

Village of Boyceville Public Noticed Permit Fact Sheet

General Information

Permit Number:	WI-0060330-11-0
Permittee Name:	Village of Boyceville, Village Hall, PO Box 368, 903 Main St., Boyceville WI 54725
Discharge Location:	Boyceville Wastewater Treatment Facility, 1406 County Road N, Boyceville, WI 54725 SW1/4, SW1/4, Section 19, T30N R13W, Town of Hay River, Dunn County
Receiving Water:	the South Fork of the Hay River in the South Fork Hay River Watershed of the Lower Chippewa River Basin in Dunn County
StreamFlow (Q _{7,10}):	20 cfs
Stream Classification:	Warm Water Sport Fish, Non-public Water Supply
Discharge Type:	Existing, continuous
Design Flow:	Annual Average: 0.22 MGD
Significant Industrial Loading?	Yes, by Ohly America, a Food Processing company, contributes up to 0.140 MGD of wastewater from food processing and drying of food grade products
Operator at Proper Grade?	Yes. Current OIC has the following Basic certifications: Sanitary Sewage Collection System , Biological Treatment: Ponds, Lagoons, and Natural Systems, Solids Separation, Disinfection, Nutrient Removal: Total Phosphorus
Approved Pretreatment Program?	N/A

Facility Description

The Boyceville Wastewater Treatment Facility (WWTF) treats domestic wastewater from the Village of Boyceville and industrial wastewater from Ohly Americas, a food processing facility. The WWTF has an annual average design flow of 0.22 million gallons per day (MGD) and had an annual actual average influent flow of 0.133 MGD in 2023 and the average effluent flow was 0.163 MGD. Treatment is via a five-celled aerated lagoon system and uses ultraviolet light for seasonal disinfection May – September. Aluminum sulfate is added to aid in phosphorous removal and sulfuric acid is used for pH control. During the last permit term the facility discontinued use of the continuous backwash sand filter. No major operational changes are in this permit term. Significant effluent monitoring and/or limit changes in this permit term are as follows: 1) the addition of annual monitoring for total nitrogen, nitrite + nitrate nitrogen and total Kjeldahl nitrogen, 2) fecal coliform monitoring and limits have been replaced with *Escherichia coli* (*E. coli*) monitoring and limits, 3) the variable daily maximum ammonia limit table has been expanded to include applicable limits at a lower effluent pH, 4) the ammonia monitoring frequency has increased, 5) acute WET testing has been added at a frequency of twice in the permit term, and 6) annual chronic WET testing has been added, along with a monthly average chronic WET limit. The sample frequency for influent and effluent flow has been changed from “continuous” to “daily”. Clarification language has been added notifying the permittee they must monitor sludge for List 2 nutrients and meet the requirements of List 3 (Pathogen Control) and List 4 (Vector Attraction Reduction) prior to landspreading if they remove sludge from the lagoon(s). Additionally, to quantitate the risk, PFAS sludge sampling has been included in the permit pursuant to ss. NR

214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code. A schedule has been included in the permit requiring the permittee submit a sludge management plan prior to removal and land application of sludge from the lagoon(s).

Substantial Compliance Determination

Enforcement During Last Permit: None. The facility has completed all previously required actions as part of the enforcement process. After a desk top review of all discharge monitoring reports, and a site visit on June 20, 2023, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Mike Chang on June 30, 2023.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
701	0.133 MGD Annual Average (2023)	Representative influent samples shall be collected from the number three lift station prior to discharge into pond #1.
001	0.163 MGD Annual Average (2023)	Representative effluent composite samples shall be collected prior to the UV disinfection tank and grab samples shall be collected at the UV disinfection tank.
002	Sludge was removed from the lagoon in 2013 and removal is expected this permit term also.	Representative composite sludge samples shall be collected in 2025 and monitored for the parameters as listed in the table below. See Section 3.2.1.1 of the permit for more information. If the permittee plans to remove sludge, they shall monitor sludge for Lists 1, 2, 3 & 4 prior to land application. The Department shall be notified at least 30 days in advance of sludge removal so that appropriate monitoring forms can be provided. Approval of landspreading sites must be completed prior to sludge removal.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT at #3 LIFT STATION

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids,		mg/L	Weekly	24-Hr Flow	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Total				Prop Comp	

Changes from Previous Permit:

The sample frequency for flow has been changed from “continuous” to “daily” for eDMR reporting purposes.

Explanation of Limits and Monitoring Requirements

Monitoring of influent flow, BOD5 and total suspended solids is required by s. NR 210.04(2), Wis. Adm. Code, to assess wastewater strengths and volumes and to demonstrate the percent removal requirements in s. NR 210.05, Wis. Adm. Code, and in the Standard Requirements section of the permit.

