Permit Modification Fact Sheet

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

General Information

Permit Number:	WI-0049816-05-1	
Permittee Name:	Dane Iowa Wastewater Commission	
Address:	5745 Mahocker Road	
City/State/Zip:	Mazomanie WI 53560	
Discharge Location:	East bank of Black Earth Creek, west of the treatment plant, approximately 50 feet downstream of the railway bridge.	
Receiving Water:	Black Earth Creek in the Black Earth Creek Watershed (LW17) of the Lower Wisconsin River Basin located in the SW ¼ of the NE ¼ of Section 18, Town 8 North, Range 6 East in Dane County at approximately Latitude 43.16994º North and Longitude 89.82811º West	
Stream Flow ($Q_{7,10}$):	17 cfs	
Stream Classification:	Warm Water Sport Fish (WWSF), non-public water supply	
Design Flow(s)	Annual Average	0.693 MGD
Significant Industrial Loading?	Cardinal Glass, Arena Cheese	
Operator at Proper Grade?	Facility is Basic with subclasses A1 – Suspended Growth Processes; B – Solids Separation; C – Biological Solids/Sludges; P – Total Phosphorus; D – Disinfection; L – Laboratory; SS – Sanitary Sewage Collection System. Three operators are certified.	
Approved Pretreatment Program?	N/A	

Facility Description

The Dane Iowa Wastewater Commission owns and operates a wastewater treatment facility that provides secondary treatment and nutrient removal to a combination of commercial and residential wastewater from the Villages of Arena, Black Earth, and Mazomanie, and the Wisconsin Heights School. The facility is designed to treat an average of 693,000 gallons per day. Treatment units include raw wastewater screening, a three-ring oxidation ditch providing secondary treatment, ammonia removal, biological phosphorus removal, final clarification, summer (May – September) ultraviolet light disinfection, and effluent post-aeration.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, CMARs, land app reports, compliance schedule items, and a site visit on May 24, 2022, this facility has been found to be in substantial compliance with their current permit.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)**
703	0.339 MGD (August 2017 – August 2022 Average)	Representative influent samples shall be collected after screening in the influent channel prior to the parshall flume.
001	0.428 MGD (August 2017 – August 2022 Average)	Representative effluent samples shall be collected in the contact tank prior to the UV disinfection channel for composite samples and post aeration for grab samples at the end of the contact tank, prior to discharge to Black Earth Creek. Flow is sampled after UV disinfection.
002	Approximately 400 dry U.S. Tons Annually	Class A, sewage sludge cake, treated by Schwing "Bioset" process and sampled immediately after treatment process. Monitor for Lists 1, 2, 3 and 4 quarterly. Representative samples shall be monitored once in 2025 for PCBs.
003	Outfall Not Used During Previous Permit Term	Class B, sewage sludge cake, treated by Schwing "Bioset" process and sampled either immediately after treatment process OR from Class B Cake Storage. Monitor for Lists 1, 2, 3 and 4 quarterly when outfall is used within the period for land application. Sampling shall only be conducted in accordance with Class B requirements of department approved sludge management plan. This outfall shall only be used when Class A sewage sludge limits cannot be met. The status of this outfall is INACTIVE. Contact DNR representative to activate this outfall and verify sampling requirements prior to disposal.
004	New Outfall	Class B, liquid sewage sludge from Tank #2 Sludge Tank leading to belt filter press. Monitor for Lists 1, 2, 3 and 4 quarterly when outfall is used within the period for land application. Sampling shall only be conducted in accordance with Class B requirements of department approved sludge management plan. This outfall is provided for operational flexibility should treatment equipment failure occur. The status of this outfall is INACTIVE. Contact DNR representative to activate this outfall and verify sampling requirements prior to chosen disposal.
005	New Outfall	Class A, sewage sludge cake, treated by Schwing "Bioset" process and sampled from cake storage. Pathogen retest monitoring requirements include List 3 quarterly during periods when sewage sludge is distributed as EQ product or land applied.
601	In-stream Monitoring	In-stream Sampling Point 601: representative water samples shall be collected from the Black Earth Creek. Sample point 601 is located downstream of the Dane Iowa WWTP Outfall, at the Morrill Road Bridge (43.16431, -89.84314). Sample point 601 correlates with the sample locations described in the approved AM Plan No. WQT-2023-0002 (November 2022).
602	In-stream Monitoring	In-stream Sampling Point 602: representative water samples shall be collected from Black Earth Creek. Sample point 602 is located upstream of the Dane Iowa WWTP Outfall, at the Hudson Road

