Permit Modification Fact Sheet

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

General Information

Permit Number:	WI-0020231-10-1	
Permittee Name:	CITY OF HORICON	
Address:	404 East Lake Street	
City/State/Zip:	Horicon WI 53032	
Discharge Location:	110 Jackson Street, Horicon	
Receiving Water:	Rock River (Sinissippi Lake Watershed, UR08 – Upper Rock River Basin) in Dodge County	
StreamFlow ($Q_{7,10}$):	7-Q10 = 6.3 cfs	
Stream Classification:	Full Fish and Aquatic Life – Warm Water Sport Fishery	
Discharge Type:	Existing, Continuous	
Design Flow(s)	Annual Average	0.582 MGD
Significant Industrial Loading?	John Deere Horicon Works	
Operator at Proper Grade?	Yes. Advanced - A1, B, C, P, D, L Basic – SS	
Approved Pretreatment Program?	N/A	

Facility Description

The City of Horicon Wastewater Treatment Facility (WWTF) operates an oxidation ditch activated sludge plant with an average annual design flow of 0.582 MGD. The facility's design organic capacity is 950 lbs/day. Preliminary Treatment consists of fine screening and grit removal. After preliminary treatment, wastewater flows to the single oxidation ditch for biologic treatment via extended aeration activated sludge. FX-300 is dosed to the end of the oxidation ditch for chemical phosphorus removal. A splitter structure distributes flow from the oxidation ditch evenly between the two final clarifiers. Clarified effluent is disinfected with chlorine gas, dechlorinated with sulfur dioxide and aerated before discharging to the Rock River. In addition, blending has been approved for this permit term. The City of Horicon's WWTF has the capacity to divert flow prior to the oxidation ditch and stored in a peak flow clarifier during high flow events. Wastewater flow bypasses the oxidation ditch and final clarifiers and then receives disinfection prior to discharge. Sludge is aerobically digested and dewatered by a filter press. Biosolids are removed by a local contract hauler and land applied.

Substantial Compliance Determination

Enforcement During Last Permit: No formal enforcement was taken during the last permit term.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items and a facility inspection on April 25, 2023, conducted by DNR Wastewater Engineer, Jacob Van Susteren-Wedesky, this facility has been found to be in substantial compliance with their current permit, WI-0020231-09-0.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	No flow data available.	INFLUENT: Representative influent samples shall be collected from the influent line after the parshall flume. Samples shall be 24-hour flow proportionate composite samples. Influent flow measurement is not required.
001	0.44 MGD (2022 Data)	EFFLUENT: Representative 24-hour flow proportionate effluent samples shall be collected prior to the disinfection facility for composite samples and after step aeration for grab samples, prior to discharge to the Rock River.
101	New Sample Point	BLENDING: Sample point for reporting diverted flow from prior to the oxidation ditch and stored in a peak flow clarifier during high flow events. Wastewater flow bypasses the oxidation ditch and final clarifiers and then receives disinfection prior to discharge. The permittee shall notify the Department when blending occurs. See "Blending" requirements in the Standard Requirements section of the permit.
004	110 dry tons generated annually (WPDES permit application submitted 7/23/2023)	Aerobically digested, Belt press cake, Class B. Representative sludge samples shall be collected after the belt press.
005		Class B: Liquid Sludge. This outfall has been included for emergency uses. The liquid sludge shall be sampled and analyzed for nutrients prior to landspreading. If Sampling Point 005 is not active in any given calendar year, no sampling is required. Prior notification to the Department is required if land application is proposed. All requirements of ch. NR 204, Wis. Adm. Code are applicable.
006	Inactivated for the reissuance. See sample point 101 for Blending.	Only active during blending events. Events must be for at least 24 consecutive hours for this sampling point to be active. Track effluent flow using capacity of pipe, and assuming full flow. All monitoring must be reported under and meet the requirements of Sampling Point 001. Composite samples may be time-proportionate when blending.

1 Influent – Monitoring Requirements

Sample Point Number: 701- INFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

Changes from Previous Permit:

Flow- monitoring added.

