

## Permit Fact Sheet

### General Information

Permit Number:	WI-0026000-11-0	
Permittee Name:	VILLAGE OF TONY	
Address:	PO Box 12 W5395 Walnut Street	
City/State/Zip:	Tony WI 54563	
Discharge Location:	SW ¼ of section 33; T35N-R5W, Town of Dewey south of Tony, Rusk County	
Receiving Water:	An effluent ditch to a wetland then into a roadside ditch to a tributary to Deer Tail Creek within the Deer Tail Watershed in the Upper Chippewa River Basin in Rusk County	
StreamFlow (Q <sub>7,10</sub> ):	0.0 cfs	
Stream Classification:	<ul style="list-style-type: none"> <li>• Both the effluent ditch and the wetland complex are classified as limited aquatic life (LAL) water.</li> <li>• The road ditch to the creek and unnamed tributary to Deer Tail Creek are defined as Limited Forage Fish (LFF) water. <i>Note: When ch. NR 104, Wis. Adm. Code is revised it is recommended that the codified fish and aquatic life classification for the unnamed tributary be changed to a Warm Water Sport Fishery (WWSF).</i></li> <li>• Deertail Creek is a Warm Water Sport Fishery (WWSF).</li> </ul> <p>All are non-public water supply</p>	
Discharge Type:	Existing permittee that is authorized to discharge year-round but practices seasonal discharges.	
Wild Rice Impacts: <i>(no specific wild rice standards exist at this time)</i>	No impacts identified. The conclusion of no impact is based on the low effluent volumes in comparison to the river volumes and the distance to recorded wild rice habitat is over 20 miles away (Holcombe Flowage). (Evaluation completed March 2017)	
Design Flow(s)	Annual Average	0.023 MGD
Significant Industrial Loading?	No	
Operator at Proper Grade?	Yes	
Approved Pretreatment Program?	N/A	

### Facility Description

The Village of Tony owns and operates a wastewater treatment facility designed to treat 22,300 gallons per day currently treats an average of 16,000 gallons per day (2019 – 2023 data). The facility consists of two stabilization ponds operated one after another (in series). Within these ponds naturally occurring bacteria and organisms already present in the wastewater break down the organic matter until the wastewater can meet discharge standards. The effluent discharges to an effluent ditch draining to a wetland complex tributary then road ditch flowing about one mile before entering Deer Tail Creek.

## Substantial Compliance Determination

**Enforcement During Last Permit:** A Notice of Noncompliance was issued to the Village on October 14, 2019, due to delays in implementing a Facility Maintenance Schedule which included repairs to lagoon dikes and lift stations. However, construction associated with the schedule has now been completed. The facility was upgraded in 2022. The facility experienced effluent flow/suspended solids exceedances that occurred during an atypical spring, 2023 thaw which resulted in ponds filling to near capacity necessitating a discharge. Burrowing of animals in dike roads is also significant and needs to be addressed. Flow reporting during construction was at times inaccurate. The CMOM also needs to be updated. However, the Village is working on addressing these issues and should be able to achieve compliance with the conditions of the WPDES permit at reissuance.

After a desk top review of all discharge monitoring reports, CMARS, CMOM, and a site visit on August 14, 2023, by Arthur Ryzak, WDNR, the Village of Tony has been found to be in substantial compliance with their current permit.

**Compliance determination entered by Arthur Ryzak, WDNR on September 11, 2023.**

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	INFLUENT An average of 0.016 MGD (2019 – 2023 data)	Representative samples shall be collected in the influent sample building before the first pond.
001	EFFLUENT An average of 0.091 MGD (2019 – 2023 data) There was on average 36 days of discharge each year. Exception is 2022, no discharge due to refilling the ponds after the upgrade.	Representative samples shall be collected after the V-notch weir on the effluent discharge line prior to discharge to the ditch draining to a wetland tributary to Deer Tail Creek.
003	SLUDGE Sludge has not been removed.	Samples shall be collected in a manner and at a time that is representative of the sludge being monitored.

## 1 Influent – Monitoring Requirements

### Sample Point Number: 701- INFLUENT TO PLANT

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

## Changes from Previous Permit:

Effluent limitations and monitoring requirements were re-evaluated for the proposed permit term and the following change was made from the previous permit.