2 Surface Water - Monitoring and Limitations

Sample Point Number: 001- DISCHARGE PRIOR TO HAY RIVER

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate	Daily Max	0.427 MGD	Daily	Continuous	
BOD5, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	
Nitrogen, Ammonia Variable Limit		mg/L	2/Week	24-Hr Flow Prop Comp	Daily maximum limit varies with effluent pH. See ammonia section in permit for limits.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	2/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	34 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies Nov - April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	25 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies Jan - April
Nitrogen, Ammonia	Weekly Avg	17 mg/L	2/Week	24-Hr Flow	Limit applies May - Oct

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
(NH ₃ -N) Total				Prop Comp	
Nitrogen, Ammonia (NH ₃ -N) Total	Monthly Avg	17 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies May - Oct
Nitrogen, Ammonia (NH ₃ -N) Total	Monthly Avg	34 mg/L	2/Week	24-Hr Flow Prop Comp	Limit applies Nov & Dec
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit & monitoring apply May - Sept
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit & monitoring apply May - Sept. See the E. coli Percent Limit section below. Enter the result in the DMR on the last day of the month.
Phosphorus, Total	Monthly Avg	1.0 mg/L	Weekly	24-Hr Flow Prop Comp	See TMDL section
Phosphorus, Total	Monthly Avg	3.0 lbs/day	Weekly	Calculated	
Phosphorus, Total		lbs/yr	Monthly	Calculated	Calculate the 12-Month Rolling Sum of Total Monthly mass of phosphorus discharged and report on the last day of the month on the DMR. See phosphorus section(s).
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Monitoring required annually in specific quarters. See Nitrogen Series Monitoring section in permit for more info.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	
Acute WET		TU _a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET testing section in permit
Chronic WET	Monthly Avg	8.3 TU _c	See Listed Qtr(s)	24-Hr Flow Prop Comp	

Changes from Previous Permit

1) the addition of annual monitoring for total nitrogen, nitrite + nitrate nitrogen and total Kjeldahl nitrogen, 2) fecal coliform monitoring and limits have been replaced with *Escherichia coli* (*E. coli*) monitoring and limits, 3) the variable daily maximum ammonia limit table has been expanded to include applicable limits at a lower effluent pH, 4) the ammonia monitoring frequency has increased from weekly to 2/week, 5) monthly reporting of a 12-month rolling sum of

Total Phosphorus mass will be reported on the eDMRs like other parameters and not in the comments section of the reporting forms, 6) acute WET testing has been added at a frequency of twice in the permit term, 7) annual chronic WET testing has been added, along with a monthly average chronic WET limit, and 8) the sample frequency for flow has been changed from “continuous” to “daily” for eDMR reporting purposes.

Explanation of Limits and Monitoring Requirements

The effluent monitoring frequency for all parameters were considered. Monitoring frequencies are based on the size and type of the facility and are established to best characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. 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. For more information see the March 22, 2021 version of the Bureau of Water Quality Program Guidance Document “Monitoring Frequencies for Individual Wastewater Permits”. Using the criteria previously stated, the department has determined that an increase in the ammonia monitoring frequency is needed from weekly to 2/week. Also, as noted above, the flow frequency has changed from continuous to daily for eDMR reporting purposes.

Limits were determined for Boyceville’s existing discharge to the South Fork Hay River using chs. NR 102, 105, 106, 205, 210 and 217 of the Wisconsin Administrative Code (where applicable). For additional information on any of the limits see the December 21, 2023 memo from Ben Hartenbower to Holly Heldstab titled “Water Quality-Based Effluent Limitations for the Boyceville Wastewater Treatment Facility WPDES Permit No. WI-0060330”

MUNICIPAL EFFLUENT LIMITS –In accordance with the federal regulation 40 CFR 122.45(d), and to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, limits in this permit are to be expressed as weekly average and monthly average limits whenever practicable.

BOD, TSS and pH: Monitoring and limits for these pollutants correspond to the requirements of the current permit since the facility has not increased the capacity of the wastewater treatment system since the last permit issuance, nor are increases expected during the term of the permit.

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. Daily maximum ammonia limits that vary with effluent pH apply year-round, along with seasonally variable weekly average and monthly average limits. See the table below for the variable daily maximum limits. Samples for ammonia shall be collected at the same time as the pH samples.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

E. coli/Disinfection: Boyceville disinfects the effluent May-Sept using UV light prior to discharge to South Fork of the Hay River. Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying *E. coli* WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits

for facilities with required disinfection include monitoring for *E. coli* while facilities are disinfecting during the recreation period, and establish effluent limitations for *E. coli* established in s. NR 210.06 (2), Wis. Adm Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to *E. coli* to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code.; revised permit requirements for publicly and privately owned sewage treatment works in ch. NR 210, Wis. Adm. Code.; and, updated approved analytical methods for bacteria in ch. NR 219, Wis. Adm. Code.

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. NR 217 also specifies WQBELs for discharges of phosphorus to surface waters of the state from publicly and privately owned wastewater facilities and a facility/site that is regulated under NR 216 where the standards in NR151 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.

Boyceville is included within the Tainter Lake/Lake Menomin Total Maximum Daily Load (TMDL), which was approved by EPA September 2012. The TMDL establishes Waste Load Allocations (WLAs) for point source dischargers and determines the maximum amounts of phosphorus that can be discharged and still protect water quality. The WLA for Boyceville is 670 lbs/year and 1.83 lbs/day. The monthly average limit of 3.0 lbs/day was determined in the WQBEL memorandum signed on August 19, 2013 in accordance with the *TMDL Development and Implementation Guidance*. A technology-based limit of 1.0 mg/L (monthly average) also applies.