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/sample Contents and Treatment Description (as applicable)**
		Bridge (43.17655, -89.81861). Sample point 602 correlates with the sample locations described in the approved AM Plan No. WQT-2023-0002 (November 2022).

1 Influent - Proposed Monitoring

Sample Point Number: 703- COMBINED INFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
BOD_5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
$CBOD_5$		mg/L	3/Week	24-Hr Flow Prop Comp	

Changes from Previous Permit:

None.

Explanation of Limits and Monitoring Requirements

Flow and TSS: These are standard municipal wastewater requirements. TSS monitoring is required for percent removal requirements.

$CBOD_5$ and BOD_5: When a permit contains effluent limits for $CBOD_5$ based on s. NR 210.07, Wis. Adm. Code, the permit shall include influent monitoring for both $CBOD_5$ and BOD_5. Monitoring for influent CBOD5 satisfies the percent removal requirements of s. NR 210.05, Wis. Adm. Code, and monitoring for influent BOD_5 satisfies operational requirements for the CMAR and other code requirements.

2 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- EFFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	3/Week	Continuous	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
$CBOD_5$	Weekly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May through October annually.
$CBOD_5$	Weekly Avg	40 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November through April annually.
$CBOD_5$	Monthly Avg	25 mg/L	3/Week	24-Hr Flow Prop Comp	
$CBOD_5$	Weekly Avg	170 lbs/day	3/Week	Calculated	
Suspended Solids, Total	Weekly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May through October annually.
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November through April annually.
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	3/Week	Grab	
pH Field	Daily Min	6.0 su	3/Week	Grab	
Dissolved Oxygen	Daily Min	6.0 mg/L	3/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total	Daily Max	14 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective October through May annually.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	14 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective October through May annually.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	32 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective June through September annually.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective April through May annually.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	15 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective June through September annually.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	14 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective October through March annually.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit Effective May through September annually.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit Effective May through September annually. See the 'E. coli Percent Limit' section below. Enter the result in the DMR on the last day of the month.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only in calendar year 2026.
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	6-Month Avg	0.5 mg/L	3/Week	24-Hr Flow Prop Comp	This is an Adaptive Management interim limit effective on May 1, 2023. See 'Total Phosphorus Interim Limit, Averaging Periods and Compliance Determination' section below.
Phosphorus, Total		lbs/day	3/Week	Calculated	Calculate the daily mass discharge of phosphorus in lbs/day on the same day phosphorus sampling occurs. Daily mass (lbs/day) = daily concentration (mg/L) x daily flow (MGD) x 8.34
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Monitor annually in rotating quarters. See 'Nitrogen Series Monitoring' section below.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Monitor annually in rotating quarters. See 'Nitrogen Series Monitoring' section below.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Monitor annually in rotating quarters. See 'Nitrogen Series Monitoring' section below. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
PFOS		ng/L	Annual	Grab	Monitoring only. See 'PFOS/PFOA Minimization Plan Determination of Need' schedule.
PFOA		ng/L	Annual	Grab	Monitoring only. See 'PFOS/PFOA Minimization

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Plan Determination of Need' schedule.

