, 2025
- Appendix D: WDNR PMP Guidance, Appendix F – PFOS and PFOA Minimization Plan Annual Report Checklist

## 1.0 Introduction

Cascades Tissue Group (Cascades) operates a paper mill located at 1200 Forest Street in Eau Claire, Wisconsin.

Effluent from the facility is discharged into the Chippewa River in accordance with the current Wisconsin Pollutant Discharge Elimination System (WPDES) permit # WI-0003077-10-0, effective August 1, 2023. Pursuant to the current permit, Cascades conducted monthly effluent sampling for two per- and polyfluoroalkyl substances (PFAS), perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), for 24 months. Cascades completed 24 months of sampling between August 2023 and July 2025. Results from the 24 months of sampling were provided to the Wisconsin Department of Natural Resources (WDNR) in the Final PFOA/PFOS Effluent Discharge Report dated August 1, 2025.

Following review of the Final PFOA/PFOS Effluent Discharge Report, the WDNR issued a letter on September 4, 2025 requiring the submittal of an initial PFOS minimization plan. This PFOS Minimization Plan (PMP) has been developed in response to the WDNR's requirement and is intended to be consistent with the WDNR guidance document on PFOS and PFOA Minimization Plans (WDNR, 2024). This plan has been developed to target only PFOS, as only PFOS was identified by WDNR as having reasonable potential to be discharged above the applicable standard in NR 102.04(8)(9d), Wis. Adm. Code.







The mill and wastewater treatment plant were operating under normal conditions during the time period reviewed. It is estimated that 75% of the effluent flow discharged to surface water is from river water influent sources, with approximately 25% from city water influent sources. Captured stormwater may contribute a small amount to the effluent flows on an intermittent basis.

Sanitary wastewater is sent to the Eau Claire POTW for treatment and is not reflected in the values above.

## **4.0 Activities and Evaluation Completed to Date**

### **4.1 Results from Previous Sampling**

Cascades completed 24 months of sampling between August 2023 and July 2025. Results from the 24 months of sampling were described in the Final PFOA/PFOS Effluent Discharge Report dated August 1, 2025. The report is included as Appendix B. The Wisconsin Department of Natural Resources (WDNR) issued an Approval letter and Technical Memo dated September 4, 2025. This letter and memo are included in Appendix C.

In summary, all of the sampling results for PFOA and the 30-day P99 value calculated by the WDNR of 51.05 ng/L were below the narrative standard of 95 ng/L. PFOS levels averaged 15 ng/l for samples analyzed by EPA Method 537, 11 ng/L for samples analyzed by EPA Method 1633, and the 30-day P99 value calculated by the WDNR was 16.95 ng/L, all of which exceeded the narrative PFOS standard of 8 ng/L. As such, this PMP has been developed to reduce the level of PFOS in the effluent discharged from the plant.

### **4.2 Source Identification**

Evaluation of potential historical contamination or usage of materials that may contain PFOS or its precursors is proposed as part of this plan.

### **4.3 Source Reduction Activities Already Implemented**

No source reduction activities have been implemented to date. Source reduction activities will be developed when sources are identified.

## 5.0 PFOS Minimization Plan Implementation General Approach and Timeline

Consistent with WDNR guidance, Cascades is developing and implementing its PMP in a phased, stepwise approach. Implementation of a PFAS Minimization Plan may take up to seven years. However, the length of time a facility will be allowed to implement the minimization plan will be site-specific and re-evaluated at permit reissuance and whenever updates are made to the minimization plan.

An annual report will be prepared each year, which will summarize the actions taken (including monitoring results, and reduction efforts) and will include proposed activities for the following year.

The proposed approach for this PMP involves focusing initially on source identification. Depending on results of the source identification efforts, source reduction activities may be implemented.

### 5.1 Year 1

The focus for the first year is source identification and inventorying. During this time, Cascades will:

- continue monthly monitoring of influent (from river and municipal sources) and effluent for PFOS;
- review current raw materials, including pulp feedstocks and chemical additives, and review associated SDS, product specifications, and supplier agreements related to PFOS use in these materials;
- assess for potential PFOS-containing products (i.e., chemical additives, etc.) in the facility's purchasing review and approval process; and
- evaluate, to the extent possible, potential historical uses of raw materials that may have contained PFOS and other potential historical sources of PFOS contamination, such as AFFF use;

Additional details about these proposed activities are provided below.