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

Total Nitrogen Monitoring (NO₂+NO₃, TKN and Total N): The Department has included effluent monitoring for Total Nitrogen in the permit through the authority under §§ 283.55(1)(e), Wis. Stats., which allows the department to require the permittee to submit information necessary to identify the type and quantity of any pollutants discharged from the point source, and through s. NR 200.065(1)(h), Wis. Adm. Code, which allows for this monitoring to be collected during the permit term. More information on the justification to include total nitrogen monitoring in wastewater permits can be found in the “Guidance for Total Nitrogen Monitoring in Wastewater Permits” dated October 1, 2019. Annual tests are scheduled in the following rotating quarters:

- 2nd quarter (April – June) 2024
- 4th quarter (October – December) 2025
- 3rd quarter (July – September) 2026
- 1st quarter (January – March) 2027
- 2nd quarter (April – June) 2028

WET Testing: Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at <http://dnr.wi.gov/topic/wastewater/wet.html>). See the WQBEL memo above for more information on the WET testing & limit. Two acute WET tests are required during the permit term in the following quarters:

- 3rd quarter (July – September) 2025
- 2nd quarter (April – June) 2028

Chronic WET testing is required annually in the quarters listed below and an 8.3 TU_c monthly average limit is in place throughout this permit term.

- 2nd quarter (April – June) 2024
- 4th quarter (October – December) 2025
- 3rd quarter (July – September) 2026
- 1st quarter (January – March) 2027
- 2nd quarter (April – June) 2028

Chloride: Acute and chronic chloride toxicity criteria for the protection of aquatic life are included in Tables 1 and 5 of ch. NR 105, Wis. Adm. Code. Subchapter VII of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for chloride. Based on a comparison of effluent chloride concentration data and calculated effluent limitations, it has been determined that neither effluent limits nor monitoring are required.

PFOS and PFOA: NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Pursuant to s. NR 106.98(3)(b), Wis. Adm. Code, the department evaluated the need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites and other potential sources of PFOS or PFOA. Based on information available at the time the permit was drafted, the department has determined the permittee does not need to sample for PFOS or PFOA as part of this permit reissuance. The department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

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. Based on the available effluent data, no effluent limits or monitoring are required.

Mercury: The permit application did not require monitoring for mercury because the Boyceville Wastewater Treatment Facility is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3, Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, “there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5), Wis. Adm. Code.” A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. The average concentration in the sludge from 2020 was 0.01 mg/kg. Therefore, no mercury monitoring is required at Outfall 001.

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
002	B	Liquid	Fecal Coliform	Injection	Land Application	According to the permittee's reissuance application they removed sludge from the aerated lagoon 07/01/2013, but have not removed sludge from the stabilization pond since 11/15/2012. They plan to remove sludge from the pond during this permit term, likely in 2024 or 2025.
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No						
Is a priority pollutant scan required? No						

Sample Point Number: 002- Lagoon Sludge

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

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Per Application	Composite	Prior to land application
Nitrogen, Ammonia (NH ₃ -N) Total		Percent	Per Application	Composite	Prior to land application
Phosphorus, Total		Percent	Per Application	Composite	Prior to land application
Phosphorus, Water Extractable		% of Tot P	Per Application	Composite	Prior to land application
Potassium, Total Recoverable		Percent	Per Application	Composite	Prior to land application
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	
PFOA + PFOS		ug/kg	Once	Calculated	
PFAS Dry Wt			Once	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

List 2 Nutrient monitoring – Monitoring for list 2 (nutrients) is highly recommended at the same time as the monitoring of List 1 (metals) in year 2 of the permit. Results will assist in the determination of the acres needed for land application of sludge should it be necessary. The number of acres needed is also required for the Sludge Management Schedule (see schedules for more information).

Change in form submittal – In prior permit reissuances when it has been noted in the application that sludge would not be removed during the permit term, the department required sampling during the second year of the permit term and the sludge characteristic report (3400-049) would be generated only during that year. Due to moving to electronic submittal of forms via Switchboard, forms 3400-049 (“Characteristics Report”), 3400-052 (“Other Methods of Disposal”) and 3400-055 (“Annual Land Application”) will now be generated by the department and the permittee will be required to submit all three reports each year of the permit term. This change was adopted to provide the permittee flexibility because many lagoon desludging projects can be unexpected, are delayed or staggered over multiple years. Additionally, it is used to officially report that no land application of sludge has occurred, and annual submittal of the forms is required per the standard requirements section.

PFAS – Monitoring is required once during the permit term pursuant s. NR 204.06(2)(b)9., Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high quality limits for metals in sludge are specified in s. NR 204.07(5). Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7) for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k). Radium requirements are addressed in s. NR 204.07(3)(n).

PFAS- The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA is currently developing a risk assessment to determine future land application rates and expects to release this risk assessment by the end of 2024. In the interim, the department has developed the “Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS”.

4 Schedules

4.1 Sludge Management Plan

Required Action	Due Date
<p>Submit a Sludge Management Plan: The permittee shall submit a management plan for approval if removal of sludge will occur during this permit term. The plan shall demonstrate compliance with ch. NR 204, Wis. Adm. Code and at minimum address 1) How and where is sludge sampled; 2) Available sludge storage details and location(s); 3) How will the sludge be removed with details on volume, characterization and how will the treatment plant continue to function during the drawdown; 4) Describe the type of transportation and spreading vehicles and loading and unloading practices; 5) Identify approved land application sites, apply for needed sites, site limitations, total acres needed and vegetative cover management; 6) Specify record keeping procedures including site loading; 7) Address contingency plans for adverse weather and odor/nuisance abatement; and 8) Include any other pertinent information such as other disposal options that may be used or specifications of any pretreatment processes</p> <p>Once approved, all sludge management activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes. No desludging may occur unless approval from the Department is obtained. Daily logs shall be kept that record where the sludge has been disposed.</p> <p>The plan is due at least 60 days prior to desludging.</p>	

Explanation of Sludge Management Plan Schedule: If the lagoons are to be de-sludged during this permit term. A management plan is needed to show compliance with ch NR 204, Wis. Adm. Code by clearly explains how the sludge will be safely removed, what contingencies are in place, the type of equipment that will be used and how the sludge will be land applied to ensure the proper precautions are in place to prevent any negative impacts to surface water or groundwater.

