

# Permit Fact Sheet

## General Information

Permit Number:	WI-0031755-08-0	
Permittee Name:	JAMESTOWN SANITARY DISTRICT NO 3	
Address:	2085 Louisburg Road	
City/State/Zip:	Louisburg WI 53807	
Discharge Location:	West end of treatment ponds, 200 yards west of lift station. SW ¼ of NW ¼, Section 12, T1N, R2W.	
Receiving Water:	Louisburg Creek (Galena River Watershed, GP01 – Grant-Platte River Basin) in Grant County	
StreamFlow (Q <sub>7,10</sub> ):	0.20 cfs	
Stream Classification:	Warm Water Sport Fish (WWSF), non-public water supply	
Discharge Type:	Existing, Intermittent	
Design Flow(s)	Annual Average	0.0088 MGD
Significant Industrial Loading?	None	
Operator at Proper Grade?	Facility is Basic with subclasses A4 – Ponds, Lagoons, and Natural Systems; SS – Sanitary Sewage Collection System. One operator is certified.	
Approved Pretreatment Program?	N/A	

## Facility Description

The Jamestown Sanitary District #3 operates a wastewater treatment facility that serves a population of approximately 100 residents with no significant industrial contributors. Treatment consists of a three-cell fill and draw stabilization pond that provides secondary treatment to a combination of domestic and commercial wastewater. Occasionally, flow will travel from the first pond to the second pond; flow does not travel from the second pond to the third pond. The facility currently receives an average of approximately 6,000 gallons per day of influent wastewater and did not discharge to Louisburg Creek during the previous permit term.

## Substantial Compliance Determination

During the previous permit term, secondary enforcement actions were implemented. The permittee is currently in the process of completing corrective actions.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site visit on December 6, 2023, this facility has been found to be in substantial compliance with their current permit as long as the corrective action compliance schedule continues to be implemented.

Sample Point Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)
701	6,000 gpd (Average April 2019 – November 2023)	Influent: Representative grab samples shall be collected at the main lift station wet well. Flow is calculated by multiplying pump flow capacity and pump time from the meters located at the main lift station.
001	N/A No discharge occurred during previous permit term	Effluent: Representative grab samples for fill & draw discharge (April-May & October-November) shall be collected at the holding pond outfall manhole, prior to discharge to Louisburg Creek.
003	N/A Did not dispose of sludge during previous permit term	Liquid, Class B. Representative sludge samples collected from the lagoons.
101	0.0094 MGD (Average April 2019 – November 2023)	In-plant monitoring: Representative grab samples collected from the discharge pipe from pond number one (primary pond) into pond number two. Flow is estimated.

## 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	Calculated	Report the total daily gallons.
BOD <sub>5</sub> , Total		mg/L	2/Month	Grab	
Suspended Solids, Total		mg/L	2/Month	Grab	

### Changes from Previous Permit:

**Flow:** The sample frequency and sample type have changed to ‘Daily’ and ‘Calculated,’ respectively, for eDMR reporting purposes.

### Explanation of Limits and Monitoring Requirements

**BOD<sub>5</sub> and Total Suspended Solids:** Tracking of BOD<sub>5</sub> and 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- GEN PLANT (Pond #1)

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Estimated	
BOD5, Total		mg/L	2/Month	Grab	
Suspended Solids, Total		mg/L	2/Month	Grab	
pH Field		su	2/Month	Grab	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	Grab	
Nitrogen, Total Kjeldahl		mg/L	Monthly	Grab	
Nitrogen, Nitrite + Nitrate Total		mg/L	Monthly	Grab	
Chloride		mg/L	Monthly	Grab	

### Changes from Previous Permit:

No changes from pervious permit.

### Explanation of Limits and Monitoring Requirements

Monitoring will provide valuable data.

## 3 Surface Water - Monitoring and Limitations

### Sample Point Number: 001- EFFLUENT (fill & draw)

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate	Daily Max	0.022 MGD	Daily	Continuous	April-May & October-November
BOD5, Total	Weekly Avg	45 mg/L	3/Week	Grab	April-May & October-November
BOD5, Total	Monthly Avg	30 mg/L	3/Week	Grab	April-May & October-November
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	Grab	April-May & October-November

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	Grab	April-May & October-November
pH Field	Daily Max	9.0 su	5/Week	Grab	April-May & October-November
pH Field	Daily Min	6.0 su	5/Week	Grab	April-May & October-November
Nitrogen, Ammonia Variable Limit		mg/L	3/Week	See Table	Look up the variable ammonia limit from the 'Variable Ammonia Limitation' table and report the variable limit in the Ammonia Variable Limit column on the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	3/Week	Grab	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH3-N) Total column of the eDMR. See Ammonia Limitation Section.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	3/Week	Grab	April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	9.1 mg/L	3/Week	Grab	October
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	15 mg/L	3/Week	Grab	November
Phosphorus, Total	Monthly Avg	0.225 mg/L	3/Week	Grab	
Phosphorus, Total	6-Month Avg	0.075 mg/L	3/Week	Grab	
Chloride		mg/L	4/Month	Grab	Monitoring in 2027.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	Grab	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	Grab	Annual in rotating quarters. See Nitrogen Series Monitoring section.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					Nitrogen and Total Nitrite + Nitrate Nitrogen.