Changes from Previous Permit

- Fecal coliform monitoring and limits have been replaced with *Escherechia coli* (*E. coli*) monitoring and limits. *E. coli* monitoring is required and limits go into effect May 1, 2023. *E. coli* limits of 126 #/100 ml as a monthly geometric mean and 410 #/100 ml as a daily maximum that may not be exceeded more than 10 percent of the time in any calendar month will apply.
- New timeframe for Chloride monitoring is now calendar year 2026.
- An interim Adaptive Management Total Phosphorus 6-month limit of 0.5 mg/L is effective on May 1, 2023.
- Annual monitoring the Total Nitrogen parameters (TKN, $N0_2$+$N0_3$ and Total N) is now required in rotating quarters throughout the permit term.
- ~~Monitoring once per two months for PFOS and PFOA is included in the permit in accordance with s. NR 106.98(2)(b), Wis. Adm. Code.~~ The monitoring frequency for PFOS and PFOA has been reduced from 1/ 2 Months to Annual.

Explanation of Limits and Monitoring Requirements

Please refer to the Water Quality Based Effluent Limits (WQBEL) memo prepared by Sarah Luck dated June 21st, 2022 for the detailed calculations and explanation.

> Note: Throughout this fact sheet all citations of administrative code, for example, s. NR 102.06, Wis. Adm. Code, will be referenced as s. NR 106.02, and reflect current Wisconsin Administrative Code.

Sampling Frequencies – Taking into consideration guidance and requirements in administrative code, effluent monitoring frequencies for Dane Iowa's permit were determined to be appropriate for pollutants that have final effluent limits in effect during this permit term. 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.

Categorical Limits

$CBOD_5$, Total Suspended Solids (TSS), pH, and Dissolved Oxygen– Standard municipal wastewater requirements for $CBOD_5$, TSS, pH, and Dissolved Oxygen are included based on NR 210 'Sewage Treatment Works' requirements for discharges to limited aquatic life streams. Chapter NR 102 'Water Quality Standards for Surface Waters' also specifies requirements for pH for fish and aquatic life streams. Regulatory changes to s. NR 205.065, became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. These changes are based on 40 CFR 122.45(d).

Water Quality Based Limits and WET Requirements and Disinfection

Disinfection – The Dane Iowa wastewater treatment facility is required disinfect its effluent discharged to Black Earth Creak seasonally, May 1 through September 30 annually, to protect recreational uses in and on downstream waters and is accomplished using ultraviolet light disinfection.

E. Coli – Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying *E. coli* WPDES permit implementation procedures became effective May 1, 2020. The new rule requires that WPDES permits for facilities with required disinfection include monitoring for *E. coli* while facilities are disinfecting during the recreation

period and establish effluent limitations for *E. coli* established in s. NR 210.06 (2), Wis. Adm Code. The administrative code rule changes included the following actions: revised the bacteria water quality criteria from fecal coliform to *E. coli* to protect recreation in ch. NR 102, Wis. Adm. Code.; removed fecal coliform criteria for certain individual waters from ch. NR 104, Wis. Adm. Code.; revised permit requirements for publicly 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.

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. Results of chloride monitoring performed during the permit term in 2021 showed that there was not reasonable potential to exceed either the daily maximum or weekly average chloride WQBELs. Monthly monitoring is required in calendar year 2026 to generate data to evaluate the need for chloride limits at the next permit reissuance.

Total Phosphorus – The proposed permit will be Dane Iowa's second permit term under new administrative rules for phosphorus discharges that took effect December 1, 2010. Details regarding the administrative rules for phosphorus discharges may be found at: http://dnr.wi.gov/topic/surfacewater/phosphorus.html. Phosphorus rules are contained in s. NR 102.06 and ch. NR 217, Subchapter III. A monthly average interim limit of 1 mg/L is effective upon permit reissuance. Additionally, an Adaptive Management Interim limit of 0.5 mg/L expressed as a 6-month average is effective May 1, 2023. The averaging periods for the 6-month limit are May through October and November through April and the limit is effective May 1, 2023 beginning with the 6-month average period from May 1, 2023 through October 30, 2023. The facility has shown the ability to meet this Adaptive Management Interim limit from recent facility changes.