BOD5 and Total Suspended Solids- Sample frequency increased to 3/week.

Explanation of Limits and Monitoring Requirements

Flow Rate - Reporting of flow added because the permittee had an influent flow meter installed.

BOD5 and Total Suspended Solids- Tracking of BOD_5 and Total Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the 'Standard Requirements' section of the permit.

2 Inplant - Monitoring and Limitations

Sample Point Number: 101- BLENDING

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Per Occurrence	Continuous	Calculate flow using pipe capacity and assuming full flow conditions.
Time		hours	Per Occurrence	Calculated	Report the total duration of blending within a given day (12:00am - 11:59pm) in which blending occurs. See "Blending Flow" permit section.

Changes from Previous Permit:

This is a new sample point.

Explanation of Limits and Monitoring Requirements

The Department previously determined that the facility is able to practice blending pursuant to s. NR 210.12, Wis. Adm. Code. This sample point was added to track the volume of wastewater that bypasses the oxidation ditch and final clarifiers and the duration of the blending event pursuant s. NR 210.12(6), Wis. Adm. Code. Additionally, the permittee is required to notify the department when blending occurs.

Blending was previously reported under Outfall 006, but since the entire blended flow recombines with the effluent stream prior to disinfection, all sampling requirements and discharge is captured under Outfall 001.

3 Surface Water - 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	Daily	Continuous	
BOD5, Total	Weekly Avg	21 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May - October.
BOD5, Total	Weekly Avg	35 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November - April.
BOD5, Total	Monthly Avg	21 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May - October.
BOD5, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November - April.
BOD5, Total	Weekly Avg	102 lbs/day	3/Week	Calculated	Limit effective May - October.
BOD5, Total	Weekly Avg	170 lbs/day	3/Week	Calculated	Limit effective November - April.
Suspended Solids, Total	Weekly Avg	21 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May - October.
Suspended Solids, Total	Weekly Avg	35 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November - April.
Suspended Solids, Total	Monthly Avg	21 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective May - October.
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Limit effective November - April.
Suspended Solids, Total	Weekly Avg	142 lbs/day	3/Week	Calculated	Limit effective for April, May, June, October, November, December, January and March.
Suspended Solids, Total	Weekly Avg	153 lbs/day	3/Week	Calculated	Limit effective for February.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Suspended Solids, Total	Weekly Avg	95 lbs/day	3/Week	Calculated	Limit effective for July.
Suspended Solids, Total	Weekly Avg	59 lbs/day	3/Week	Calculated	Limit effective for August.
Suspended Solids, Total	Weekly Avg	94 lbs/day	3/Week	Calculated	Limit effective for September.
Suspended Solids, Total	Monthly Avg	101 lbs/day	3/Week	Calculated	Limit effective for April, May, June, October, November, December, January and March.
Suspended Solids, Total	Monthly Avg	109 lbs/day	3/Week	Calculated	Limit effective for February.
Suspended Solids, Total	Monthly Avg	67 lbs/day	3/Week	Calculated	Limit effective for July and September.
Suspended Solids, Total	Monthly Avg	42 lbs/day	3/Week	Calculated	Limit effective for August.
Nitrogen, Ammonia (NH3-N) Total	Daily Max	11 mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	11 mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	11 mg/L	3/Week	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	0.6 mg/L	3/Week	24-Hr Flow Prop Comp	MDV interim limit effective upon reissuance and will remain in effect until January 1, 2028.
Phosphorus, Total	Monthly Avg	0.87 lbs/day	3/Week	Calculated	Limit effective beginning January 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	1.8 lbs/day	3/Week	Calculated	Limit effective beginning February 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	1.96 lbs/day	3/Week	Calculated	Limit effective beginning March 1, 2028. See Water Quality Based Effluent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	1.92 lbs/day	3/Week	Calculated	Limit effective beginning April 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	1.71 lbs/day	3/Week	Calculated	Limit effective beginning May 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	1.31 lbs/day	3/Week	Calculated	Limit effective beginning June 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	0.86 lbs/day	3/Week	Calculated	Limit effective beginning July 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	0.3 lbs/day	3/Week	Calculated	Limit effective beginning August 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	0.41 lbs/day	3/Week	Calculated	Limit effective beginning September 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	0.67 lbs/day	3/Week	Calculated	Limit effective beginning October 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	0.84 lbs/day	3/Week	Calculated	Limit effective beginning November 1, 2028. See Water Quality Based Effluent Limits (WQBELs)