Special Reporting Requirements

N/A

Other Comments:

Publishing Newspaper: Tribune Press Reporter, PO Box 38, Glenwood City, WI 54013-0038

Attachments:

Water Quality Based Effluent Limits: December 21, 2023 memo from Ben Hartenbower to Holly Heldstab titled "Water Quality-Based Effluent Limitations for the Boyceville Wastewater Treatment Facility WPDES Permit No. WI-0060330"

Expiration Date:

March 31, 2029

Justification Of Any Waivers From Permit Application Requirements

N/A

Prepared By: Holly Heldstab, Wastewater Specialist

Date: February 5, 2024

CORRESPONDENCE/MEMORANDUM

DATE: December 21, 2023

TO: Holly Heldstab– WCR/Eau Claire

FROM: Benjamin Hartenbower – WCR/Eau Claire

SUBJECT: Water Quality-Based Effluent Limitations for the Boyceville Wastewater Treatment Facility
WPDES Permit No. WI-0060330

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 the Boyceville Wastewater Treatment Facility in Dunn County. This municipal wastewater treatment facility (WWTF) discharges to the South Fork Hay River, located in the South Fork Hay River Watershed in the Lower Chippewa River Basin. This discharge is included in the Tainter Lake/Lake Menomin TMDL as approved by EPA. The evaluation of the permit recommendations is discussed in more detail in the attached report.

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate	0.427 MGD				1,2
BOD ₅			45 mg/L	30 mg/L	1
TSS			45 mg/L	30 mg/L	1
pH	9.0 s.u.	6.0 s.u.			1
Ammonia Nitrogen					3
January-April	Variable		34 mg/L	25 mg/L	
May - October	Variable		17 mg/L	17 mg/L	
November & December	Variable		34 mg/L	34 mg/L	
Bacteria <i>E. coli</i>				126#/100 mL geometric mean	4
Phosphorus TBEL TMDL Limit				1.0 mg/L 3.0 lbs/day	5
TKN, Nitrate+Nitrite, and Total Nitrogen					2,6
Acute WET					7
Chronic WET				8.3 TUc	7,8

Footnotes:

1. No changes from the current permit.
2. Monitoring only.


3. The variable daily maximum ammonia nitrogen limit table corresponding to effluent pH values. These limits apply year-round.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.3
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

4. Bacteria limits apply during the disinfection season of May-September. Additional limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
5. The phosphorus mass limit is based on the Total Maximum Daily Load (TMDL) for the Tainter Lake/Lake Menomin TMDL to address phosphorus water quality impairments within the TMDL area.
6. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO₃), nitrite (NO₂), and total kjeldahl nitrogen (TKN) (all expressed as N).
7. Two Acute and annual Chronic WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).
8. The Instream Waste Concentration (IWC) to assess chronic test results is 12%. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 30%, 10%, 3% & 1% and the dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the South Fork Hay River.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Benjamin Hartenbower at (715) 225-4705 or Benjamin.Hartenbower@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (3) – Narrative, Thermal Table, & Map

PREPARED BY: 
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Date: 12/21/2023

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**Water Quality-Based Effluent Limitations for
the Boyceville Wastewater Treatment Facility
WPDES Permit No. WI-0060330**

Prepared by: Benjamin P. Hartenbower

PART 1 – BACKGROUND INFORMATION

Facility Description:

The Village of Boyceville owns and operates a 5-cell aerated lagoon system with a continuous backwash sand filter and a UV disinfection unit. Aluminum Sulfate is added to the sand filter reject water to assist in phosphorus removal. Sulfuric acid is used for pH control. The facility treats domestic wastewater from the Village and industrial waste from Ohly Americas, a food processing facility.

Attachment #3 is a map of the area showing the approximate location of Outfall 001.

Existing Permit Limitations

The current permit, expiring on December 31, 2023, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate	0.427 MGD				1
BOD ₅			45 mg/L	30 mg/L	1
TSS			45 mg/L	30 mg/L	1
pH	9.0 s.u.	6.0 s.u.			1
Ammonia Nitrogen					2
January-April	Variable		34 mg/L	25 mg/L	
May - October	Variable		17 mg/L	17 mg/L	
November & December	Variable		34 mg/L	34 mg/L	
Fecal Coliform					
May-September			656#/100 mL geometric mean	400#/100 mL geometric mean	
Phosphorus					
TBEL				1.0 mg/L	
TMDL Limit				3 lbs/day	

Footnotes:

1. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.