### Changes from Previous Permit

**pH:** The sample frequency has increased.

**Chloride:** The sample frequency has changed to 4/Month.

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

### Explanation of Limits and Monitoring Requirements

Please refer to the Water Quality Based Effluent Limits memo for the Jamestown Sanitary District No. 3 prepared by Sarah Luck, dated July 30, 2024, and used for reissuance.

**BOD<sub>5</sub>, Total Suspended Solids, and pH:** No changes are recommended in the categorical permit limitations for BOD<sub>5</sub>, total suspended solids, and pH because the water quality criteria and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.

**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.

**Phosphorus:** Phosphorus requirements are based on the Phosphorus Rules that became effective 12/1/2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. WQBELs for phosphorus are needed whenever the discharge contains phosphorus at concentrations or loadings that will cause or contribute to an exceedance of the water quality standards.

For the reasons explained in the April 30, 2012 paper entitled ‘Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin’, WDNR has determined that it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily, weekly or monthly values. The final effluent limit for phosphorus is expressed as a six-month average. It is also expressed as a monthly average equal to three times the derived WQBEL. This final effluent limit was derived from and complies with the applicable water quality criterion. A mass limit would also be required, expressed as an annual total (due to the non-continuous nature of the discharge), if discharge occurs to surface water.

**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. The permittee’s monitoring data shows that there is no reasonable potential to exceed the calculated WQBELs for chloride. Monitoring is included in the permit to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.

**Total Nitrogen Monitoring (NO<sub>2</sub>+NO<sub>3</sub>, 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.

**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.

Section NR 102.04(5)(a), Wis. Adm. Code, states that all surface waters shall be suitable for recreational use and meet the E. coli criteria established to protect this use. Section NR 102.04(5)(b), Wis. Adm. Code, states that exceptions to the disinfection requirement can be made if the department determines, in accordance with the procedures specified in s. NR 210.06(3), Wis. Adm. Code, that disinfection is not required to meet water quality criteria. As part of the reissuance process, the requirements for disinfection were reviewed under s. NR 210.06(3), Wis. Adm. Code.

It was determined that the permittee is not required to disinfect. See WQBEL for further explanation.

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

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

The department has been revisiting the sampling frequencies at every facility to evaluate whether current frequencies are appropriate or if an increase is warranted. The frequency for pH was increased to align Jamestown Sanitary District No. 3 with other facilities of similar size to ensure fairness and in consideration of department guidance on sampling frequencies.

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

**Expression of Limits:** In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as weekly average and monthly average limits.

## 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)
003	B	Liquid	Fecal Coliform	Injection/Incorporation	N/A	N/A Lagoon
Does sludge management demonstrate compliance? <b>Yes</b>						
Is additional sludge storage required? <b>No</b>						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? <b>N/A. Source of water</b>						

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)
supply is private wells.						
If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility.						
Is a priority pollutant scan required? <b>No, design flow is less than 5 MGD.</b>						
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: 003- LAGOON SLUDGE

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

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	
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Once	Composite	Once when land application occurs.
Nitrogen, Ammonium (NH4-N) Total		Percent	Once	Composite	Once when land application occurs.
Phosphorus, Total		Percent	Once	Composite	Once when land application occurs.
Phosphorus, Water Extractable		% of Tot P	Once	Composite	Once when land application occurs.
Potassium, Total Recoverable		Percent	Once	Composite	Once when land application occurs.
PFOA + PFOS		ug/kg	Once	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Once	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

### Changes from Previous Permit:

**List 2 Nutrient:** Monitoring has been added should land application occur and for planning purposes.

**PFAS:** Once 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), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07 (7), Wis. Adm. Code, for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code.

**List 2 Nutrient:** Monitoring for list 2 (nutrients) is highly recommended at the same time as the monitoring of List 1 (metals) in year 2 of the permit (2025). Results will assist in the determination of the acres needed for land application of sludge should it be necessary. The number of acres needed is also required for the Land Application Management Plan schedule item (see schedules for more information). List 2 nutrient sampling is required when land application occurs.

**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.

**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”.

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department’s implementation of EPA’s recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9, Wis. Adm. Code.