Adaptive Management for Total Phosphorus Compliance – Dane Iowa requested, and the Department approved a plan to implement a watershed adaptive management approach under s. NR 217.18, Wis. Adm. Code and s. 283.13(7) Wis. Stats. as a means for Dane Iowa to achieve compliance with the phosphorus water quality standard in s. NR 102.06, Wis. Adm. Code. The phosphorus limitations and conditions in this permit reflect the approved Adaptive Management (AM) Plan WQT-2023-0002 (November 2022). The permittee shall design and implement the actions identified in the approved AM Plan No. WQT-2023-0002 (November 2022) in accordance with the goals and measures identified. The goal of the AM plan is to reduce phosphorus loadings within the watershed action area by at a minimum 498 lbs/yr by the end of this permit term. In addition, annual progress reports are required. See Schedules section for more details. The Department may terminate the AM option based on the reasons enumerated in NR 217.18(3)(e)2, Wis. Adm. Code.

The permit contains an interim adaptive management phosphorus limit of 0.5 mg/L expressed as a six-month seasonal average that is effective May 1, 2023. The averaging periods for the six-month average limit are May through October and November through April. Compliance with the 0.5 mg/L six-month interim limit is evaluated at the end of each six-month period on April 30 and October 31 annually. The 1.0 mg/L monthly average phosphorus limit is in effect for the duration of the reissued permit.

Surface water monitoring requirements are included in the proposed permit in support of the goals and measures of the Adaptive Management Plan and are discussed in more detail in following subsections of this fact sheet. Sampling is required on the days each week as outlined in the approved Adaptive Management Plan.

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: **April – June 2023; July – September 2024; October – December 2025; January – March 2026; April – June 2027**

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 major municipal dischargers with an average flow rate greater than 1 MGD but less than 5 MGD, at a minimum sample effluent once every two-months for PFOS and PFOA pursuant s. NR 106.98(2)(b), Wis. Adm. Code.

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

A sample frequency of 1/2 months means one sample is taken during any two-month period. Examples of 1/2 month sample would be every other month (Jan, March, May, etc.) or back-to-back months with a break in between (February & March, May & June, Aug & Sept, etc.). DMR Short Forms will be generated for the following time periods: January-February, March-April, May-June, July-August, September-October, and November-December. At a minimum one sample result will be present on each form.

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

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

After a review of the data submitted with the Year 2 Report on Effluent Discharges, the department has determined that it is warranted to reduce the sampling frequency in this case. The department is requiring continued monitoring of these compounds to complete the permit term to ensure that the current effluent quality is maintained. At the next permit reissuance, the department will make another determination as to whether further reduction or removal of monitoring is warranted, based on the continued sampling results.

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. The need for daily maximum, weekly average and monthly average ammonia limits were evaluated in the June 21, 2022 WQBEL memo and no changes to the limits are recommended in the proposed permit.

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 and Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. Based on an evaluation of maximum temperatures reported during monitoring from January 2021 through December 2021 no effluent limits or monitoring are recommended for temperature.

Whole Effluent Toxicity – Whole effluent toxicity (WET) testing requirements and limits (if applicable) are determined in accordance with ss. NR 106.08 and NR 106.09 Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). No WET testing is required because information related to the discharge indicates the potential for effluent toxicity is low.

Sample Point Number: 601- Black Earth Creek - Downstream and 602- Black Earth Creek - Upstream

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow River		cfs	Per Occurrence	Measure	Voluntary river flow estimates for each day that in-stream phosphorus monitoring is performed November 1 through April 30 annually.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow River		cfs	1/ 2 Weeks	Measure	Provide an estimate of river flow for each day that in-stream phosphorus monitoring is performed May 1 through October 31 annually.
Phosphorus, Total		mg/L	Per Occurrence	Grab	Voluntary monitoring November 1 through April 30 annually. See permit subsections for sampling and reporting requirements.
Phosphorus, Total		mg/L	1/ 2 Weeks	Grab	Collect samples biweekly May 1 through October 31 annually. See permit subsections for sampling and reporting requirements.
Phosphorus, Total		lbs/month	Per Occurrence	Calculated	Calculated total phosphorus loads may also be reported for the months of November through April, as data is available. See Permit Subsection for calculation of total monthly loads.
Phosphorus, Total		lbs/month	1 / 2 Weeks	Calculated	Calculate and report total monthly phosphorus loads for the months of May through October annually. See permit subsection for calculation of total monthly loads.