- The sampling location has been moved from the lift station to the influent sample building.
- Flow sampling frequency changed to reflect the current electronic reporting standard.
- Flow sampling frequency for BOD<sub>5</sub> and Total Suspended Solids was changed from twice a month to weekly to match the effluent sampling frequency.
- The facility has installed an influent 24-hour flow proportional composite sampler. The sample type has been updated to reflect the change.

## Explanation of Limits and Monitoring Requirements

The parameters are standard for minor municipalities, as are monitoring and frequency requirements for municipal wastewater treatment plant. Tracking of BOD<sub>5</sub>, and Suspended Solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code.

## 2 Surface Water - Monitoring and Limitations

### Sample Point Number: 001- EFFLUENT DISCHARGE

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	Daily	Total Daily	
BOD <sub>5</sub> , Total	Weekly Avg	45 mg/L	Weekly	Grab	INTERIM LIMIT effective April, May, September, October and November until August 31, 2028 when the final limit goes into effect per the "Effluent Limitations for BOD <sub>5</sub> and Total Suspended Solids" schedule.
BOD <sub>5</sub> , Total	Weekly Avg	30 mg/L	Weekly	Grab	Limit effective December, January, February, March, June, July and August until September 1, 2028 when this limit becomes effective year round. See the "Effluent Limitations for BOD <sub>5</sub> and Total Suspended Solids" schedule for more information.
BOD <sub>5</sub> , Total	Monthly Avg	30 mg/L	Weekly	Grab	INTERIM LIMIT effective April, May, September,

<b>Monitoring Requirements and Limitations</b>					
<b>Parameter</b>	<b>Limit Type</b>	<b>Limit and Units</b>	<b>Sample Frequency</b>	<b>Sample Type</b>	<b>Notes</b>
					October and November until August 31, 2028 when the final limit goes into effect per the "Effluent Limitations for BOD5 and Total Suspended Solids" schedule
BOD5, Total	Monthly Avg	20 mg/L	Weekly	Grab	Limit effective December, January, February, March, June, July and August until September 1, 2028 when this limit becomes effective year round. See the "Effluent Limitations for BOD5 and Total Suspended Solids" schedule for more information.
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	Grab	INTERIM LIMIT effective April, May, September, October and November until August 31, 2028 when the final limit goes into effect per the "Effluent Limitations for BOD5 and Total Suspended Solids" schedule
Suspended Solids, Total	Weekly Avg	30 mg/L	Weekly	Grab	Limit effective December, January, February, March, June, July and August until September 1, 2028 when this limit becomes effective year round. See the "Effluent Limitations for BOD5 and Total Suspended Solids" schedule for more information.
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	Grab	INTERIM LIMIT effective April, May, September, October and November until August 31, 2028 when the final limit goes into effect per the "Effluent Limitations for BOD5 and Total Suspended Solids"

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					schedule
Suspended Solids, Total	Monthly Avg	20 mg/L	Weekly	Grab	Limit effective December, January, February, March, June, July and August until September 1, 2028 when this limit becomes effective year round. See the "Effluent Limitations for BOD5 and Total Suspended Solids" schedule for more information.
pH Field	Daily Max	9.0 su	Weekly	Grab	
pH Field	Daily Min	6.0 su	Weekly	Grab	
Dissolved Oxygen	Daily Min	4.0 mg/L	Weekly	Grab	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	21 mg/L	Weekly	Grab	Limit is effective in April.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	14 mg/L	Weekly	Grab	Limit is effective in May.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	13 mg/L	Weekly	Grab	Limit is effective in April.
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	5.5 mg/L	Weekly	Grab	Limit is effective in May.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	Weekly	Grab	Enter the daily ammonia result on the eDMR and compare to the Nitrogen, Ammonia Variable Limit column to determine compliance.
Nitrogen, Ammonia Variable Limit		mg/L	Weekly	Calculated	Using the daily pH result look up the applicable ammonia limit in the "Ammonia Limitation" section in the permit and report the variable limit on the eDMR.
Phosphorus, Total	Monthly Avg	5.0 mg/L	Weekly	Grab	INTERIM LIMIT - Limit is in effect until required actions in the "Phosphorus" schedule are completed.
E. coli		#/100 ml	Weekly	Grab	Monitoring is effective