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

## 5 Schedules

### 5.1 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

Required Action	Due Date
<p><b>Desludging Management Plan:</b> Submit a management plan to optimize the desludging of the lagoons during this permit term. At a minimum, the plan shall address how the sludge will be sampled, removed, transported, and disposed of. No desludging may occur without plan approval.</p> <p>The Desludging Management Plan is due 90 days prior to desludging.</p>	
<p><b>Land Application Management Plan:</b> Submit a management plan to optimize the land application system performance. The management plan shall be consistent with the requirements of this permit, and ch. NR 204, Wis. Adm. Code. All Department issued approval maps and Land Application Approval Forms (3400-122) for all approved sites shall be included in the management plan to comply with s. NR 204.07(2), Wis. Adm. Code. Sites that no longer match approval conditions in the Department issued approval maps and Land Application Approval Forms (3400-122) in the management plan, including those sites without approval maps or forms, must be reviewed and potentially reauthorized to comply with ch. NR 204, Wis. Adm. Code. Once approved, all landspreading activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes.</p> <p>The Land Application Management Plan is due 90 days prior to land application.</p>	
<p><b>Treatment Plant Upgrade to Meet WQBELs:</b> Provide confirmation that the permittee has awarded construction contracts and initiated construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Wis. Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41,</p>	03/31/2025

Wis. Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.	
<b>Complete Construction:</b> The permittee shall complete construction of wastewater treatment system upgrades and shall inform the Department of the substantial completion.	09/30/2025
<b>Achieve Compliance:</b> The permittee shall achieve compliance with the WQBELs and WPDES Permit.	12/31/2025

### Explanation of Schedule

This schedule is a result of ongoing issues of noncompliance, the schedule is included to bring the permittee back into compliance.

### Special Reporting Requirements

None.

### Other Comments:

None.

### Attachments:

Water Quality Based Effluent Limits, dated July 30, 2024

### Expiration Date:

September 30, 2029

### Justification Of Any Waivers From Permit Application Requirements

No waivers were requested or given from permit application requirements.

**Prepared By:** BetsyJo Howe, Wastewater Specialist

**Date:** 07/15/2024; 7/31/2024

Updated (based on fact check comments): Editorial changes for clarity. 8/15/2024

Updated (based on public notice comments):

**CORRESPONDENCE/MEMORANDUM**

DATE: July 30, 2024  
 TO: BetsyJo Howe – SCR/Fitchburg  
 FROM: Sarah Luck – SCR/Fitchburg  
 SUBJECT: Water Quality-Based Effluent Limitations for Jamestown Sanitary District No. 3  
 WPDES Permit No. WI-0031755-08-0

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the Jamestown Sanitary District No. 3 in Grant County. This municipal wastewater treatment facility (WWTF) discharges to Louisburg Creek, located in the Galena River Watershed in the Grant Platte River Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate	0.022 MGD					1
BOD <sub>5</sub>			45 mg/L	30 mg/L		1
TSS			45 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Ammonia Nitrogen April May October November	Variable Variable Variable Variable			13 mg/L - 9.1 mg/L 15 mg/L		1,2
Phosphorus				0.225 mg/L	0.075 mg/L	3
Chloride						4
TKN, Nitrate+Nitrite, and Total Nitrogen						5

Footnotes:

1. No changes from the current permit.
2. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit.

Effluent pH s.u.	Ammonia Limit mg/L	Effluent pH s.u.	Ammonia Limit mg/L	Effluent pH s.u.	Ammonia Limit mg/L
6.0 < pH ≤ 6.1	108	7.0 < pH ≤ 7.1	66	8.0 < pH ≤ 8.1	14
6.1 < pH ≤ 6.2	106	7.1 < pH ≤ 7.2	59	8.1 < pH ≤ 8.2	11
6.2 < pH ≤ 6.3	104	7.2 < pH ≤ 7.3	52	8.2 < pH ≤ 8.3	9.4
6.3 < pH ≤ 6.4	101	7.3 < pH ≤ 7.4	46	8.3 < pH ≤ 8.4	7.8
6.4 < pH ≤ 6.5	98	7.4 < pH ≤ 7.5	40	8.4 < pH ≤ 8.5	6.4
6.5 < pH ≤ 6.6	94	7.5 < pH ≤ 7.6	34	8.5 < pH ≤ 8.6	5.3
6.6 < pH ≤ 6.7	89	7.6 < pH ≤ 7.7	29	8.6 < pH ≤ 8.7	4.4

Effluent pH s.u.	Ammonia Limit mg/L	Effluent pH s.u.	Ammonia Limit mg/L	Effluent pH s.u.	Ammonia Limit mg/L
6.7 < pH ≤ 6.8	84	7.7 < pH ≤ 7.8	24	8.7 < pH ≤ 8.8	3.7
6.8 < pH ≤ 6.9	78	7.8 < pH ≤ 7.9	20	8.8 < pH ≤ 8.9	3.1
6.9 < pH ≤ 7.0	72	7.9 < pH ≤ 8.0	17	8.9 < pH ≤ 9.0	2.6


3. A mass limit would also be required, expressed as an annual total (due to the non-continuous nature of the discharge), if discharge occurs to surface water.
4. Monitoring at a frequency to ensure that a minimum of 11 sample results are available at the next permit issuance.
5. As recommended in the Department's October 1, 2019 *Guidance for Total Nitrogen Monitoring in Wastewater Permits*, annual total nitrogen monitoring is recommended for all minor municipal permittees. Total Nitrogen is the sum of nitrate (NO<sub>3</sub>), nitrite (NO<sub>2</sub>), and total kjeldahl nitrogen (TKN) (all expressed as N).