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					for Total Phosphorus Schedule.
Phosphorus, Total	Monthly Avg	0.76 lbs/day	3/Week	Calculated	Limit effective beginning December 1, 2028. See Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus Schedule.
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly phosphorus discharged in lbs/month on the last day of the month on the DMR. See Standard Conditions for 'Appropriate Formulas' to calculate the total monthly discharged in lbs/month.
Phosphorus, Total		lbs/yr	Annual	Calculated	Report the sum of the total monthly discharges for the calendar year on the annual report form.
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	6.0 mg/L	5/Week	Grab	
Chlorine, Total Residual	Daily Max	38 ug/L	5/Week	Grab	Limit effective May through September.
Chlorine, Total Residual	Weekly Avg	20 ug/L	5/Week	Grab	Limit effective May through September.
Chlorine, Total Residual	Monthly Avg	20 ug/L	5/Week	Grab	Limit effective May through September.
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit effective May through September.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May through September. See the E. coli Percent Limit section. Enter the result in the DMR on the last day of the month.
Chloride		mg/L	4/Month	24-Hr Flow Prop Comp	Sample on four consecutive days each month during

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					calendar year 2027.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See 'Nitrogen Series Monitoring' section below.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See 'Nitrogen Series Monitoring' section below.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Temperature Maximum		deg F	3/Week	Grab	Monitoring only in 2027.
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 Plan Determination of Need schedule.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	Two acute tests are required. See WET testing section for more information.
Chronic WET	Monthly Avg	2.8 TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	Yearly chronic tests are required. See WET testing section for more information.

Changes from Previous Permit:

Flow Rate - Sample frequency changed to daily from continuous for eDMR reporting purposes.

Ammonia-Nitrogen - Sample frequency increased to 3/week.

Phosphorus - Monitoring and limits associated with the Rock River TMDL have been added to the permit.

pH, Chlorine, and Dissolved Oxygen - Sampling frequency increased to 5/week.

E. coli - Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) limits. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

Chloride - Sample frequency increased to 4/month and sampling year updated to 2027.

Phosphorus MDV - The permittee has applied for a multi-discharger variance (MDV) for phosphorus for this permit term and the application has been approved by the Department. An MDV interim limit of 0.6 mg/L has been added that goes into effect immediately upon reissuance. The permittee is required to report the total amount of phosphorus discharged in lbs/month and lbs/year. By March 1 of each year the permittee shall make a payment(s) to participating county(s) of **$64.75** per pound of phosphorus discharged during the previous year in excess of the target value of the TMDL derived limit.

Total Nitrogen Monitoring (TKN, N02+N03 and Total N) - Annual monitoring in rotating quarters throughout the permit term was added to the proposed permit.

PFOS and PFOA - The monitoring frequency has been reduced from 1/ 2 Months to Annual.

WET - Acute testing has decreased from three tests to two tests.

Explanation of Limits and Monitoring Requirements

Categorical Limits

Total Suspended Solids, BOD5, pH: Standard municipal wastewater requirements for total suspended solids and pH are included based on ch. NR 210, Wis. Adm. Code, 'Sewage Treatment Works' requirements for discharges to fish and aquatic life streams. Tracking of BOD5 and total suspended solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in the Standard Requirements section of the permit. Chapter NR 102, Wis. Adm. Code, 'Water Quality Standards for Surface Waters' also specifies requirements for pH for fish and aquatic life streams.

Water Quality Based Limits: Refer to the Water Quality-Based Effluent Limitations (WQBELs) memo for the Horicon Wastewater Treatment Facility, prepared by Nicole Krueger dated January 30, 2024 (updated on 2/12/24 with typographical error corrected), was used for this reissuance.