2. Variable daily maximum ammonia nitrogen limits:

May to October Daily Maximum Ammonia Limits			
Effluent pH (s.u.)	NH ₃ -N Limit (mg/L)	Effluent pH (s.u.)	NH ₃ -N Limit (mg/L)
pH ≤ 7.9	>17	8.4 < pH ≤ 8.5	6.4
7.9 < pH ≤ 8.0	17	8.5 < pH ≤ 8.6	5.3
8.0 < pH ≤ 8.1	14	8.6 < pH ≤ 8.7	4.4
8.1 < pH ≤ 8.2	11	8.7 < pH ≤ 8.8	3.7
8.2 < pH ≤ 8.3	9.4	8.8 < pH ≤ 8.9	3.1
8.3 < pH ≤ 8.4	7.8	8.9 < pH ≤ 9.0	2.6

November to April Daily Maximum Ammonia Limits			
Effluent pH (s.u.)	NH ₃ -N Limit (mg/L)	Effluent pH (s.u.)	NH ₃ -N Limit (mg/L)
pH ≤ 7.5	>34	8.2 < pH ≤ 8.3	9.4
7.5 < pH ≤ 7.6	34	8.3 < pH ≤ 8.4	7.8
7.6 < pH ≤ 7.7	29	8.4 < pH ≤ 8.5	6.4
7.7 < pH ≤ 7.8	24	8.5 < pH ≤ 8.6	5.3
7.8 < pH ≤ 7.9	20	8.6 < pH ≤ 8.7	4.4
7.9 < pH ≤ 8.0	17	8.7 < pH ≤ 8.8	3.7
8.0 < pH ≤ 8.1	14	8.8 < pH ≤ 8.9	3.1
8.1 < pH ≤ 8.2	11	8.9 < pH ≤ 9.0	2.6

Receiving Water Information

- Name: The South Fork Hay River
- Waterbody Identification Code (WBIC): 2070100
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
 Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: USGS for Station 05367930 near Boyceville, in the South Fork Hay River
 7-Q₁₀ = 20.0 cfs (cubic feet per second)
 7-Q₂ = 29.0 cfs
 Harmonic Mean Flow = 42.5 cfs using a drainage area of 89.8 mi².

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

- Hardness = 222 mg/L as CaCO₃. This value represents the geometric mean of 10 samples collected in the South Fork Hay River at Boyceville from 09/30/1997 to 08/20/2014.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: Metals data from the Chippewa River at Durand is used for this evaluation because there is no data available for the South Fork Hay River and the the Chippewa River is within the same ecological landscape so ambient water quality characteristics are expected to be similar. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: None
- Impaired water status: This discharge is located within the Tainter Lake/Lake Menomin TMDL for phosphorus

Effluent Information:

- Design Flow Rates(s):
 Annual Average = 0.220 MGD (Million Gallons per Day)
 Peak daily = 0.654 MGD
 Peak weekly = 0.635 MGD
 Peak monthly = 0.610 MGD
 For reference, the actual average flow from January 2019 to November 2023 was 0.149 MGD.
- Hardness = 152 mg/L as CaCO₃. This value represents the geometric mean of 4 effluent samples collected from 07/06/2023 to 07/17/2023.
- Acute dilution factor used in accordance with s. NR 106.06 (3) (c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water Source: Domestic wastewater with water supply from the wells and non-domestic contribution from Ohly Americas.
- Additives: Aluminum Sulfate
- Total Phosphorus Wasteload Allocation: 670 lbs/year
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus Chloride and hardness. The permit-required monitoring for Ammonia and Phosphorus from January 2019 to November 2023 is used in this evaluation.

Chemical Specific Effluent Data at Outfall 001

Sample Date	Chloride mg/L	Sample Date	Copper µg/L
07/06/2023	55	06/15/2023	2.16
07/09/2023	138	06/18/2023	2.19
07/12/2023	138	06/21/2023	2.23
07/17/2023	139	06/24/2023	1.86
		06/27/2023	1.66
		06/30/2023	1.56
		07/03/2023	1.31
		07/06/2023	1.67
		07/09/2023	2.09
		07/12/2023	2.10
		07/17/2023	1.69
mean	118	1-day P ₉₉	2.7
		4-day P ₉₉	2.3

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.”.

The following table presents the average concentrations and loadings at Outfall 001 from January 2019 to November 2023 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6):

Parameter Averages with Limits

	Average Measurement	Average Mass Discharged
BOD ₅	5 mg/L*	
TSS	7 mg/L*	
pH	7.78 s.u.	
Ammonia Nitrogen	1.85 mg/L*	
Fecal Coliform	26#/100 mL	
Phosphorus	0.63 mg/L*	0.7 lbs/day

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

PART 2 – WATER QUALITY-BASED Effluent Limitations for Toxic Substances – EXCEPT AMMONIA NITROGEN

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

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P₉₉) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
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-Q₁₀

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-Q₁₀ 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.

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

Where:

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

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

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

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

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

Attachment #1

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q₁₀ 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 the Village of Boyceville Wastewater Treatment Facility and the limits are set based on two times the acute toxicity criteria.