No WET testing is required because information related to the discharge indicates low to no risk for toxicity.

Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code, are not required due to the non-continuous nature of the discharge.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Sarah Luck (Sarah.Luck@wisconsin.gov) or Diane Figiel (Diane.Fiegel@wisconsin.gov).

Attachments (3) – Narrative, Site Map, and Ammonia Nitrogen Calculations

PREPARED BY:  Date: July 30, 2024  
 Sarah Luck  
 Water Resources Engineer

E-cc: Caitlin O’Connell, Wastewater Engineer – SCR/Fitchburg  
 Diane Figiel, Water Resources Engineer – WY/3  
 Nathaniel Willis – WY/3

**Facility Planning Water Quality-Based Effluent Limitations for  
Jamestown Sanitary District No. 3**

**WPDES Permit No. WI-0031755-08-0**

**PART 1 – BACKGROUND INFORMATION**

**Facility Description**

The Jamestown Sanitary District #3 operates a three-cell fill and draw stabilization pond wastewater treatment system providing secondary treatment to a combination of domestic and commercial wastewater. Occasionally, flow will travel from the first pond to the second pond; flow does not travel from the second pond to the third pond.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

**Existing Permit Limitations**

The current permit, which expired on March 31, 2024, includes the following effluent limitations and monitoring requirements.

**Sampling Point 101** (defined as grab samples from pond number one):

Sampling was required for flow rate, BOD<sub>5</sub>, total suspended solids, pH, ammonia nitrogen, total nitrogen (total kjeldahl and Nitrate+Nitrite), and chloride.

**Outfall 001:**

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate	0.022 MGD					1
BOD <sub>5</sub>			45 mg/L	30 mg/L		2
TSS			45 mg/L	30 mg/L		2
pH	9.0 s.u.	6.0 s.u.				2
Ammonia Nitrogen						3
April	Variable			13 mg/L		
May	Variable			-		
October	Variable			9.1 mg/L		
November	Variable			15 mg/L		
Chloride						4
Phosphorus						5
Interim				2.9 mg/L		
Final				0.225 mg/L	0.075 mg/L	

**Footnotes:**

1. Applicable April through May and October through November. The flow limit is thought to have been a calculated effluent for the fill and draw discharge based on an influent annual average design flow of 7,360 gpd (7,360 gpd x 12 months / 4 months discharging) that was for a facility upgrade proposed around 2000. It is unclear whether the upgrade was ever completed, but the flow limit of 0.022 MGD has been present since 2000.

Attachment #1

2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
3. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit.

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

4. Monitoring only.
5. A compliance schedule is in the current permit to meet the final WQBELs by November 1, 2019.

**Receiving Water Information**

- Name: Louisburg Creek
- Waterbody Identification Code (WBIC): 943000
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
- Low Flow: The following 7-Q<sub>10</sub> and 7-Q<sub>2</sub> values are from USGS for the station located at NE 1/4 of NW 1/4 of Section 12, T1N-R2W, at approximately 400 feet downstream from country road bridge just downstream the from tributary at Louisburg in Grant County. The Harmonic Mean has been estimated as recommended in *State of Wisconsin Water Quality Rules Implementation Plan* (Publ. WT-511-98)

Annual: 7-Q<sub>10</sub> = 0.20 cfs (cubic feet per second)  
 7-Q<sub>2</sub> = 0.32 cfs  
 90-Q<sub>10</sub> = 0.26 cfs  
 Harmonic Mean Flow = 0.71 cfs

Monthly:

	Apr	May	Oct	Nov
7-Q <sub>10</sub> (cfs)	0.42	0.37	0.27	0.28
7-Q <sub>2</sub> (cfs)	0.67	0.59	0.43	0.45

- Hardness = 459 mg/L as CaCO<sub>3</sub>. This value represents the geometric mean of data (n=2) from WET tests performed by Kieler Sanitary District No. 1 on 06/19/18 and 12/08/20 for Sinnippee Creek. This facility and receiving water are close to Jamestown Sanitary District No. 3 and considered a reasonable approximation for the background hardness for Louisburg Creek.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%

Attachment #1

- Source of background concentration data: Metals data from Rountree Branch, in Grant County, is used for this evaluation because there is no data available for Louisburg Creek. Rountree Branch is within the same ecological landscape so ambient water quality characteristics are expected to be similar. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: None.
- Impaired water status: Louisburg Creek along stream miles 0.00 – 5.26 is impaired for sediment/total suspended solids at the point of discharge. Approximately three miles downstream, the Menominee River is listed as impaired for total phosphorus.

