Permit Fact Sheet

General Information

Permit Number:	WI-0037702-11-0
Permittee Name:	Pickles Manufacturing LLC
Address:	857 School Place
City/State/Zip:	Green Bay WI 54303
Discharge Location:	857-897 School Place, Green Bay, WI (Brown County)
Receiving Water:	Fox River via storm sewer
Stream Flow ($Q_{7,10}$):	660 cfs
Stream Classification:	Warm water sport fish community, non-public water supply

Facility Description

This facility produces fresh pickles, process pickles, and sweet relish. The facility operates year-round, although the busiest months are during the fresh-pack season, July through September, as a fresh harvested cucumber stock is received. Leading up to the fresh-pack season, production starts to ramp up in April – June and tapers off after October. During the fresh-pack season, the facility operates two nine-hour production shifts, followed by a sanitation shift. This production period also produces the greatest volume of cooling water and process wastewater discharges. During the non-fresh-pack season, the facility operates two eight-hour production shifts, followed by a sanitation shift. From June through September, fresh cucumbers are received at the facility and either processed as fresh pickles or transferred into fermentation tanks for subsequent processing throughout the remainder of the year. Specific processes involved in pickle production which generate wastewater include: washing raw product, brine preparation, desalting process pickles, container filling, pasteurization, and plant sanitation. Cooling water (contact and non-contact) is discharged to the municipal storm sewer system, while all other wastewaters generated are discharged to the sanitary sewer for treatment at NEW Water. Pasteurizers at the facility do not use any chemical additives as part of normal operation. The pasteurizers are cleaned with a clean-in-place system on a regular basis. Frequency of cleaning varies from daily to weekly, depending on the volume of production through each pasteurizer. Chemical cleaning agents are used during the pasteurizer cleaning process, but all the cleaning water, including any chemical cleaning agents, is discharged to the sanitary sewer.

Substantial Compliance Determination

Enforcement During Last Permit: During the last permit term, there have been several minor violations of effluent limits for Biochemical Oxygen Demand, BOD. However, the facility has taken the necessary steps to correct their actions and nothing further is required. The facility has completed all previously required actions as part of the enforcement process.

After a desk top review of all discharge monitoring reports, compliance schedule items, and a site visit on 02/01/2023, Pickles Manufacturing 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)**
001	Annual Avg = 0.683 MGD (7/1/2019 – 1/31/2024)	Effluent: Contact cooling, non-contact cooling and pasteurization water. 24-Hr composite sampler located at the discharge of the cooling water collection tank, prior to the storm sewer. Total residual chlorine monitoring only may be sampled in the storm sewer prior to discharge to the Fox River and shall not occur during major rain events.

1 Surface Water - Monitoring and Limitations

Sample Point Number: 001- COOLING WATER SAMPLE TANK

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Daily Max	20 mg/L	Monthly	24-Hr Comp	
BOD5, Total	Monthly Avg	10 mg/L	Monthly	24-Hr Comp	
pH Field	Daily Max	9.0 su	Monthly	Grab	
pH Field	Daily Min	6.0 su	Monthly	Grab	
Chlorine, Total Residual	Daily Max	38 ug/L	Monthly	Grab	
Chlorine, Total Residual	Monthly Avg	38 ug/L	Monthly	Grab	
Temperature	Daily Max	120 deg F	Monthly	Grab	
Suspended Solids, Total		mg/L	Monthly	24-Hr Comp	Monitoring in 2028.
Copper, Total Recoverable		ug/L	Monthly	24-Hr Comp	Monitoring in 2028.
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Comp	Monitoring in 2028.
Phosphorus, Total		mg/L	Monthly	24-Hr Comp	
PFOS		ng/L	Monthly	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need schedule.
PFOA		ng/L	Monthly	Grab	Monitoring only. See

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					PFOS/PFOA Minimization Plan Determination of Need schedule.

Changes from Previous Permit

Total Suspended Solids: Monthly monitoring in 2028 has been added to the permit.

Nitrogen, Ammonia (NH3-N) Total: Monthly monitoring in 2028 has been added to the permit.