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 = 16.0 cfs, (1-Q₁₀ (estimated as 80% of 7-Q₁₀)), as specified in s. NR 106.06 (3) (bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD. mg/L	ATC	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P ₉₉	1-day MAX. CONC.
Arsenic		339.8		679.6	135.92	<0.989		
Cadmium	152	16.72	0.010	33.44	6.69	<0.19		
Chromium (+3)	152	2546.63	0.500	5093.3	1018.7	<1.1		
Copper	152	23.1	1.210	46.2			2.7	
Lead	152	160.69	0.338	321.4	64.3	<4.3		
Nickel	152	670.25		1340.5	268.1	3.9		
Zinc	152	174.04	1.143	348.1	69.6	<5.7		
Chloride		757		1514	303	118		139

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 5.00 cfs (¼ of the 7-Q₁₀), as specified in s. NR 106.06 (4) (c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P ₉₉
Arsenic		152.2		2387.8	477.6	<0.989	
Cadmium	175	3.82	0.010	59.8	12	<0.19	
Chromium (+3)	222	253.83	0.500	3974.9	795	<1.1	
Copper	222	20.48	1.210	303.5			2.3
Lead	222	60.51	0.338	944.4	188.9	<4.3	
Nickel	222	102.47		1607.6	321.5	3.9	
Zinc	222	241.75	1.143	3775.9	755.2	<5.7	
Chloride		395		6197	1239	118	

* 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 = 10.6 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	0.010	11932	2386	<0.19
Chromium (+3)	3818000	0.500	123126335	24625267	<1.1
Lead	140	0.338	4504.3	900.9	<4.3
Nickel	43000		1386703	277341	3.9

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 10.6 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		428.9	85.8	<0.989

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, limits are not required for toxic substances.

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98, Wis. Adm. Code. Based on the annual design flow and category of nondomestic contribution, it is unlikely that the effluent will contain PFOS or PFOA. **Therefore, monitoring is not recommended.** If information becomes available that indicates PFOS or PFOA may be present in the effluent or source water, the monitoring requirements may change.

Mercury – The permit application did not require monitoring for mercury because the Boyceville Wastewater Treatment Facility is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3., Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5). A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. The concentration in the sludge from 2020 was 0.01 mg/kg. Therefore, no mercury monitoring is recommended at Outfall 001.

**PART 3 – WATER QUALITY-BASED Effluent Limitations
for AMMONIA NITROGEN**

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. The current permit has daily maximum, weekly average, and monthly average limits. These limits are re-evaluated at this time due to the following changes:

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.
- Section NR 106.07(3), Wis. Adm. Code requires weekly and monthly average limits for municipal treatment plants.
- The maximum expected effluent pH has changed

Daily Maximum Limits based on Acute Toxicity Criteria (ATC):

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

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

Where:

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

The effluent pH data was examined as part of this evaluation. A total of 1753 sample results were reported from January 2019 to November 2023. The maximum reported value was 8.90 s.u. (Standard pH Units). The effluent pH was 8.70 s.u. or less 99% of the time. The 1-day P₉₉, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 9.14 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 9.06 s.u. Therefore, a value of 8.90 s.u. is believed to represent the maximum reasonably expected pH, and therefore most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 8.9 s.u. into the equation above yields an ATC = 1.56 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method

In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are calculated using the 1-Q₁₀ receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q₁₀ (estimated as 80 % of 7-Q₁₀) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	3.11
1-Q ₁₀	69.27

The 2×ATC method yields the most stringent limits for the Boyceville Wastewater Treatment Facility.

The current permit has variable daily maximum effluent limits based on effluent pH. Presented below is an updated table of daily maximum limitations corresponding to the full effluent pH range.

Daily Maximum Ammonia Nitrogen Limits – WWSF

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6

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

The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, since those limits relate to the assimilative capacity of the receiving water.

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria in ch. NR 105, Wis. Adm. Code.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as Warm Water Sport Fish Community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

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

Where:

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

E = 0.854,

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

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

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

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

Attachment #1

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q₁₀ (4-Q₃, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q₅ (estimated as 85% of the 7-Q₂ if the 30-Q₅ is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 °C, 25% of the flow is used if the Temperature < 11 °C, and 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are believed to be present in South Fork Hay River. So “ELS Absent” criteria apply from October through December, and “ELS Present” criteria will apply from January through September for a WWSF classification.

The “default” basin assumed values are used for temperature and background ammonia concentrations, because minimum ambient data is available. The values for pH are based on data collected from the Hay River. These values are shown in the table below, with the resulting criteria and effluent limitations.

Weekly and Monthly Ammonia Nitrogen Limits – WWSF

		January-April	May-September	October-December
Effluent Flow	Qe (MGD)	0.220	0.220	0.220
Background Information	7-Q ₁₀ (cfs)	20	20	20
	7-Q ₂ (cfs)	29	29	29
	Ammonia (mg/L)	0.12	0.04	0.13
	Temperature (°C)	8.9	20.6	10.0
	pH (s.u.)	7.45	7.91	7.94
	% of Flow used	25	100	25
	Reference Weekly Flow (cfs)	5.0	20.0	5.0
	Reference Monthly Flow (cfs)	6.163	24.650	6.163
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	11.41	4.66	6.64
	Early Life Stages Absent	16.40	4.66	8.88
	30-day Chronic			
	Early Life Stages Present	4.56	1.86	2.66
	Early Life Stages Absent	6.56	1.86	3.55
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	177.33	276.22	
	Early Life Stages Absent			137.48
	Monthly Average			
	Early Life Stages Present	85.12	134.01	
Early Life Stages Absent			65.54	

Effluent Data

The following table evaluates the statistics based upon ammonia data reported from January 2019 to November 2023, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Boyceville Wastewater Treatment Facility permit for the respective month ranges.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	January-April	May-September	October-December
1-day P ₉₉	14.01	8.14	2.79
4-day P ₉₉	8.11	4.64	1.52
30-day P ₉₉	4.79	2.47	0.73
Mean*	3.37	1.56	0.39
Std	2.85	1.77	0.69
Sample size	80	107	62
Range	<0.17 - 11	<0.12 - 6.8	<0.13 - 2.528

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

Based on this comparison, daily limits are required January through September.