**Effluent Information**

- Flow rate:  
 Permitted discharge flow limit = 0.022 MGD (Million Gallons per Day)  
 The flow limit of 0.022 MGD has been given in the permit since 2000 and will be continued. Since this is the maximum permitted discharge, 0.022 MGD will be used to calculate limits. For reference, the actual average flow, measured at sample point 101 and excluding zero flow days, from April 2019 through November 2023 was 0.0094 MGD; the facility has had no recorded discharges from Outfall 001 during the last permit term.
- Hardness = 335 mg/L as CaCO<sub>3</sub>. This value represents the geometric mean of data (n=4) from April 2023 reported on the 2023 permit application.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Domestic wastewater with water supply from wells.
- Additives: None.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness, and phosphorus.
- Effluent data at Outfall 001 is not available due to the lack of discharge. In-plant sampling results (from sampling point 101) for substances for which a single sample was analyzed are shown in the tables in Part 2 below, in the column titled “MEAN EFFL. CONC.”. Otherwise, substances with multiple data points are shown in the tables below or in their respective parts in this evaluation.

**Copper Effluent Data**

Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)
04/11/23	5.6	04/30/23	1.9	08/02/23	16
04/18/23	3.1	05/23/23	5.7	08/06/23	41
04/22/23	6.2	05/28/23	13	08/10/23	11
04/26/23	10	07/30/23	2.6		
1-day P <sub>99</sub> = 54 µg/L					
4-day P <sub>99</sub> = 29 µg/L					

**Chloride Effluent Data**

Sample Date	Chloride (mg/L)	Sample Date	Chloride (mg/L)	Sample Date	Chloride (mg/L)	Sample Date	Chloride (mg/L)
04/11/19	150	11/19/19	150	09/16/21	315	05/02/23	250

Attachment #1

Sample Date	Chloride (mg/L)	Sample Date	Chloride (mg/L)	Sample Date	Chloride (mg/L)	Sample Date	Chloride (mg/L)
05/29/19	165	12/03/19	200	11/30/21	640	06/27/23	276
06/18/19	180	03/24/20	160	03/22/22	277	07/27/23	343
07/25/19	185	09/09/20	145	05/12/22	250	08/24/23	322
08/22/19	190	10/15/20	145	08/02/22	256	09/14/23	309
09/24/19	125	04/22/21	205	10/18/22	266	10/03/23	333
10/24/19	160	08/17/21	240	04/11/23	209	11/21/23	305
1-day P <sub>99</sub> = 572 mg/L							
4-day P <sub>99</sub> = 384 mg/L							

Effluent data at Outfall 001 is not available due to the lack of discharge. The following table presents the average concentrations at sample point 101 (Pond #1) from April 2019 through November 2023 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

**Parameter Averages with Limits**

	Average Measurement
BOD <sub>5</sub>	27 mg/L
TSS	57 mg/L
pH field	8.3 s.u.
Phosphorus*	
Ammonia Nitrogen	5.07 mg/L

\*Limits were included in the permit with required monitoring, but the facility did not collect any samples throughout the last permit term.

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

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

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

**Acute Limits based on 1-Q<sub>10</sub>**

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

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



Qe

Where:

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

Qs = average minimum 1-day flow which occurs once in 10 years (1-day Q<sub>10</sub>)  
 if the 1-day Q<sub>10</sub> flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q<sub>10</sub>).

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

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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q<sub>10</sub> method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for Jamestown Sanitary District No. 3, and the limits are set based on two times the acute toxicity criteria.

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

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

RECEIVING WATER FLOW = 0.16 cfs, (1-Q<sub>10</sub> (estimated as 80% of 7-Q<sub>10</sub>)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P <sub>99</sub>	1-day MAX. CONC.
Arsenic		340	679.6	135.9	2.3		
Cadmium	335	41.2	82.5	16.5	<0.19		
Chromium	301	4446	8891.7	1778	<1.1		
Copper	335	48.6	97.1			54	41
Lead	335	344	687.6	137.5	<4.3		
Nickel	268	1080	2160.6	432	2.5		
Zinc	333	345	689.4	137.9	7.0		
Chloride (mg/L)		757	1514.0			572	640

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

\*\* The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q<sub>10</sub> flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

**Weekly Average Limits based on Chronic Toxicity Criteria (CTC)**

RECEIVING WATER FLOW = 0.05 cfs (¼ of the 7-Q<sub>10</sub>), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P <sub>99</sub>
Arsenic		152.2		376	75.2	2.3	