Total Phosphorus: Monthly monitoring has been added to the permit.

PFOS and PFOA – Monthly monitoring is included in the permit in accordance with s. NR 106.98(2)(d), Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Refer to the WQBEL memo for the detailed calculations, prepared by the Water Quality Bureau prepared by Michael Polkinghorn dated March 29, 2024, used for this reissuance.

Total Suspended Solids: The previous permit did not require monitoring for Outfall 001, but one non-detectable sample of <2.2 mg/L (10/03/2023) was provided in the permit application. The previous limit evaluation (April 2019) stated TSS sampling during January 2019 were below quantifiable levels and similar nondetectable values from historic monitoring. This limited dataset implies Outfall 001 is likely not a source of TSS so the need for a TSS WLA or WQT is not required at this time. Monthly monitoring for 1 year is recommended during the reissued permit term to better determine if Outfall 001 is a TSS source.

Nitrogen, Ammonia (NH3-N) Total: Based on the effluent data, there is no reasonable potential for the discharge to exceed the most stringent ammonia nitrogen limits that would be calculated. Therefore, ammonia nitrogen limits are not recommended during the reissued permit term. The sample result of 1.5 mg/L (10/24/2023) is somewhat high for a cooling water discharge with no apparent sources of nutrients. A review of historic effluent ammonia nitrogen data (n = 4, January 2019) for Outfall 001 from the previous limit evaluation (April 2019) were nondetectable at <0.23 mg/L. This would indicate the 1.5 mg/L is most likely unrepresentative of the discharge but continued discharge at this level would most likely result in reasonable potential for daily maximum limits in the future. Therefore, monthly ammonia nitrogen monitoring for 1 year is recommended during the reissued permit term to determine the need for ammonia nitrogen limits at the next permit reissuance.

Total Phosphorus: The previous permit did not require monitoring for Outfall 001 but data is available from the permit application (October 2023 – December 2023). Eight of the samples were nondetectable at <0.03 mg/L and the other two samples were 0.03 and 1.1 mg/L. Historic sampling (n = 6, January 2019) were all nondetectable at <0.07 mg/L. This limited dataset implies Outfall 001 is likely not a source of phosphorus so the need for a phosphorus WLA or WQT is not required at this time. Monthly phosphorus monitoring is recommended to better determine the need for the technology-based limit so the dataset will also provide better information to determine if Outfall 001 is a phosphorus source.

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 source water has known levels of PFOS/PFOA.

Monitoring Frequency: The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

The Department has been revisiting the sampling frequencies at every facility to evaluate whether current frequencies are appropriate of if an increase is warranted. The frequencies for pH and phosphorus were increased to align Princeton with other facilities of similar size to ensure fairness and in consideration of department guidance of sample frequencies.

Requirements in administrative code (NR 108, 205, 210 and 214 Wis. Adm. Code) and Section 283.55, Wis. Stats., were considered, where applicable, when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. The department has determined at this time that the aforementioned changes in monitoring frequency are warranted based on the size and type of the facility.

2 Schedules

2.1 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.	09/30/2025
Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results. The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan. If the Department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for Department approval no later than 90 days after written notification was sent from the Department. The Department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued. If, however, the Department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.	09/30/2026

2.2 Disinfection Certification

Required Action	Due Date
Wastewater Operator Certification for Disinfection: The permittee shall have at least one person obtain certification for the Disinfection Subclass by the due date.	09/30/2025

Explanation of Schedules

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.

Attachments:

Water Quality-Based Effluent Limitations – 03/09/2024

Expiration Date:

September 30, 2029

Justification Of Any Waivers From Permit Application Requirements

No waivers from permit application requirements granted.