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

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

Conclusions and Recommendations

In summary, current ammonia nitrogen limitations and monitoring are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
January-April	Variable	34	25
May - October	Variable	17	17
November & December	Variable	34	34

PART 4 – WATER QUALITY-BASED Effluent Limitations for BACTERIA

On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Codes, became effective which replace fecal coliform limits with new *Escherichia coli* (*E. coli*) limits for protection of recreational uses. Section NR 210.06(2)(a)1, Wis. Adm. Code, includes two limits which must be included in permits for facilities which are required to disinfect:

1. The geometric mean of *E. coli* bacteria in effluent samples collected in any calendar month may not exceed 126 counts/100 mL.
2. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 counts/100 mL.

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

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

Effluent Data

The Boyceville Wastewater Treatment Facility has monitored effluent *E. coli* from August 2022 to July 2023 and a total of 21 results are available. A geometric mean of 126 counts/100 mL was never exceeded, with a maximum monthly geometric mean of 10 counts/100 mL. Effluent data never exceeded 410 counts/100 mL. The maximum reported value was 16 counts/100 mL. Based on this effluent data it appears that the facility can meet new *E. coli* limits and a compliance schedule is not needed in the reissued permit.

PART 5 – PHOSPHORUS

Technology-Based Effluent Limit

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because the Boyceville Wastewater Treatment Facility currently has a limit of 1.0 mg/L, this limit should be included in the reissued permit. This limit remains applicable unless a more stringent WQBEL is given.

Water Quality-Based Effluent Limits (WQBEL)

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 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.075 mg/L applies for the South Fork Hay River.

The conservation of mass equation is described in s. NR 217.13(2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs) provided below.

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

Where:

WQC = 0.075 mg/L for the South Fork Hay River.

Qs = 100% of the 7-Q2 of 29 cfs

Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code

Qe = effluent flow rate = 0.220 MGD = 0.340 cfs

f = the fraction of effluent withdrawn from the receiving water = 0

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated using the procedures specified in s. NR 102.07(1)(b) to (c), Wis. Adm. Code. The median shall be calculated with at least one year of data using samples collected once per month during the period of May through October. All representative data from the most recent 5 years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

The following data were considered in estimating the background phosphorus concentration:

SWIMS ID	173245
Station Name	Monitoring station at Bridge
Waterbody	South Fork Hay River
Sample Count	6
First Sample	05/09/2012
Last Sample	10/09/2012
Mean	0.064 mg/L
Median	0.051 mg/L

Substituting a median value of 0.051 mg/L into the limit calculation equation above, the calculated limit is 2.2 mg/L.

TMDL Limits – Phosphorus

The Tainter Lake/Lake Menomin TMDL established a waste load allocation (WLA) for the Village of Boyceville of 670 lbs/year and 1.83 lbs/day. The monthly average limit of 3.0 lbs/day was determined in the WQBEL memorandum signed on August 19, 2013 in accordance with the *TMDL Development and Implementation Guidance*. The multiplier of 1.64 was chosen as described in the Department TMDL Implementation guidance using a coefficient of variation (CV) of 0.45 and weekly effluent monitoring.

This TMDL-based WQBEL will be re-evaluated if the annual WLA is not being met as described in the prior stated guidance. Rolling 12-month sums can be compared directly to the annual wasteload allocation. In this case, the peak rolling sum of 368 lbs/yr (January 2019 – November 2023) is less than the annual WLA of 670 lbs/yr. **Therefore, the Village of Boyceville is meeting their annual WLA and the TMDL-based WQBEL of 3.0 lbs/day as a monthly average will be continued in the reissued permit.**

PART 6 – WATER QUALITY-BASED Effluent Limitations for THERMAL

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

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from January 2019 to November 2023.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum	Daily Maximum	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)	(°F)	(°F)
JAN			NA	120
FEB			NA	120
MAR			NA	120
APR			108	120
MAY			NA	120
JUN			NA	120
JUL			NA	120
AUG			NA	120
SEP			NA	120
OCT			NA	120
NOV			NA	120
DEC			NA	120

Reasonable Potential

At temperatures above ~103°F, conventional biological treatment systems stop functioning properly and experience upsets. There is no indication that this has ever occurred at this treatment system. This information, coupled with hydraulic detention time of lagoon systems, lead to the conclusion that there is no reasonable potential for the discharge to exceed the 108°F limitation. **No temperature limits or monitoring are recommended** to be included in the reissued permit.

PART 7 – 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)*.