Changes from Previous Permit

None.

Explanation of Limits and Monitoring Requirements

As part of the Adaptive Management Plan requirements, downstream monitoring for river flow rate, in-stream phosphorus concentration and total monthly in-stream phosphorus loads is required during the months of May through October. Monitoring for these same parameters is voluntary during the months of November through April. When voluntary monitoring is completed, results must be reported on the monthly eDMR. The in-stream phosphorus concentration and

river flow rate are used to calculate the total monthly loading of phosphorus in the Black Earth Creek on a monthly basis. This monitoring will allow the permittee to demonstrate reductions in phosphorus loading for each month of the year.

Downstream monitoring for 'Flow Rate' at Sample Point 601 (Downstream) may be measured or calculated by reporting the sum of the measured Flow Rate at Sample Point 602 (Upstream) + Sample Point 001 (effluent). Upstream Flow Monitoring at Sample Point 602 shall be monitored based on stream stage or other approved measure method. This method must be documented in the Adaptive Management Plan and shall be specified on the monthly eDMR.

3 Land Application - Proposed 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	A	Cake	Fecal Coliform	pH Adjustment Approved Equivalent Process	Land Application	400
003	B	Cake	Fecal Coliform	pH Adjustment Injection Incorporation	Land Application	0
004	B	Liquid	Fecal Coliform		Land Application	New Outfall
005	A	Cake	Fecal Coliform	Sample point for retesting Class A Cake from Storage		New Outfall

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**

If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in land applying sludge from this facility

Is a priority pollutant scan required? **No**, design flow is less than 5 MGD (0.693 MGD).

Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.

Sample Point Number: 002 - CLASS A CAKE SLUDGE; 003 - CLASS B CAKE SLUDGE; 004 - CLASS B LIQUID SLUDGE

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Monitor representative samples from Outfall 002 once in calendar year 2025.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Monitor representative samples from Outfall 002 once in calendar year 2025.
Solids, Total		Percent	Quarterly	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Quarterly	Composite	
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Potassium, Total Recoverable		Percent	Quarterly	Composite	

Sampling Point (Outfall) 005 - CLASS A SLUDGE PATHOGEN RETEST FROM STORAGE

Sludge Monitoring Requirements	
Sludge Requirements	**Sample Frequency**
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	**Quarterly**

Changes from Previous Permit:

- Outfall 004 – "Class B Liquid Sludge" was added for operational flexibility so the permittee can land apply or haul off-site Class B liquid sludge from Sludge Storage Tank #2 if treatment equipment failure occurs and the permittee is unable to meet the requirements for Class A Sludge.
- Outfall 005 – "Class A Sludge Pathogen Retest from Storage" was added as a sample point for retesting Class A Cake Sludge from the Schwing "Bioset" process that is stored prior to distribution.
- New timeframe for monitoring PCBs is now calendar year 2025.

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).

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

4 Schedules

4.1 Watershed Adaptive Management Annual Report Submittals

The permittee shall submit annual reports on the implementation of AM plan No. WQT-2023-0002 (November 2022) as specified in 2.2.1.4 and the following schedule.