Prepared By: Sarah Adkins, Wastewater Specialist

Date: July 11, 2024

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: March 29, 2024

TO: To be determined

FROM: Michael Polkinghorn – NOR/Rhinelander Service Center Michael Polkinghorn

SUBJECT: Water Quality-Based Effluent Limitations for Pickles Manufacturing LLC
WPDES Permit No. WI-0037702-11-0

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from Pickles Manufacturing LLC in Brown County. This secondary industrial facility discharges to the Fox River, located in the East River Watershed in the Lower Fox River Basin. This discharge located within the Lower Fox River Basin (LFRB) Total Maximum Daily Load (TMDL) as approved by EPA on May 18, 2012. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

Parameter	Daily Maximum	Daily Minimum	Monthly Average	Footnotes
Flow Rate				1
BOD_5	20 mg/L		10 mg/L	1
pH	9.0 s.u.	6.0 s.u.		1
Chlorine (Total Residual)	38 µg/L		**38 µg/L**	1, 2
Temperature	120 °F			1
TSS				3
Copper (Total Recoverable)				3
Ammonia Nitrogen				3
Phosphorus				4
PFOS and PFOA				5

Footnotes:

1. No changes from the current permit.
2. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
3. Monthly monitoring for 1 year is recommended during the reissued permit term.
4. Monthly monitoring is recommended during the reissued permit term.
5. Monthly monitoring is required in accordance with s. NR 106.98(2), Wis. Adm. Code.

No WET testing is required because information related to the discharge indicates low to no risk for toxicity. The recommended limits meet the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, and additional limits are not required.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Michael Polkinghorn at (715) 360-3379 or Michael.Polkinghorn@wisconsin.gov and Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (2) – Narrative & discharge area map.

PREPARED BY: Michael A. Polkinghorn – Water Resources Engineer

E-cc: Laura Gerold, Wastewater Engineer – NER/Green Bay Service Center
Heidi Schmitt-Marquez, Regional Wastewater Supervisor – NER/Green Bay Service Center
Diane Figiel, Water Resources Engineer – WY/3
Nathaniel Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Pickles Manufacturing LLC

WPDES Permit No. WI-0037702-11-0

Prepared by: Michael A. Polkinghorn

PART 1 – BACKGROUND INFORMATION

Facility Description

This facility produces fresh pickles, process pickles, and sweet relish. The facility operates year-round, although the busiest months are during the fresh-pack season, July through September, as fresh harvested cucumber stock is received. Leading up to the fresh-pack season, production increases in April – June and decreases after October. During the fresh-pack season, the facility operates two nine-hour production shifts, followed by a sanitation shift. This production period also produces the greatest volume of cooling water and process wastewater discharges. During the non-fresh-pack season, the facility operates two eight-hour production shifts, followed by a sanitation shift. From June through September, fresh cucumbers are received at the facility and either processed as fresh pickles or transferred into fermentation tanks for subsequent processing throughout the remainder of the year. Specific processes involved in pickle production which generate wastewater include: washing raw product, brine preparation, desalting process pickles, container filling, pasteurization, and plant sanitation.

Contact cooling, noncontact cooling, and pasteurization wastewaters are discharged on a noncontinuous basis via Outfall 001 to the west bank of the Fox River, through approx. 3,000 ft of storm sewer just outside of the operation building along School Place Rd. All other wastewaters generated are discharged to the sanitary sewer for treatment at NEW Water. Pasteurizers at the facility do not use any chemical additives as part of normal operation except for dechlorination. The pasteurizers are cleaned with a clean-in-place system on a regular basis. Frequency of cleaning varies from daily to weekly, depending on the volume of production through each pasteurizer. Chemical cleaning agents are used during the pasteurizer cleaning process, but all the cleaning water, including any chemical cleaning agents, is discharged to the sanitary sewer.

Attachment #2 is a discharge area map of Outfall 001.

Existing Permit Limitations

The current permit, expiring on 06/30/2024, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Monthly Average	Footnotes
Flow Rate				1
BOD_5	20 mg/L		10 mg/L	2
pH	9.0 s.u.	6.0 s.u.		2
Residual Chlorine	38 µg/L		**38 µg/L**	3
Temperature	120 ºF			

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Monthly Average	Footnotes
Copper (Total Recoverable)				1

Footnotes:

1. Monitoring only.
2. These are best professional judgment-based limits as described in subch. 3 of ch. NR 220, Wis. Adm. Code, and given to industrial discharges.
3. The bolded monthly average limit complies with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes.