Ammonia, Nitrogen: Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Tables 2C and 4B of ch. NR 105. Subchapter III of ch. NR 106 establishes the procedure for calculating water quality based effluent limitations (WQBELs) for ammonia.

Total Maximum Daily Load (TMDL) Limitations: The Rock River TMDL for Total Phosphorus (TP) and Total Suspended Solids (TSS) was approved by the Environmental Protection Agency (EPA) in September 2011. The TMDL-derived limits are expressed as weekly average and monthly average effluent limits.

Total Suspended Solids: The current permit includes a weekly average concentration limit of 21 mg/L (May – October) and 35 mg/L (November – April) and a monthly average concentration limit of 21 mg/L (May- October) and 30 mg/L (November – April). Monthly average and weekly average mass effluent limitations should be included in the permit according to the table below, along with the currently imposed concentration limits.

Month	Monthly Ave TSS Effluent Limit (lbs/day)	Weekly Ave TSS Effluent Limit (lbs/day)
Jan	101	142
Feb	109	153
March	101	142
April	101	142
May	101	142
June	101	142
July	67	95
Aug	42	59
Month	**Monthly Ave TSS Effluent Limit (lbs/day)**	**Weekly Ave TSS Effluent Limit (lbs/day)**

Sept	67	94
Oct	101	142
Nov	101	142
Dec	101	142

Phosphorus - Phosphorus rules became effective December 1, 2010 per NR 217, Wis. Adm. Code, that required the permittee to comply with water quality based effluent limits (WQBELs) for total phosphorous. For this permit term, the permittee has applied for the Multi-Discharger Variance (MDV) for phosphorus as provided for in s. 283.16, Wis. Stats., and approved by USEPA on February 6, 2017 for a 10-year duration. The permittee qualifies for the MDV because it is an existing source and a major facility upgrade is needed to comply with the applicable phosphorus WQBELs, thereby creating a financial burden. The interim effluent limit for total phosphorus is 0.6 mg/L as an average monthly limit.

Conditions of the MDV require the permittee to optimize phosphorus removal throughout the proposed permit term, comply with interim limits and make annual payments to participating county(s) by March 1 of each year based on the pounds of phosphorus discharged during the previous year in excess of the specified target value. A reopener clause is included in the permit to address the current MDV's expiration date, as a permit action may be required to update or remove variance provisions if the MDV is altered or unavailable after February 6, 2027.

The "price per pound" value is $64.75 adjusted for CPI annually during the first quarter as defined by s. 283.16(8)(a)2, Wis. Stats and takes effect for reissued permits with effective dates starting April 1. This may differ from the "price per pound" that is public noticed; however, the "price per pound" is set upon reissuance and is applicable for the entire permit term. The participating county(s) uses these payments to implement non-point source phosphorus control strategies at the watershed level. Please see the phosphorus compliance schedule included in the Schedules section.

The approved total phosphorus TMDL limits for this permittee are included in the table below. The limits become effective January 1, 2028.

Total Phosphorus TMDL Limits

Month	Monthly Ave TP Effluent Limit (lbs/day)
Jan	0.87
Feb	1.80
March	1.96
April	1.92
May	1.71
June	1.31
July	0.86
Aug	0.30
Sept	0.41
Oct	0.67
Nov	0.84
Dec	0.76

Dissolved Oxygen (DO) - The DO limits in this permit are based on water quality standards from surface waters classified as fish and aquatic life as specified in s. NR 102.04(4)(a) and (b), Wis. Adm. Code.

Total Residual Chlorine - Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the de-chlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states, "When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L." Because the WQBELs are more restrictive, they are recommended instead and included in this permit.

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 IV of ch. NR 106 established the procedure for calculating water quality based effluent limitations (WQBELs) for chloride. Because effluent concentrations are below the calculated WQBELs for chloride no effluent limits are included in the proposed permit. Chloride monitoring frequency was increased from once per month during one calendar year of the permit term to 4 times per month on consecutive days during calendar year 2027 to provide additional data that is more characteristic of the effluent, and to meet requirements of s. NR 106.85, Wis. Adm. Code.

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 ss. 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.