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
					May through September during periods of discharge. See the "E. coli Monitoring" section in the permit for more information.
PFOS		ng/L	See Permit Note	Grab	Monitoring only. See "PFOS/PFOA" sections and "PFOS/PFOA Minimization Plan Determination of Need" schedule for more information.
PFOA		ng/L	See Permit Note	Grab	Monitoring only. See "PFOS/PFOA" sections and "PFOS/PFOA Minimization Plan Determination of Need" schedule for more information.
Nitrogen, Total Kjeldahl		mg/L	Annual	Grab	See the "Nitrogen Series Monitoring" section in the permit for more information.
Nitrogen, Nitrite + Nitrate Total		mg/L	Annual	Grab	See the "Nitrogen Series Monitoring" section in the permit for more information.
Nitrogen, Total		mg/L	Annual	Calculated	Total Nitrogen = Total Nitrogen Kjeldahl (mg/L) + Nitrite + Nitrate Nitrogen (mg/L). See the "Nitrogen Series Monitoring" section in the permit for more information.

### Changes from Previous Permit

Effluent limitations and monitoring requirements were re-evaluated for the proposed permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- A **Flow** limit is not included this permit term.

- The twice monthly monitoring frequency was increased to weekly monitoring in response to exceedances that occurred during the previous permit term (See the Substantial Compliance Determination section in this document for more information).
- **BOD<sub>5</sub>** and **Total Suspended Solids** limits have been replaced by effluent limits as described in s. NR 104.02(3)(b), Wis. Adm. Code.
- **Ammonia** weekly and monthly average limits have been added for April and May
- A **Phosphorus** interim limit and schedule has been added to the permit.
- **E. coli** monitoring has been added during the months of May – September.
- **PFOS** and **PFOA** monitoring have been included this permit term.
- Annual monitoring for the **Nitrogen Series** (nitrate +nitrite, total Kjeldahl nitrogen and total nitrogen) has been added to the permit.

## Explanation of Limits and Monitoring Requirements

More information on categorical and water quality-based limits (WQBEL) is found in the “Water Quality-Based Effluent Limitations for the Village of Tony (WI-0026000-11)” memo dated January 8, 2024.

**Discharge season** - The facility has been authorized to discharge on a fill-and-draw basis during April, May, September, October and November or on a continuous basis during the remainder of the year. The facility normally operates during fill-and-draw months. Fill-and-draw and continuous discharge seasons had specific limitations. By the end of the permit term, limits will be consistent year-round. *All samples shall be taken during normal operating conditions; therefore, monitoring is required only during periods of discharge.*

**Flow** – In the previous permit issuance the facility was given variance limits for flow and BOD<sub>5</sub> per s. NR 104.02(4)(c), Wis. Adm. Code. Re-evaluation has determined that the permittee doesn’t meet all required conditions and a variance is not applicable. The flow limit has been removed.

**BOD<sub>5</sub>** and **Total Suspended Solids (TSS)** - In the previous permit issuance the facility was given variance limits for flow, BOD<sub>5</sub> and TSS per s. NR 104.02(4)(c), Wis. Adm. Code. Re-evaluation has determined that the permittee doesn’t meet all required conditions and a variance is not applicable. Limits that are protective of LAL communities are a weekly average of 30 mg/L and a monthly average of 20 mg/L. The facility is unable to meet the limits consistently, therefore, interim limits of 45 mg/L weekly average and 30 mg/L monthly average and a schedule have been included this permit reissuance. Final limits will begin at the end of the schedule.

**pH** - Categorical limits for pH are required per ch. NR 210 (Subchapter II).

**Dissolved Oxygen** - Categorical limits for Dissolved Oxygen in a Limited Aquatic Life (marginal surface waters) are found in NR 104.02(3)(b) and 210.05(3) Wis. Adm. Code.