Receiving Water Information

- Name: Fox River
- Waterbody Identification Code (WBIC): 117900
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply. Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS Station 040851385 (Fox River at Oil Tank Depot in Green Bay, WI), approx. 1.2 mi downstream of where the discharge meets the Fox River:
  7-Q_{10} = 660 cubic feet per second (cfs)
  7-Q_2 = 1,400 cfs
  Harmonic Mean Flow = 2,052 cfs using a drainage area of 6,330 mi^2
  The Harmonic Mean has been estimated based on average flow and the 7-Q_{10} using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

Monthly Low-Flows

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7-Q_{10} (cfs)	2,481	1,911	2,087	1,848	1,510	1,445	1,147	1,126	869	1,055	1,632	2,231

- Hardness = 199 mg/L as $CaCO_3$. This value represents the geometric mean of data (n = 4, March 2015 – October 2021) from chronic WET testing conducted for the Heart of the Valley Metro Sewerage District's discharge to the Fox River.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%.
- Source of background concentration data: Metals data from Fox River at De Pere is used for this evaluation. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations.
- Multiple dischargers: There are several other dischargers to the Fox River however they are not in the immediate vicinity and the mixing zones do not overlap. Therefore, the other dischargers do not impact this evaluation.
- Impaired water status: The Fox River is on the CWA Section 303(d) list and is impaired by phosphorus and polychlorinated biphenyls (PCBs). It is included in the LFRB TMDL area for

phosphorus and TSS impairments.

Effluent Information

- Flow rate(s):
  Maximum annual average = 0.683 million gallons per day (MGD)
  This flow rate accounts for the seasonal nature of the discharge during July 2019 – January 2024 and excludes days discharge did not occur. For reference over the same time period, the actual average flow was 0.403 MGD excluding days discharge did not occur and 0.282 MGD including days discharge did not occur.
- Hardness = 130 mg/L as $CaCO_3$. This value represents the geometric mean of data (n = 4, October 2023) from the permit application.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: City of Green Bay municipal supply.
- Additives: Nalco 7408 is used for dechlorination.
- Effluent characterization: This facility is categorized as a secondary industry, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness and phosphorus. The current permit also required monitoring for copper.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.
- Pickles Manufacturing had a compliance schedule during the current permit term in response to the implementation of chlorine WQBELs in the permit and had installed a chlorine treatment system in May 2022. Effluent chlorine data prior to June 2022 is considered not representative of the current discharge. Therefore, effluent chlorine data from June 2022 to present is utilized in this evaluation.

Copper Effluent Data

Sample Date	Conc. (µg/L)	Sample Date	Conc. (µg/L)	Sample Date	Conc. (µg/L)
01/25/2023	4.2	07/24/2023	3.0	10/17/2023	2.6
02/08/2023	3.6	08/22/2023	3.2	10/24/2023	1.9
03/15/2023	5.0	09/07/2023	2.8	11/07/2023	2.7
04/18/2023	6.0	10/03/2023	<1.6	12/14/2023	16
05/23/2023	2.6	10/04/2023	2.1		
06/26/2023	2.2	10/10/2023	1.3		
1-day P_{99} = 17 µg/L					
4-day P_{99} = 9.7 µg/L					

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

Chlorine Effluent Data

Statistics	Conc. (µg/L)
1-day P_{99}	35
4-day P_{99}	28
30-day P_{99}	21
Mean	18

Std	5
Sample size	19
Data Range	<20 – 30
Date Range	June 2022 – Jan. 2024

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

The following table presents the average concentrations and loadings at Outfall 001 from July 2019 – January 2024 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits

	Average Measurement*
BOD_5	9.4 mg/L
pH field	7.8 s.u.
Chlorine (Total Residual)	455 µg/L
Temperature	58 °F

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

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

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

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P_{99}) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q_{10}

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q_{10} receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

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

Where:

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

Qs = average minimum 1-day flow which occurs once in 10 years (1-day Q_{10})
if the 1-day Q_{10} flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q_{10}).
Qe = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.
f = Fraction of the effluent flow that is withdrawn from the receiving water, and
Cs = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for Pickles Manufacturing and the limits are set based on two times the ATC.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)
RECEIVING WATER FLOW = 528 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Chlorine		19.0	38.1			35	30
Arsenic		340	680	135.9	<0.028		<0.028
Cadmium	130	13.9	27.8	5.6	<0.6		<0.6
Chromium	130	2,230	4,461	892	4.7		4.7
Copper	130	19.8	39.6			17	16
Lead	130	137	275	55.0	<7.0		<7.0
Nickel	130	584	1,169	234	3.4		3.4
Zinc	130	151	302	60.4	<4.4		<4.4
Chloride (mg/L)		757	1,514	303	17		17

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)
RECEIVING WATER FLOW = 165 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Chlorine		7.28		1,145			28
Arsenic		152.2		23,931	4,786	<0.028	
Cadmium	175	3.82	0.02	598	120	<0.6	
Chromium	199	231.71	0.78	36,311	7,262	4.7	
Copper	199	18.62	1.67	2,667			9.7

Attachment #1

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Lead	199	54.34	0.93	8,399	1,680	<7.0	
Nickel	199	93.26		14,664	2,933	3.4	
Zinc	199	219.33	5.49	33,628	6,726	<4.4	
Chloride (mg/L)		395	25.5	58,123	11,625	17	

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

Monthly Average Limits based on Wildlife Criteria (WC)
The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

Monthly Average Limits based on Human Threshold Criteria (HTC)
RECEIVING WATER FLOW = 513 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370	0.02	180,097	36,020	<0.6
Chromium	3,818,000	0.78	1,858,509,426	371,701,885	4.7
Lead	140	0.93	67,697	13,539	<7.0
Nickel	43,000		20,931,357	4,186,271	3.4

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 513 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		6,474	1,295	<0.028

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

Conclusions and Recommendations
Based on a comparison of the effluent data and calculated effluent limitations, **effluent limitations are not recommended for toxic substances.** Limits and/or monitoring recommendations are made in the paragraph below:

Total Residual Chlorine – Considering available effluent data from the current permit term (June 2022 – January 2024), the 1-day P_{99} concentration is 35 µg/L, and the 4-day P_{99} concentration is 28 µg/L. These effluent concentrations are below the calculated chlorine WQBELs; **therefore, effluent limits are not needed. The daily maximum and monthly average limits of 38 µg/L are recommended to continue**

during the reissued permit term unless the antibacksliding and limit continuation requirements of subch. 2 of NR 207, and s. NR 205.067(5), Wis. Adm. Codes, respectively, are met.

Copper – Considering available effluent data from the current permit term (January 2023 – December 2023), the 1-day P_{99} concentration is 17 mg/L, and the 4-day P_{99} concentration is 9.7 mg/L. These effluent concentrations are below the calculated copper WQBELs; **therefore, effluent limits are not needed. Monthly copper monitoring for 1 year is recommended to continue during the reissued permit term** due to the likelihood of reasonable potential being demonstrated via the mean effluent copper concentration being higher than 1/5th of the calculated daily maximum copper WQBEL as a result of less than 11 detectable copper samples being available at the next permit reissuance.

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Available well monitoring sample data from the Green Bay Waterworks (PWS ID: 40503562) is provided in the table below:

Water Supply PFAS Data

Sample Date	Sample ID	Site ID	PFOS (ng/L)	PFOA (ng/L)
11/14/2022	1349317	EP-81	2.3	2.1
01/09/2023	CB001903-01	T4	1.8	2.5
04/03/2023	CB03202-01	T4	1.8	2.1
		Average =	2.0	2.2

The limited data above shows the municipal water supply exceeds 1/5th of the applicable PFOS criterion. Although this water data shows that all applicable drinking water standards are met, the concentrations still have the reasonable potential to exceed the applicable surface water quality standard for PFOS. Based on the known levels of PFOS/PFOA in the source water which shows reasonable potential for the effluent concentrations to exceed the applicable surface water quality standard, **PFOS and PFOA monitoring is recommended at a monthly frequency during the reissued permit term.**

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that Pickles Manufacturing does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time. The table below shows the results of effluent ammonia nitrogen sampling at Outfall 001 during October 2023:

Ammonia Nitrogen Effluent Data

Sample Date	Conc. (mg/L)*
10/03/2023	0.28
10/10/2023	<0.21
10/17/2023	<0.21
10/24/2023	1.5
Mean	0.031

Attachment #1
* Nondetectable values (<) are treated as zero in the average calculation.