Temperature - 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. One year of monitoring in year 2027 is recommended in the proposed permit because the temperature data for the month of November is close to the calculated limit. In addition, Horicon is anticipating increased effluent flow rates which may cause exceedances to this limit in the future.

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 municipal dischargers with an average flow rate less than 1 MGD, to be evaluated on a case-by-case basis to determine if monitoring is required pursuant to s. NR 106.98(2)(c), 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 proposed permit was drafted, it was identified that the POTW's discharge and the types of indirect dischargers may be a potential source of PFOS/PFOA. Therefore, monitoring once every two months is included.

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.

Monitoring Frequencies - Monitoring Frequency for a permitted sewage treatment work is evaluated on a case-by-case basis pursuant s. NR 210.04, Wis. Adm. Code. Appropriate monitoring is evaluated based on the size and type of facility, the ability to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Monitoring frequency for flows, emerging contaminants, and pollutants with final effluent limits has been evaluated for this facility and will be reflected in the proposed permit. Additionally, there will be a need to demonstrate compliance with anticipated new equipment brought online through the facility upgrade. After evaluation, an increase in sampling frequency is warranted to capture changes in treatment due to facility upgrades and to align with sampling frequencies of similarly sized facilities with similar effluent quality throughout the state. The proposed permit will include an increased monitoring frequency for parameters with existing limits including pH, DO, Chlorine (Total Residual), Chloride and Ammonia-Nitrogen. In addition to this increase, monitoring will be required for PFOS/PFOA (pursuant s. NR 106.98(2)(c), Wis. Adm. Code).

Whole Effluent Toxicity - Whole effluent toxicity (WET) testing requirements 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)

Sample Point Number: 006 – Effluent Blending

Changes from Previous Permit:
This outfall has been deleted.

Explanation Monitoring Requirements
See explanation under InPlant Sample Point 101.

4 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)**
004	B	Cake	Fecal Coliform	Incorporation	Land Application	110 Dry Tons
005	B	Liquid	ND	ND	ND	NE
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? Yes. If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						

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)**
Is a priority pollutant scan required? No. 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: 004- Cake Biosolids

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		Percent	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
Phosphorus, Water Extractable		Percent	Annual	Composite	
Radium 226 Dry Wt		pCi/g	Once	Composite	Once in 2025.
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2025.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2025.
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Radium - Updated monitoring year to 2025.

PCB - Updated monitoring year to 2025.

PFAS - Annual monitoring is included in the permit 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), Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n), Wis. Adm. Code.

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".

Sample Point Number: 005- Liquid Sludge

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
Phosphorus, Water Extractable		Percent	Annual	Composite	
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

PFAS – Annual monitoring is included in the permit pursuant s. NR 204.06(2)(b)9, Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Sample point 005 will be used only for emergencies only and is not used on a regular basis. If there is a need to use this outfall, the department must be notified. Complete monitoring of the sludge must be completed total solids and nutrients. All spreading restrictions found in ch. NR 204, Wis. Adm. Code are applicable.

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), Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n), Wis. Adm. Code.

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".

5 Schedules

5.1 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.	04/01/2025
Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all additional PFOS and PFOA data that may be collected including any	04/01/2026

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.	

5.2 Phosphorus Payment per Pound to County

The permittee is required to make annual payments for phosphorus reductions to the participating county or counties in accordance with s. 283.16(8), Wis. Stats, and the following schedule. The price per pound will be set at the time of permit reissuance and will apply for the duration of the permit.

Required Action	Due Date
Annual Verification of Phosphorus Payment to County: The permittee shall make a total payment to the participating county or counties approved by the Department by March 1 of each calendar year. The amount due is equal to the following: [(lbs of phosphorus discharged minus the permittee's target value) times ($64.75 per pound)] or $640,000, whichever is less. See the payment calculation steps in the Surface Water section. The permittee shall submit Form 3200-151 to the Department by March 1 of each calendar year indicating total amount remitted to the participating counties to verify that the correct payment was made. The first payment verification form is due by the specified Due Date. Note: The applicable Target Value is [CHOOSE ONE: the TMDL derived limit value OR 0.2 mg/L] as defined by s. 283.16(1)(h), Wis. Stats. The "per pound" value is $50.00 adjusted for CPI.	03/01/2025
Annual Verification of Payment #2: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2026
Annual Verification of Payment #3: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2027
Annual Verification of Payment #4: Submit Form 3200-151 to the Department indicating total amount remitted to the participating counties.	03/01/2028

5.3 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The permittee shall comply with the WQBELs for Phosphorus as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification requirement.