**Ammonia – Daily** - Using current acute and chronic ammonia toxicity criteria found in Tables 2C and 4B of NR 105 Wis. Adm. Code and limit calculating procedures (Subchapter IV of 106, Wis. Adm. Code ammonia limitations were calculated for the facility. The facility had variable limits during the previous permit term, they continue to be protective of the receiving water and continue through this permit term. Sample results for pH shall be used to calculate the daily variable limit. Total ammonia (NH<sub>3</sub>-N) sampling shall occur on the same day pH levels are monitored. The applicable variable limit shall be recorded on the Electronic Discharge Monitoring Report (eDMR) in the Ammonia Variable Limit column. Report the effluent ammonia sample result in the ‘Nitrogen, Ammonia (NH<sub>3</sub>-N) Total’ column. Compare the variable daily maximum ammonia limit to the reported ammonia result, record the number of exceedances in the box to the right of the ‘Limit in Effect’ ‘Daily Max’ row in the ‘Summary’ tables at the end of the eDMR.

The variable limit table remains the same as the previous permit term, but the table has been expanded to include limits from the pH range of 6.0 – 9.0 s.u.

**Daily Maximum Ammonia Nitrogen Limits – LAL Community**

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	83	7.0 < pH ≤ 7.1	51	8.0 < pH ≤ 8.1	11
6.1 < pH ≤ 6.2	82	7.1 < pH ≤ 7.2	46	8.1 < pH ≤ 8.2	8.8
6.2 < pH ≤ 6.3	80	7.2 < pH ≤ 7.3	40	8.2 < pH ≤ 8.3	7.3
6.3 < pH ≤ 6.4	78	7.3 < pH ≤ 7.4	35	8.3 < pH ≤ 8.4	6.0
6.4 < pH ≤ 6.5	75	7.4 < pH ≤ 7.5	31	8.4 < pH ≤ 8.5	5.0
6.5 < pH ≤ 6.6	72	7.5 < pH ≤ 7.6	26	8.5 < pH ≤ 8.6	4.1
6.6 < pH ≤ 6.7	69	7.6 < pH ≤ 7.7	22	8.6 < pH ≤ 8.7	3.4
6.7 < pH ≤ 6.8	65	7.7 < pH ≤ 7.8	19	8.7 < pH ≤ 8.8	2.8
6.8 < pH ≤ 6.9	60	7.8 < pH ≤ 7.9	16	8.8 < pH ≤ 8.9	2.4
6.9 < pH ≤ 7.0	56	7.9 < pH ≤ 8.0	13	8.9 < pH ≤ 9.0	2.0

**Ammonia Weekly and Monthly Limits** - Based on this comparison between effluent 99<sup>th</sup> upper percentile (P99) during each month with the daily maximum limit show there was reasonable potential for the discharge to exceed the calculated ammonia nitrogen limits for April and May. Weekly and monthly average ammonia nitrogen limits for April and May are included this permit term.

**Phosphorus** - Phosphorus requirements are based on the Phosphorus Rules as detailed in NR 102 (water quality standards) and NR 217, Wis. Adm. Code (effluent standards and limitations for phosphorus). Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. Currently in NR 217 Wis. Adm. Code there are three types of limit calculations used to determine if a phosphorus limit is needed: a technology based effluent limit (TBEL), a water quality-based effluent limit (WQBEL) determined by stream criteria and a WQBEL based on a Total Daily Maximum Daily Load (TMDL) allocation.

In the case of the Village of Tony:

- A TBEL of 1.0 mg/L is needed if a facility discharges more than the threshold of 150 pounds per month (s. NR 217.04(1)(a)1 Wis. Adm. Code). The limit memo determined that the facility discharges less than the threshold (approximately 36 lbs/month); therefore, a TBEL is not applicable this permit term.
- Based on the size and classification of the stream, the water quality criteria for the ditch to Deerskin Creek is 75 ug/L. This criterion and instream background phosphorus data are used to calculate the stream criterion-based WQBELs. The calculated WQBELs are 0.23 mg/L (monthly average), 0.075 mg/L (6-month average) and 0.085 lbs/day (6-month average). The WQBELs will become effective March 31, 2033 upon completion of the Phosphorus schedule. Until the WQBELs becomes effective an interim limit of 5.0 mg/L based on the 1-day P99 will be in effect.