Based on this effluent data, there is no reasonable potential for the discharge to exceed the most stringent ammonia nitrogen limits that would be calculated. **Therefore, ammonia nitrogen limits are not recommended during the reissued permit term.** The sample result of 1.5 mg/L (10/24/2023) is somewhat high for a cooling water discharge with no apparent sources of nutrients. A review of historic effluent ammonia nitrogen data (n = 4, January 2019) for Outfall 001 from the previous limit evaluation (April 2019) were nondetectable at <0.23 mg/L. This would indicate the 1.5 mg/L is most likely unrepresentative of the discharge but continued discharge at this level would most likely result in reasonable potential for daily maximum limits in the future. **Therefore, monthly ammonia nitrogen monitoring for 1 year is recommended during the reissued permit term to determine the need for ammonia nitrogen limits at the next permit reissuance.**

PART 4 – PHOSPHORUS & TSS

Technology-Based Effluent Limit – Phosphorus
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industrial facilities that discharge greater than 60 pounds of total phosphorus per month to comply with a 12-month rolling average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Pickles Manufacturing does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The current permit did not require effluent phosphorous monitoring for Outfall 001 but data is available from the permit application (n = 10, October 2023 – December 2023). Therefore, only 3 months of paired effluent phosphorus and flow data are available to calculate monthly mass phosphorus values. The data demonstrates that the annual monthly average phosphorus loading is less than 60 lbs/month, which is the threshold for industrial facilities as described in s. NR 217.04(1)(a)2, Wis. Adm. Code. **Therefore, a technology-based limit is not recommended during the reissued permit term.**

Annual Average Mass Total Phosphorus Loading

Month	Average Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
Oct. 2023	0.22	11.9	22
Nov. 2023	<0.03	9.01	0*
Dec. 2023	0.03	0.714	0.18
		Average =	11

*Months where the calculated monthly mass phosphorus loading is zero are excluded from calculation of the average.

**Total P (lbs/month) = Monthly average (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
Where total flow is the sum of the actual flow (MGD) for that month

A review of the total monthly effluent flow data during July 2019 – January 2024 shows the flow can fluctuate significantly on a monthly and yearly basis ranging from 0.714 – 25 MG/month. Higher flows periods are likely related to increased production during April – October but some years were observed to have high flows year round. There is concern a technology-based limit may be needed during years with year round high flow where even with smaller effluent phosphorus concentrations in the discharge may result in exceedance of the 60 lbs/month of phosphorus for industrial facilities. **Therefore, monthly**

phosphorus monitoring is recommended during the reissued permit term to determine the need of a technology-based phosphorus limit at the next permit reissuance. In addition, the need for a WQBEL for phosphorus must be considered.

Water Quality-Based Effluent Limits (WQBEL) – Phosphorus
Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Section NR 217.16, Wis. Adm. Code, states that the Department may include a TMDL-derived water quality based effluent limit (WQBEL) for phosphorus in addition to, or in lieu of, a s. NR 217.13 WQBEL in a WPDES permit. Because the discharge is directly to the Fox River which is an impaired segment covered under an approved TMDL, the TMDL-based limit is protective of the immediate receiving water as well as downstream waters and can be included in the WPDES permit absent the s. NR 217.13 WQBEL. This limit should be expressed in a manner consistent with the wasteload allocation and assumptions of the TMDL. If after two permit terms, the Department determines the nonpoint source load allocation has not been substantially reduced, the Department may include the s. NR 217.13 WQBEL unless these reductions are likely to occur.