Attachment #1

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC50 (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC₂₅ (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of **12%** shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

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

Where:

Q_e = daily max flow rate = 0.427 MGD = 0.661 cfs

f = fraction of the Q_e withdrawn from the receiving water = 0

Q_s = 1/4 of the 7-Q₁₀ = 20.00 cfs ÷ 4 = 5.00 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual*, a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- Receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.
- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

Attachment #1
WET Data History

Date Test Initiated	Acute Results LC ₅₀ %				Chronic Results IC ₂₅ %					Footnotes or Comments
	<i>C. dubia</i>	Fathead minnow	Pass or Fail?	Used in RP?	<i>C. dubia</i>	Fathead Minnow	Algae (IC ₅₀)	Pass or Fail?	Use in RP?	
11/13/1991					>60	>60		Pass	No	1
09/30/1997	>100	>100	Pass	No	3.8	>80		Fail	No	1
04/11/2000	>100	>100	Pass	No	82.8	>100		Pass	No	1
07/10/2001	>100	>100	Pass	No	1.42	>100		Fail	No	1
08/07/2001					>100	>100		Pass	No	1
09/11/2001					77.3	>100		Pass	No	1
07/07/2005	>100	>100	Pass	Yes	>100	83.1		Pass	Yes	
04/20/2006					>100	15.11		Pass	Yes	
01/24/2008					>100	>100		Pass	Yes	
07/15/2009	>100	>100	Pass	Yes						
03/09/2011	>100	>100	Pass	Yes						
08/20/2014	>100	>100	Pass	Yes						
02/06/2018	>100	>100	Pass	Yes						

Footnotes:

1. *Data Not Representative*. Significant changes were made to WET test methods in 2004 and these changes were assumed to be fully implemented by certified labs by no later than June 2005.
- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

$$\text{Acute Reasonable Potential} = [(TU_a \text{ effluent})(B)]$$

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

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

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

Chronic WET Limit Parameters

TU_c (maximum) 100/IC ₂₅	B (multiplication factor from s. NR 106.08(6)(c), Wis. Adm. Code, Table 4)	IWC
100/15.11 = 6.62 TU _c	3.8 Based on 2 detects	12%

[(TU_c effluent) (B)(IWC)] = 2.92 >1.0

Therefore, reasonable potential is shown chronic WET limits using the procedures in s. NR 106.08(6) and representative data from 2005 to 2008.

Expression of WET limits

Chronic WET limit = [100/IWC] TU_c = 100/12 = 8.3 TU_c expressed as a monthly average

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

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. 0 Points	IWC = 12%. 0 Points
Historical Data	No data available in past 5 years. (5 pts) 5 Points	No data available in past 5 years. (5 pts) 5 Points
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. 0 Points	Same as Acute. 0 Points
Receiving Water Classification	WWSF (5 pts) 5 Points	Same as Acute. 5 Points
Chemical-Specific Data	Reasonable potential for Ammonia limits based on ATC; (5 pts) Chloride, Copper, and Nickel detected. (3 pts) Additional Compounds of Concern: None 8 Points	No reasonable potential for limits based on CTC; Ammonia nitrogen limit carried over from the current permit. Ammonia, Chloride, Copper, and Nickel detected. (3 pts) Additional Compounds of Concern: None 3 Points

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	Acute	Chronic
Additives	One Water Quality Conditioners added. (1 pt) Permittee has proper P chemical SOPs in place 1 Point	All additives used more than once per 4 days. 1 Point
Discharge Category	One Industrial Contributor. (5 pts) 5 Points	Same as Acute. 5 Points
Wastewater Treatment	Secondary or Better 0 Points	Same as Acute. 0 Points
Downstream Impacts	No impacts known 0 Points	Same as Acute. 0 Points
Total Checklist Points:	24 Points	19 Points
Recommended Monitoring Frequency (from Checklist):	2 tests during permit term	1x yearly
Limit Required?	No	Yes Limit = 8.3 TU _c
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above two acute WET tests are recommended in the reissued permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).

Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

Facility:	Boyceville WWTF	7-Q₁₀:	20.00	cfs	Temp Dates		Flow Dates	
Outfall(s):	001	Dilution:	25%		Start:	N/A	01/01/19	
Date Prepared:	12/13/2023	f:	0		End:	N/A	11/30/23	
Design Flow (Q_e):	0.220 MGD	Stream type:	Small warm water sport or forage fish community					
Storm Sewer Dist.	0 ft	Q_s:Q_e ratio:	14.7	:1				
		Calculation Needed?	YES					

Month	Water Quality Criteria			Receiving Water Flow Rate (Q _s) (cfs)	Representative Highest Effluent Flow Rate (Q _e)		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	T _a (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)		7-day Rolling Average (Q _{esl}) (MGD)	Daily Maximum Flow Rate (Q _{ea}) (MGD)		Weekly Average (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	33	49	76	5.00	0.190	0.231	0			NA	120
FEB	34	50	76	5.00	0.413	0.413	0			NA	120
MAR	38	52	77	5.00	0.185	0.212	0			NA	120
APR	48	55	79	5.00	0.430	0.443	0			108	120
MAY	58	65	82	5.00	0.258	0.301	0			NA	120
JUN	66	76	84	5.00	0.271	0.315	0			NA	120
JUL	69	81	85	5.00	0.210	0.279	0			NA	120
AUG	67	81	84	5.00	0.211	0.329	0			NA	120
SEP	60	73	82	5.00	0.210	0.318	0			NA	120
OCT	50	61	80	5.00	0.243	0.309	0			NA	120
NOV	40	49	77	5.00	0.242	0.310	0			NA	120
DEC	35	49	76	5.00	0.203	0.225	0			NA	120

Attachment #3