Required Action	Due Date
Annual Adaptive Management Report #7: Submit an annual adaptive management report. The annual adaptive management report shall: - Identify those actions from section 3 of the approved adaptive management plan that were completed during the previous calendar year and those actions that are in progress; - Evaluate collected monitoring data; - Document progress in achieving the goals and measures identified in the approved adaptive management plan; - Describe the outreach and education efforts that occurred during the past calendar year; - Identify any corrections or adjustments to the adaptive management plan that are needed to achieve compliance with the phosphorus water quality standards specified in s. NR 102.06, Wis. Adm. Code; - Describe any updates needed to Dane Iowa's approved phosphorus optimization plan; - Submit results from all sample points outlined in AM plan No. WQT-2023-0002 (November 2022) to the Department using the Department's Laboratory Data Entry System (LDES).	03/31/2024
Annual Adaptive Management Report #8: Submit an Adaptive Management progress report as defined above.	03/31/2025
Annual Adaptive Management Report #9: Submit an Adaptive Management progress report as defined above.	03/31/2026
Annual Adaptive Management Report #10: Submit an Adaptive Management progress report as defined above.	03/31/2027
Renewal of Adaptive Management Plan for Permit Reissuance: If the permittee intends to seek renewal of AM plan No. WQT-2023-0002 (November 2022) per s. NR 217.18, Wis. Adm. Code, for the reissued permit term, proposed AM goals and actions based on an updated AM plan shall be submitted to the Department for review and approval. The permittee may propose to adjust load reductions required by AM plan No. WQT-2023-0002 (November 2022) either up or down at the beginning of each WPDES permit term to reflect changes in loads associated with point and non-point sources. This schedule may be modified to incorporate any changes in AM goals and actions, removed if the AM program is terminated per the "Adaptive Management Reopener Clause", or removed if the adaptive management plan has achieved water quality standards as determined by the Department within the AM action area.	09/30/2027
Final Adaptive Management Report for 2nd Permit Term: Submit the final Adaptive Management (AM) report documenting progress made during the second permit term under AM in meeting the watershed phosphorus reduction target of 2,398 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan modeling protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions form the approved AM plan No. WQT-2023-0002 (November 2022) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, for informational purposes, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions.	03/31/2028

Annual Adaptive Management Report #12: Submit an Adaptive Management progress report as defined above.	03/31/2029
Annual Adaptive Management Report #13: Submit an Adaptive Management progress report as defined above.	03/31/2030
Annual Adaptive Management Report #14: Submit an Adaptive Management progress report as defined above.	03/31/2031
Final Adaptive Management Report for 3rd Permit Term: Submit the final Adaptive Management (AM) report documenting progress made during the second permit term under AM in meeting the watershed phosphorus reduction target of 4,795 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan modeling protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions form the approved AM plan No. WQT-2023-0002 (November 2022) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, for informational purposes, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions.	03/31/2032
Achieve Water Quality Standards and Adaptive Management Plan Success: All the receiving waters identified within the AM plan No. WQT-2023-0002 (November 2022) shall comply with water quality standards specified in s. NR 102.06, Wis. Adm. Code. The permittee shall continue to comply with applicable effluent limits (required under s. 217.18(3)(e)3. expressed as a 6-month avg and 1.0 mg/L monthly avg and continue to monitor surface waters per the AM plan protocol at a minimum of monthly May through October for total phosphorus.	12/31/2032

Explanation of Watershed Adaptive Management Annual Report Submittals

This compliance schedule requires the permittee to submit annual adaptive management (AM) annual reports that show progress towards meeting the goals and measures contained in the approved AM plan. The final AM Report for this permit term must document the success of meeting the watershed phosphorus minimum reduction target of 1400 lbs/yr. The compliance schedule may be modified at permit reissuance, should changes in AM goals and measures or timing necessitate different dates for schedule items.

Pursuant to s. NR 217.18(1) Wis. Adm. Code., phosphorus water quality criteria must be achieved “as soon as possible”. The duration for this adaptative management schedule is 10 years. This timeframe is consistent with the approved adaptive management plan, and represents the shortest possible duration based upon the following factors that influence time required for the water body to achieve the phosphorus criterion:

- Magnitude of point and/or nonpoint source phosphorus reductions required
- Costs associated with point and/or nonpoint source phosphorus reductions
- For nonpoint source reductions, the time required to contact landowners and receive adequate participation to implement practices
- Physical characteristics of the watershed and receiving water, including land use, soil properties, slopes, channel gradient, and level of legacy sediment/phosphorus currently in the system

4.2 Sludge Management Plan

A sludge management plan is required.