Attachment #1

SUBSTANCE	REF. HARD.* mg/L	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P <sub>99</sub>
Cadmium	175	3.82	0.19	9.15	1.8	<0.19	
Chromium	301	325.75	38.9	747	149.4	<1.1	
Copper	459	38.14	6.9	84.0			29.4
Lead	356	95.51	5.3	228.0	45.6	<4.3	
Nickel	268	120.18	21.2	266	53.1	2.5	
Zinc	333	344.68	159.9	616	123.2	7.0	
Chloride (mg/L)		395		975			384

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

**Monthly Average Limits based on Wildlife Criteria (WC)**

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

**Monthly Average Limits based on Human Threshold Criteria (HTC)**

RECEIVING WATER FLOW = 0.18 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370	0.19	2298	459.6	<0.19
Chromium (+3)	3818000	38.9	23724653	4744931	<1.1
Lead	140	5.3	842	168.5	<4.3
Nickel	43000	21.2	267089	53418	2.5

**Monthly Average Limits based on Human Cancer Criteria (HCC)**

RECEIVING WATER FLOW = 0.18 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3	82.6	16.53	2.3

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

**Conclusions and Recommendations**

Based on a comparison of the effluent data and calculated effluent limitations, **no effluent limitations are required.**

Chloride – Considering available effluent data, collected from sample point 101, from the current permit term (April 2019 through November 2023), the 1-day P<sub>99</sub> chloride concentration is 572 mg/L, and the 4-day P<sub>99</sub> of effluent data is 384 mg/L. These effluent concentrations are below the calculated WQBELs for

chloride; therefore, **no effluent limits are needed. Chloride monitoring is recommended to ensure that 11 sample results are available at the next permit issuance** to meet the data requirements of s. NR 106.85, Wis. Adm. Code.

**PFOS and PFOA** – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, the effluent flow rate, and lack of indirect dischargers, **PFOS and PFOA monitoring is not recommended.** The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

**PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS  
FOR BOD<sub>5</sub> AND TSS**

**Limits for BOD<sub>5</sub> and total suspended solids (TSS) as described in the WQBEL memo dated July 13, 2020 do not change** since the discharge location is not changing; the limits in effect are categorical, based on the receiving water classification.

**PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS  
FOR AMMONIA NITROGEN**

**Daily Maximum Limits Based on Acute Toxicity Criteria (ATC)**

**The daily maximum ammonia nitrogen limit recommendations do not change** since the daily maximum limits are already pH-dependent and since there are no changes to the receiving water location or receiving water flow rate.

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

**The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change** because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in Attachment #3.

**Effluent Data**

The following ammonia nitrogen data was reported from April 2019 – November 2023 at sample point 101. Additional results were collected at sample point 101, but they are not reported below since they are not during times discharge is permitted at Outfall 001.

	Ammonia mg/L April		Ammonia mg/L May		Ammonia mg/L October		Ammonia mg/L November	
	Sample Date and Concentration	04/11/19	9.13	05/14/19	2.0	10/08/19	4.77	11/05/19
	04/22/21	5.89	05/12/22	5.56	10/15/20	6.33	11/30/21	6.78
	04/11/23	12.79	05/02/23	4.3	10/18/22	3.64	11/07/23	6.41
					10/03/23	1.82		
Mean		9.27		3.95		4.14		5.19

Where there are existing ammonia nitrogen limits in the permit, the limits must be retained regardless of reasonable potential, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

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

**Conclusions and Recommendations**

In summary, after rounding to two significant figures, the ammonia nitrogen limitations on the following page are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code.

**Final Ammonia Nitrogen Limits**

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
April	Variable	-	13
May	Variable	-	-
October	Variable	-	9.1
November	Variable	-	15

**PART 5 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA**

Section NR 102.04(5), Wis. Adm. Code, says that all surface waters shall be suitable for supporting recreational use and shall meet *E. coli* criteria during the recreation season. Section NR 102.04(5)(b), Wis. Adm. Code, allows the Department to make exceptions when it determines, in accordance with s. NR 210.06(3), Wis. Adm. Code, that wastewater disinfection is not required to protect the recreational use. Section NR 210.06(3), Wis. Adm. Code, tasks the Department with determining the need for disinfection using a site-specific analysis based on potential risk to human or animal health. It sets out the factors that must be considered in determining the necessity to disinfect municipal wastewater or to change the length of the disinfection season.

Jamestown Sanitary District No. 3 has historically been exempt from disinfection based on the hydraulic detention time. Except in extenuating circumstances, the discharge of wastewater to surface water from a treatment system with a detention time of 180 days or longer does not pose a risk to human and animal health as described in s. NR 210.06(3)(h), Wis. Adm. Code.