Required Action	Due Date
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL	01/01/2025

Compliance' in the Surface Water section of this permit.	
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.) Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	01/01/2026
Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	01/01/2027
Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	07/01/2027
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2027
Achieve Compliance : The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	01/01/2028

Explanation of Schedules

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.

County Payment

Subsection 283.16(6)(b), Wis. Stats., requires permittees that have received approval for the multi-discharger variance (MDV) to implement a watershed project that is designed to reduce non-point sources of phosphorus within the HUC 8 watershed in which the permittee is located. The permittee has selected the "Payment to Counties" watershed option described in s. 283.16(8), Wis. Stats. Under this option the permittee shall make annual payment(s) to participating county(s) that are calculated based on the amount of phosphorus actually discharged during a calendar year in pounds per year less the amount of phosphorus that would have been discharged had the permittee discharged phosphorus at a target value concentration of 0.2 mg/L. The pounds of phosphorus discharged in excess of the target value is multiplied by a per

pound phosphorus charge that will equal $64.75 per pound. This schedule requires the permittee to submit Form 3200-151 to the Department indicating the total amount remitted to the participating county(s).

Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The Department has tentatively approved coverage under the phosphorus multi discharger variance because the applicant has demonstrated that a major facility upgrade would be required to comply with the phosphorus water quality based effluent limitation, and the applicant meets the economic hardship eligibility criteria delineated in the federally approved variance. The schedule above provides the permittee with three years and nine months to complete their next facility planning effort and associated major facility upgrade to comply with the final limits.

Special Reporting Requirements

None.

Other Comments:

None.

Attachments:

PFOS and PFOA Water Quality-Based Effluent Limitations for the Horicon Wastewater Treatment Facility -WPDES Permit No. (WI-0020231) in Dodge County, by Amy Garbe, PE, Wastewater Engineer, dated May 1, 2026

Expiration Date:

March 31, 2029

Justification Of Any Waivers From Permit Application Requirements

No waivers were requested or granted from permit application requirements.

Prepared By: Melanie Burns, Wastewater Specialist

Date: January 31, 2024

Date Post Fact Check: February 13, 2024 (Phosphorus limits corrected based on updated WQBEL on 2/12/24)

Date Post Public Notice: March 26, 2024

Revised By: Sarah Donoughe, Wastewater Specialist-Adv

Date: May 22, 2026

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: May 1, 2026

TO: Sarah Donoughe – NER

FROM: Kari Fleming – WY/3

SUBJECT: PFOS and PFOA Water Quality-Based Effluent Limitations for the Horicon Wastewater Treatment Facility -WPDES Permit No. (WI-0020231) in Dodge County

This is in response to your request for an evaluation of the need for PFOS and PFOA limitations for the Horicon Wastewater Treatment Facility. This municipal wastewater treatment facility (WWTF) discharges to the Rock River, located in the Sinissippi Lake Watershed in the Upper Rock River Basin.

The current permit, effective since April 2024, 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: Rock River
- Classification: Warm Water Sport Fish (WWSF) community, non-public water supply.
- Flow: The following 7-Q_{10} and 7-Q_2 values are from USGS for Station 05424057, where Outfall 001 is located:
  7-Q10 = 6.3 cfs (cubic feet per second)
  7-Q2 = 29 cfs
  Harmonic Mean Flow = 53.6 cfs

The Harmonic Mean has been estimated based on average flow and the 7-Q_{10} using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

- % of Flow used to calculate limits: 25%

Effluent Information

- Flow: Average Design Flow = 0.582 MGD (million gallons per day)
  For reference, the actual average flow from January 2024 to March 2026 was 0.492 MGD.
- Effluent characterization: This facility is categorized as a minor municipality.