Required Action	Due Date
Sludge Management Plan (SMP) Submittal: Submit a sludge management plan (SMP) to optimize the treatment and disposal of sludge by the Due Date. The SMP shall include a description of the facilities management program for department approval pursuant to s. NR 204.11(1), Wis. Adm. Code. The plan shall include separate sections for each type of sewage sludge including: Class B liquid, Class B cake, Class A cake immediately after PFRP equivalency treatment, Class A cake from storage. If there will be designated land application sites for each waste type, they should be listed by legal location and department assigned site number. The SMP shall provide standardized information for communication to operators and the department for no less than the following: 1) Sample point, influent point and outfall monitoring locations shown on a schematic and with photos; 2) Monitoring requirements at each influent point(s), sampling point(s) and outfall location(s); 3) Sampling protocols for each location and parameters at each location including treatment temperature, pH monitoring requirements, fecal concentration as required; 4) Monitoring frequencies at each sample point, influent point and outfall; 5) Analytical methods with appropriate hold times and chain of custody procedures; 6) Provide documentation relating to temperature and pressure monitoring data recording, retrieval and printing out the data when requested by the department; 7) Storage, loading, transportation, unloading and distribution details associated with all outfalls and influent locations; and 8) Schwing Bioset start up instructions and details including detailing overcoming lack of appropriate temperatures, pressures, flow, mixing and any other potential operational details. The SMP shall have several options and operational strategies available to provide for maximum flexibility for each of the sludge treatment and disposal operations.	12/31/2023

Explanation of Sludge Management Plan Requirement

This schedule requires the permittee to submit a sludge management plan for department approval that details how the different types of sludge generated by the treatment facility will be managed in accordance with the requirements of ch. NR 204, Wis. Adm. Code.

4.3 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 PFOS and PFOA data collected including any voluntary influent, intake, in-plant, collection system sampling, and blank sample results.	03/31/2024

Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all PFOS and PFOA data collected including any voluntary 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.	03/31/2025

Explanation of PFOS/PFOA Minimization Plan Determination of Need

As stated above, NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. S. NR 106.98, Wis. Adm. Code, specifies steps to generate data in order to determine the need for reducing PFOS and PFOA in the discharge. Data generated per the effluent monitoring requirements will be used to determine the need for developing a PFOS/PFOA minimization plan. As part of the schedule, the permittee is required to submit two annual Reports on Effluent Discharge.

If the Department determines that a minimization plan is needed, the permit will be modified or revoked/reissued to include additional requirements.

Attachments:

~~Water Quality Based Effluent Limits (WQBEL) Memo – June 21, 2022~~

~~Map – Attachment #2 of WQBEL Memo~~

~~Adaptive Management Plan – November 2022~~

~~Adaptive Management Plan Approval Letter – January 3 2023~~

~~Public Notice~~

PFOS and PFOA Water Quality-Based Effluent Limitations for the Dane Iowa Wastewater Commission WWTF -WPDES Permit No. (WI-0049816) in Dane County, by Amy Garbe, PE, Wastewater Engineer, dated July 31, 2025

Proposed Expiration Date:

A permit term of five years is proposed in this reissuance with an expiration date of March 31, 2028.

Justification of Any Waivers from Permit Application Requirements

No waivers were requested from permit application requirements.

Prepared By:

Sean Spencer and Phillip Spranger – Wastewater Specialists

Date: March 30, 2023

Revised By: Sarah Donoughe, Wastewater Specialist-Adv

Date: August 7, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: July 31, 2025

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the Dane Iowa Wastewater Commission WWTF -WPDES Permit No. (WI-0049816) in Dane County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for the Dane Iowa Wastewater Commission WWTF. This municipal wastewater treatment facility (WWTF) discharges to Black Earth Creek, located in the Black Earth Creek Watershed (LW17) in the Lower Wisconsin River Basin.

The current permit, effective since April 2023, has monitoring only for PFOS and PFOA. The following review is based on new regulations which are now in effect throughout the state of Wisconsin and recommendations are made in accordance with chapters NR 102, 104, 105, 106, 207, and 217 of the Wisconsin Administrative Code, where applicable.