The Department is currently assessing the nonpoint source load in the TMDL area in an overall effort to evaluate the TMDL implementation progress. This includes, but is not limited to, tracking reductions from agricultural and other nonpoint source projects, evaluating cropland conservation trends, and implementing additional surface water monitoring sites. **In the meantime, the s. NR 217.13 phosphorus WQBEL will not be implemented during the reissued permit term until updated information on the nonpoint source loading is determined.**

TMDL Limits – Phosphorus & TSS
The LFRB TMDL report addresses phosphorus and TSS water quality impairments within the LFRB and provides wasteload allocations (WLAs) required to meet water quality standards in the TMDL area. Outfall 001 from Pickles Manufacturing was not included in the TMDL and does not have associated phosphorus and TSS WLAs because the discharge was not considered to be a source of either substance at the time of TMDL development. If Outfall 001 is found to be a source of phosphorus and/or TSS, WLAs for either must be allocated from available reserve capacity to discharge either substance in the TMDL area. Water quality trading (WQT) is also an option for phosphorus only.

For phosphorus, the current permit did not require monitoring for Outfall 001 but data is available from the permit application (n = 10, October 2023 – December 2023). Eight of the samples were nondetectable at <0.03 mg/L and the other two samples were 0.03 and 1.1 mg/L. Historic sampling (n = 6, January 2019) were all nondetectable at <0.07 mg/L. **This limited dataset implies Outfall 001 is likely not a source of phosphorus so the need for a phosphorus WLA or WQT is not required at this time.** Monthly phosphorus monitoring was recommended earlier in this evaluation to better determine the need for the technology-based limit so the dataset will also provide better information to determine if Outfall 001 is a phosphorus source.

For TSS, the current permit also did not require monitoring for Outfall 001 but one nondetectable sample of <2.2 mg/L (10/03/2023) was provided in the permit application. The previous limit evaluation (April 2019) stated TSS sampling during January 2019 were below quantifiable levels and similar nondetectable

values from historic monitoring. **This limited dataset implies Outfall 001 is likely not a source of TSS so the need for a TSS WLA or WQT is not required at this time. Monthly monitoring for 1 year is recommended during the reissued permit term to better determine if Outfall 001 is a TSS source.**

PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

Due to the amount of upstream flow available for dilution in the limit calculation (Qs:Qe >20:1), the lowest calculated limitation is 120° F as a daily maximum as described in s. NR 106.55(6)(a), Wis. Adm. Code. Outfall 001 has the daily maximum limit of 120 ºF effective in the current permit. **This limit is recommended to continue during the reissued permit term unless the antibacksliding and limit continuation requirements in subch. 2 of NR 207, and s. NR 205.067(5), Wis. Adm. Codes, respectively, are met.**

Effluent temperature data from July 2019 – January 2024 are shown below for informational purposes:

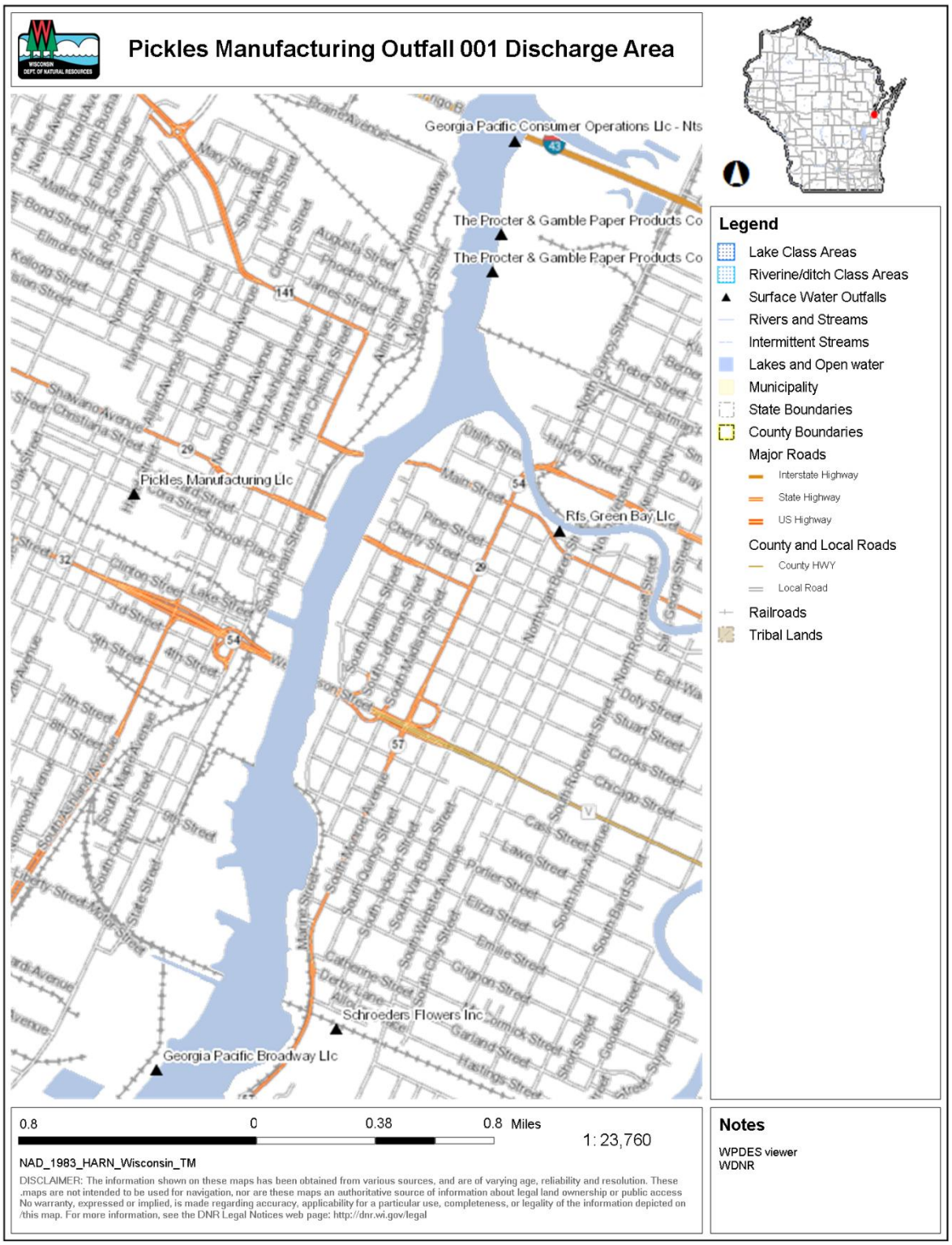
Temperature Effluent Data

Month	Representative Highest Monthly Effluent Temperature	
	Weekly Maximum (°F)	Daily Maximum (°F)
JAN	78	78
FEB	76	76
MAR	90	90
APR	65	65
MAY	68	70
JUN	80	80
JUL	78	78
AUG	72	78
SEP	76	76
OCT	78	78
NOV	78	78
DEC	75	75

PART 6 – WHOLE EFFLUENT TOXICITY (WET)

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

Outfall 001 is comprised primarily of contact cooling, noncontact cooling, and pasteurization wastewaters with dechlorination used as the sole additive. This discharge does not have a history of WET failures and toxic compounds are not present at levels of concern. Since there is believed to be a very low risk of toxicity, **WET testing is not recommended during the reissued permit term.**


Pickles Manufacturing Outfall 001 Discharge Area
Georgia Pacific Consumer Operations Llc - Nts
The Procter & Gamble Paper Products Co
The Procter & Gamble Paper Products Co
Pickles Manufacturing Llc
Rfs Green Bay Llc
Schroeders Flowers Inc
Georgia Pacific Broadway Llc
Legend
Lake Class Areas
Riverine/ditch Class Areas
Surface Water Outfalls
Rivers and Streams
Intermittent Streams
Lakes and Open water
Municipality
State Boundaries
County Boundaries
Major Roads
Interstate Highway
State Highway
US Highway
County and Local Roads
County HWY
Local Road
Railroads
Tribal Lands
0.8 0 0.38 0.8 Miles
1:23,760
NAD_1983_HARN_Wisconsin_TM
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WPDES viewer
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