#### Source Water and Effluent Monitoring

Monthly sampling will be performed for the influent (from river and municipal sources) and the effluent. Samples will be analyzed for PFOS.

#### Raw Material Review and Screening

The raw material review will include a review of all raw materials that have the potential to impact wastewater discharges from the site, including AFFF. Cascades will determine if any of its firefighting or fire suppression equipment has the potential to contain AFFF and if so, whether the system has the potential to contain PFOS or its precursors. If it has a Class B firefighting foam





## 6.0 References

Wisconsin Department of Natural Resources (WDNR) Bureau of Water Quality, Wastewater Policy and Management Team. 2024. *PFOS and PFOA Minimization Plans*. EGAD Number: 3400-2024-07. October 22.

Wisconsin Pollutant Discharge Elimination System (WPDES) permit # WI-0003077-10-0, effective August 1, 2023.



03/02/2026

Robert Decker, Resident Manager  
Cascades Tissue Group Wisconsin Inc  
1200 Forest St  
Eau Claire, WI 54703

Subject: Approval of PFOS Minimization Plan

Dear Robert Decker:

The Wisconsin Department of Natural Resources (hereafter department) is conditionally approving the PFOS minimization plan (PMP) for the Cascades Tissue Group Wisconsin Inc.'s (Cascades) facility in Eau Claire, Wisconsin, received for approval on 12/19/2025.

Cascades does not intentionally add or use PFOS or other PFAS compounds in the operating, manufacturing, or treatment processes at the facility, but two years of effluent sampling data shows reasonable potential to exceed the calculated water quality-based effluent limit for PFOS (8 ng/L). This facility estimates that it sources 75% of its effluent flow from the Chippewa River and approximately 25% of its effluent flow from city water, with occasional inputs from stormwater.

In addition to the monthly ongoing effluent PFOS monitoring, Cascades is proposing to take intake samples. This data will provide a baseline for determining and/or confirming additional possible PFOS inputs. Cascades is also proposing to review current raw materials used, assess for PFOS-containing products in the purchasing review and approval process, and evaluate potential historical uses of raw materials that may have contained PFOS and other potential historical sources of PFOS contamination. Based on the discoveries from these efforts, Cascades anticipates modifying this plan over time to both identify and address potential sources of PFOS.

The PMP is hereby approved in accordance with s. 283.31, Wis. Stats. and s. NR 106.985(2)(a), Wis. Adm. Code, subject to the following conditions:

1. That if modifications to the approved PMP are necessary, a revised PMP shall be submitted to the department for its approval prior to commencement of the modifications.
2. That the PMP be followed in accordance with the requirements of WPDES Permit No. WI-0003077-10-0 and subsequent approved modifications to the PMP and the permit.

Per s. NR 106.985(2)(b), Wis. Adm. Code, the department will modify Cascades's WPDES permit to include the PFOS minimization plan, and other related terms and conditions, including annual progress reporting requirements and a schedule of compliance to meet applicable water quality based effluent limitations. As part of the modification, the approved PMP will be available for public comment as part of the public noticed package.

This conditional approval is not to be construed as a department determination on the issuance of a WPDES permit or an opinion as to the ability of the proposed PMP to comply with effluent limitations in such a permit. Also, this letter is not to be construed as an approval for activities requiring approval under other Wisconsin administrative codes or statutes or by other federal, state or local agencies.

If you believe you have a right to challenge this decision, the Wisconsin statutes and administrative codes establish time periods 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. The filing of a request for a contested case hearing is not prerequisite for judicial review.

Please contact Nate Willis by phone (608) 535-2369 or email: [nathaniel.willis@wisconsin.gov](mailto:nathaniel.willis@wisconsin.gov) if you have any questions regarding this letter.



Digitally signed by Nate Willis, P.E.  
Date: 2026.03.02 10:03:43 -06'00'

Nate Willis, P.E.  
Wastewater Section Manager  
Bureau of Water Quality

e-cc: Taylor Wilson - Cascades  
Geisa Bittencourt – DNR  
Sarah Donoughe – DNR  
Wale Adesanwo – DNR  
Amy Garbe – DNR