Receiving Water Information

- Name: Black Earth Creek
- Classification: Warm Water Sport Fish (WWSF) community, non-public water supply
- Flow: The following 7-Q10 and 7-Q2 values are from USGS for Station 10032681 located at Bridge Street in Mazomanie, where Outfall 001 is located. The Harmonic Mean has been estimated as recommended in State of Wisconsin Water Quality Rules Implementation Plan (Publ. WT-511-98).
  7-Q10 = 17 cfs (cubic feet per second)
  7-Q2 = 26 cfs
  90-Q10 = 22 cfs
  Harmonic Mean Flow = 41 cfs using a drainage area of 99 mi^2

- % of Flow used to calculate limits: 25%

Effluent Information

- Flow: Average Design Flow = 0.693 MGD. For reference, the actual average flow from January 2023 to June 2025 was 0.352 MGD.
- Effluent characterization: This facility is categorized as a minor municipality.

The following table lists the statistics for effluent PFOS and PFOA levels from April 2023 through May 2025.

	PFOS ng/L	PFOA ng/L
1-day P_{99}	N/A	5.30
4-day P_{99}	N/A	4.07
30-day P_{99}	N/A	3.40
Mean*	0.802	3.06
Std	1.30	0.775
Sample Size	13	13

Range	<1.82 – 3.31	1.93 – 4.1

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

Water Quality Based Limit – PFOS and PFOA

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

PFOS

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

PFOA

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

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

Where:

WQC = 95 ng/L for Black Earth Creek
Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 10.25 cfs
Cs = background concentration of PFOA in the receiving water pursuant to s. NR 106.06(4)(e), Wis. Adm. Code
Qe = effluent flow rate = 0.693 MGD = 1.07 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

After substituting the appropriate variables, the calculated PFOA limit is 1,003 ng/L.

Reasonable Potential Determination

In accordance with s. NR 106.98(4)(a), Wis. Adm. Code, **the discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOS** because the arithmetic average of reported effluent PFOS data is less than 1/5th of the calculated WQBEL (8 ng/L). Therefore, **a WQBEL is not required.**

The discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOA because the 30-day P99 of reported effluent PFOA data is less than the calculated WQBEL (1,003 ng/L). Therefore, **a WQBEL is not required.**

Conclusions

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

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

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

Attachments (2) – PFOS Data and PFOA P99 Calculation

PREPARED BY: Amy Garbe date: 7/31/25

Amy Garbe, P.E., Wastewater Engineer

cc: Jordan Main, Basin Engineer – SCR/Fitchburg
Nate Willis, P.E., PFAS Implementation Coordinator – CO

Attachment 1 – PFOS Data

Sample Date	PFOS Effluent Result [ng/L]
Apr-23	<1.82
Aug-23	<1.82
Oct-23	<1.88
Dec-23	<1.86
Feb-24	<1.89
Apr-24	<1.98
Jun-24	<2
Jul-24	3.31
Sep-24	<1.99
Nov-24	3
Jan-25	2.77
Mar-25	0.62
May-25	0.723

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -			
=	= =	=	=
SUBSTANCE:			
NUMBER OF VALUES:	------		
TOTAL	13		
DETECTED	13		
NON-DETECTED	0		
d	0		
m	3.056923		
mean of all data	3.056923		
s	0.775053		
	------	------	------
n	1	4	30
d^n	0	0	0
p	0.99	0.99	0.99
Z_p	2.326785	2.326785	2.326785
1+(s/m)^2	1.064283	1.064283	1.064283
(sigma_d)^2	0.062301	0.062301	0.062301
mu_d	1.086258	1.086258	1.086258
(sigma_dn)^2	0.062301	0.015943	0.00214
mu_dn	1.086258	1.109437	1.116339
P_99 exponent	1.667028	1.403229	1.223988
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P_99	5.30	4.07	3.40
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Data Summary	
Apr-23	2.44
Aug-23	2.44
Oct-23	3.22
Dec-23	2.61
Feb-24	3.47
Apr-24	4.47
Jun-24	3.95
Jul-24	3.32
Sep-24	2.3
Nov-24	4.1
Jan-25	2.92
Mar-25	1.93
May-25	2.57