The hydraulic detention time cannot be determined at this time due to the lack of discharge. Since there has been no discharge from this facility for at least the last 10 years, it is assumed that the hydraulic detention time exceeds 180 days and therefore **bacteria limits or monitoring are not recommended during the reissued permit term.**

**PART 6 – PHOSPHORUS**

**Technology-Based Effluent Limit**

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

**Since Jamestown Sanitary District No. 3 has phosphorus limits in effect that are more stringent than 1.0 mg/L, the need for a TBEL will not be considered further.**

**Water Quality-Based Effluent Limits (WQBEL)**

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule

Attachment #1

revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

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

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

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

Where:

WQC = 0.075 mg/L for Louisburg Creek

Qs = 100% of the 7-Q<sub>2</sub> of 0.32 cfs

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

Qe = effluent flow rate = 0.022 MGD = 0.034 cfs

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

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated as a median using the procedures specified in s. NR 102.07(1)(b) to (c), Wis. Code. All representative data from the most recent 5 years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

A previous evaluation resulted in a WQBEL of 0.075 mg/L using a background concentration of 0.103 mg/L. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. No additional data were available to consider in estimating the background phosphorus concentration.

Substituting a background concentration above criteria into the limit calculation equation above would result in a calculated limit that is less than the applicable criterion of 0.075 mg/L. However, s. NR 217.13(7), Wis. Adm. Code, specifies that “if the WQBEL calculated pursuant to the procedures in this section is less than the phosphorus criterion specified in s. NR 102.06, Wis. Adm. Code, for the water body, the effluent limit shall be set equal to the criterion.”

### **Effluent Data**

The facility has not had any discharges to Louisburg Creek during last two permit terms. Consequently, no phosphorus effluent data is available. Considering that there have not been any changes to the facility or to the influent wastewater flow, the 30-day P<sub>99</sub> of 2.4 mg/L (rounded) from effluent data collected in 2011 (n=11) is considered representative of current phosphorus concentrations; the maximum reported value was 2.95 mg/L. The historic data is presented in the table below.

**Historic Total Phosphorus Effluent Data**

Sample Date	Phosphorus (mg/L)	Sample Date	Phosphorus (mg/L)	Sample Date	Phosphorus (mg/L)
08/25/11	2.68	09/20/11	2.08	10/18/11	2.38
08/30/11	1.21	09/29/11	2.95	10/25/11	1.90
09/06/11	2.13	10/05/11	2.07	11/02/11	1.86
09/12/11	1.52	10/11/11	2.83		
1-day P <sub>99</sub> = 3.69 mg/L					
4-day P <sub>99</sub> = 2.84 mg/L					
30-day P <sub>99</sub> = 2.38 mg/L					

**Reasonable Potential Determination**

The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion because the 30-day P<sub>99</sub> of reported effluent total phosphorus data is greater than the calculated WQBEL. Therefore, **a WQBEL is required.**

**Limit Expression**

According to s. NR 217.14(2), Wis. Adm. Code, because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.075 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.225 mg/L, equal to three times the WQBEL calculated under s. NR 217.13, Wis. Adm. Code shall also be included in the permit. The six-month average should be averaged during the months of May – October and November – April.

**Mass Limit**

A mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code, because the discharge is to a surface water that is upstream of a phosphorus-impaired water (Menominee River). However, due to the limited amount of historical data and absence of recent data due to the lack of discharge, an annual total mass limit is not able to be calculated. **Should discharge once again commence to surface water, a mass limit would be required.**

**PART 7 – WATER QUALITY-BASED EFFLUENT LIMITATIONS  
FOR THERMAL**

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

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

The table on the following page summarizes the calculated temperature limits.

**Monthly Temperature Limits**

Month	Calculated Effluent Limit	
	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)
APR	77	120
MAY	84	120
OCT	83	120
NOV	68	120