The following table lists the statistics for effluent PFOS and PFOA levels from January 2021 and April 2024 through March 2026.

	PFOS ng/L	PFOA ng/L
1-day P_{99}	3.00	4.44
4-day P_{99}	2.02	3.43
30-day P_{99}	1.51	2.89
Mean	1.25	2.60
Std	0.54	0.64
Sample Size	13	13
Range	0.781-2.47	1.63-3.81

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 to s. NR 106.98(4), Wis. Adm. Code. Therefore, the effluent limit for PFOS is set equal to criterion (8 ng/L).

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

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

Where:

WQC = 95 ng/L for the Rock River
Qs = 25% of the harmonic mean pursuant s. NR 106.06(4)(c)10., Wis. Adm. Code = 13.4 cfs
Cs = background concentration of PFOA in the receiving water pursuant to s. NR 106.06(4)(c), Wis. Adm. Code
Qe = effluent flow rate = 0.582 MGD = 0.90 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

After substituting the appropriate variables, the calculated PFOA limit is 1,508 ng/L.

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

The discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion for PFOA because the 30-day P_{99} of reported effluent PFOA data is less than the calculated WQBEL (1,508 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) – P99 Calculations

PREPARED BY: _____ date: 5/1/26
Amy Garbe, P.E., Wastewater Engineer

cc: Jacob Van Susteren-Wedesky, Basin Engineer – SER/Milwaukee
Nate Willis, P.E., PFAS Implementation Coordinator – CO

Attachment 1 – PFOS P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -				
=	= =	=	=	
SUBSTANCE:				
NUMBER OF VALUES:	------			
TOTAL	13			
DETECTED	13			
NON-DETECTED				
d	0			
m	1.26469			
mean of all data	1.26469			
s	0.53672			
	------	------	------	
n	1	4	30	
d^n	0	0	0	
p	0.99	0.99	0.99	
Z_p	2.32679	2.32679	2.32679	
1+(s/m)^2	1.1801	1.1801	1.1801	
(sigma_d)^2	0.1656	0.1656	0.1656	
mu_d	0.15203	0.15203	0.15203	
(sigma_dn)^2	0.1656	0.04404	0.00599	
mu_dn	0.15203	0.21281	0.23184	
P_99 exponent	1.09889	0.70111	0.41185	
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P_99	3.00	2.02	1.51	
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Data Summary	
Jan-21	0.781
Jun-24	2.47
Aug-24	1.18
Oct-24	1.32
Dec-24	0.875
Jan-25	1.26
Mar-25	0.855
May-25	1.1
Jul-25	2.31
Sep-25	1.43
Nov-25	0.932
Jan-26	0.937
Mar-26	0.991

Attachment 2 – PFOA P99 Calculation

EFFLUENT VARIABILITY ANALYSIS -			
=	= =	=	=
SUBSTANCE:			
NUMBER OF VALUES:	------		
TOTAL	13		
DETECTED	13		
NON-DETECTED	0		
d	0		
m	2.60308		
mean of all data	2.60308		
s	0.63929		
	------	------	------
n	1	4	30
d^n	0	0	0
p	0.99	0.99	0.99
Z_p	2.32679	2.32679	2.32679
1+(s/m)^2	1.06031	1.06031	1.06031
(sigma_d)^2	0.05857	0.05857	0.05857
mu_d	0.92741	0.92741	0.92741
(sigma_dn)^2	0.05857	0.01497	0.00201
mu_dn	0.92741	0.94921	0.95569
P_99 exponent	1.4905	1.23386	1.05997
	-------	-------	-------
P_99	4.44	3.43	2.89
	-------	-------	-------

Data Summary

Jan-21	3.81
Jun-24	2.43
Aug-24	2.91
Oct-24	3.54
Dec-24	2.28
Jan-25	2.86
Mar-25	2.47
May-25	2.12
Jul-25	3.14
Sep-25	2.69
Nov-25	2.03
Jan-26	1.93
Mar-26	1.63