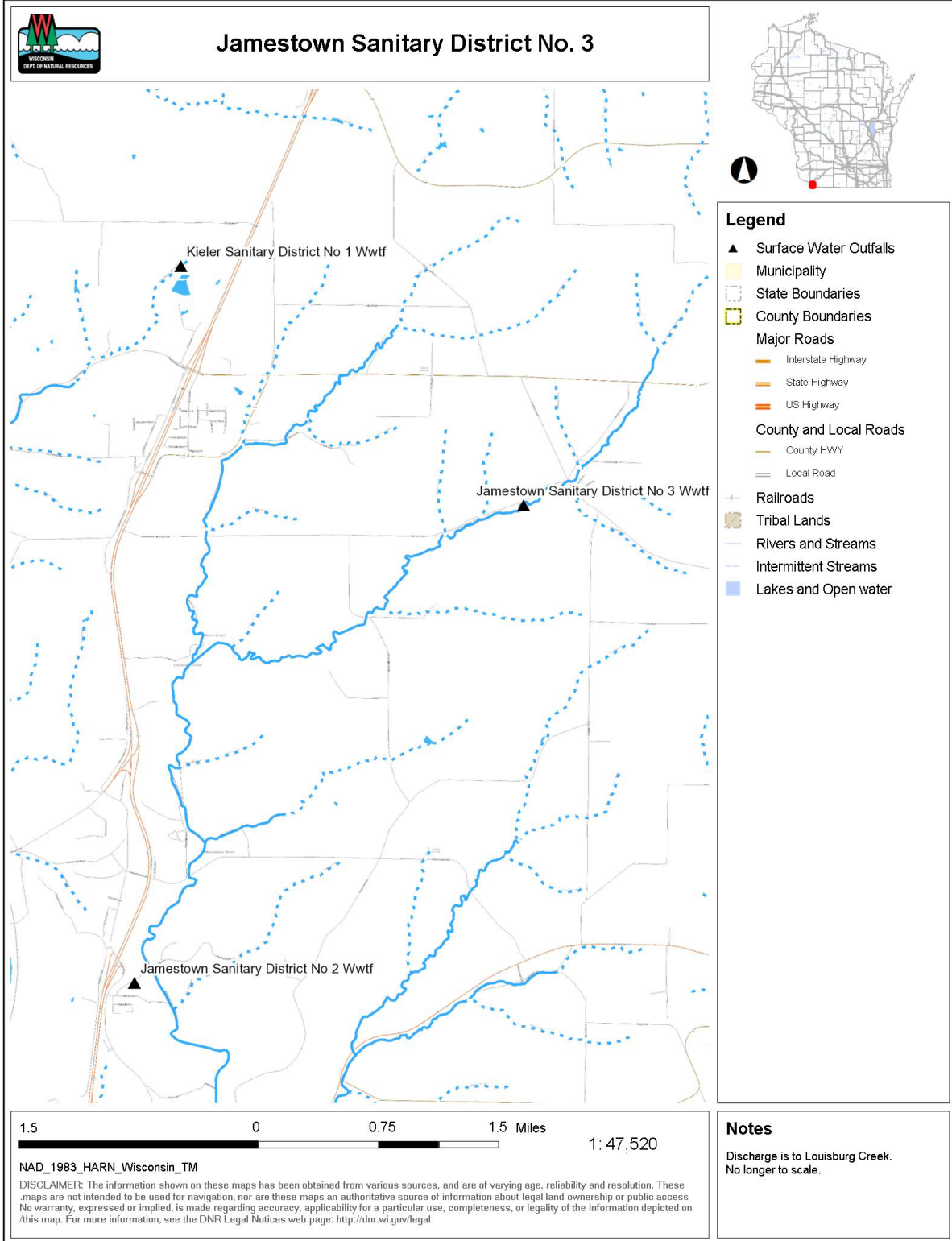
No temperature monitoring data is available. However, since this facility provides extended hydraulic detention times, elevated effluent temperatures are unlikely, and discharge temperatures are expected to be similar to ambient conditions. **Therefore, no effluent limits or thermal monitoring are recommended for temperature.**

**PART 8 – WHOLE EFFLUENT TOXICITY (WET)**

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

Guidance in Chapter 1.11 (WET Testing of Minor Municipal Discharges) of the *WET Program Guidance Document* was consulted. This is a minor municipal discharge (< 1.0 MGD) comprised solely of domestic wastewater with no history of WET failures and no toxic compounds detected at levels of concern, and no discharge to surface water in at least the last 10 years. **No WET testing is recommended at this time because of the low risk in effluent toxicity.**

Attachment #2  
Site Map





## Ammonia Nitrogen limit calculations from June 19, 2013 WQBEL Memo

<b>AMMONIA (as N) LIMITS</b>				
<b>CLASSIFICATION:</b>	<b>WWSF COMMUNITY</b>			
EFFLUENT FLOW (MGD)	0.022			
EFFLUENT FLOW (cfs)	0.034			
MAX. EFFLUENT pH (s.u.)	7.9			
<b>BACKGROUND INFORMATION</b>	<b>April</b>	<b>May</b>	<b>Oct.</b>	<b>Nov.</b>
7-Q <sub>10</sub> (cfs)	0.42	0.37	0.27	0.28
7-Q <sub>2</sub> (cfs)	0.67	0.59	0.43	0.45
Ammonia (mg/L)	0.11	0.11	0.08	0.08
Temperature (deg C)	9	17	9	3
pH (std. units)	7.97	8.21	8.21	7.97
% of river flow used:	25	100	25	25
Reference weekly flow	0.105	0.37	0.0675	0.07
Reference monthly flow	0.14237	0.5015	0.09137	0.09562
<b>CRITERIA (in mg/L)</b>				
4-day Chronic (@ backgrd. pH)				
early life stages present	6.35	3.76		
early life stages absent			6.30	10.31
30-day Chronic (@ backgrd. pH)				
early life stages present	2.54	1.50		
early life stages absent			2.52	4.12
<b>EFFLUENT LIMITS (in mg/L)</b>				
<b>Weekly average</b>				
early life stages present	25.60	43.43		
early life stages absent			18.62	31.35
<b>Monthly average</b>				
early life stages present	12.70	22.04		
early life stages absent			9.07	15.49