Based on current data the facility will not be able to meet the limits. NR 217 Wis. Adm. Code provides for alternative means of achieving the equivalent reduction of discharged phosphorus including include pollutant trading and adaptive management. A schedule of up to 9 years to achieve stringent phosphorus limits is allowed. This permit includes an interim limit of 5.0 mg/L monthly average through the permit term and a schedule targeted at achieving the limits. The schedule contains dates for evaluations and plan submittals which occur during the term of this permit. It also contains informational implementation dates that do not take effect until the next permit reissuance.

- The facility does not lie within the boundaries of any approved total maximum daily load (TMDL) area, thus a phosphorus WQBEL based on a TMDL allocation is likewise not required during this permit term.

**E. coli** - The facility has a detention time of at least 180 days, which is felt to provide enough time to disinfect the effluent and additional treatment will not be needed. Per s. NR 210.06(3)(h), Wis. Adm. Code, bacteria limits or monitoring is not typically needed. But in the case of the Village, there are several concerns about potential non representative or underestimated flow reported during July 2018 – October 2023. Incorrect flow information can affect the accuracy in



estimating the detention time for a facility. To ensure that *E. coli* water quality standards are being met monitoring through a recreational season (May – September) is required. It is not anticipated that the permittee will discharge all five months during a single calendar year therefore monitoring during multiple years is likely needed. Weekly monitoring is required during periods of discharge in May, June, July, August and September. Once data is captured for a month that month will not need to be sampled again during the remaining years of the permit term.

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.

**PFOS and PFOA** – Weekly monitoring during periods of discharge is required. Once six samples have been taken, sampling may cease for the remainder of that calendar year.

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.

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 previous PFOS/PFOA sample results were within 1/5 of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code.

**Nitrogen Series** (nitrate +nitrite, total Kjeldahl nitrogen and total nitrogen) – Annual sampling is required during a period of discharge. It is preferable that the sampling is seasonally rotated each year. In 2011, the Upper Mississippi River Basin Association (UMRBA) completed the report “Upper Mississippi River Nutrient Monitoring, Occurrence, and Local Impacts: A Clean Water Act Perspective”. Among the many recommendations of this report was that the states should expand their NPDES discharge monitoring requirements to include both phosphorus and nitrogen as they have important impacts on the mainstem upper Mississippi River as well as in the Gulf of Mexico. Consequently, the department developed the “Guidance for Total Nitrogen Monitoring in WPDES Permits” document dated October 2019, where annual effluent monitoring for total nitrogen (total nitrogen = total Kjeldahl + (nitrite+nitrate)) is required for municipal and industrial facilities discharging to surface waters. Section 283.55(1)(e) Wis. Stats. 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 s. NR 200.065 (1)(h) Wis. Adm. Code allows for this monitoring to be collected during the permit term.

**Sampling Frequencies** - The “[Monitoring Frequencies for Individual Wastewater Permits](#)” guidance document (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. Permitted monitoring frequencies fall below the standard monitoring frequencies outlined in the guidance document. Section NR 205.066(1) Wis. Adm. Code allows sampling frequency to be set on a case-by-case basis. The permittee demonstrates a history of consistent compliance with existing permit limits. Data submitted during the previous permit term continues to show consistent compliance with permit limitations, and the set monitoring frequencies are consistent with requirements of state code. The current monitoring frequencies shall continue this permit term. If

performance levels begin to vary during the permitted term, the department may re-evaluate current sampling frequencies and implement more frequent monitoring via permit modification or at permit reissuance.

### 3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	Sludge Class (A or B)	Sludge Type (Liquid or Cake)	Pathogen Reduction Method	Vector Attraction Method	Reuse Option	Amount Reused/Disposed (Dry Tons/Year)
003	B	Liquid	Sludge removal is not anticipated this permit term. If removal is needed see the land application and schedule sections of the permit for more information.			
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No, during the most recent sampling event (2020) results were below the level of detection.						
If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in land applying sludge from this facility						
Is a priority pollutant scan required? No						
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	

<b>Monitoring Requirements and Limitations</b>					
<b>Parameter</b>	<b>Limit Type</b>	<b>Limit and Units</b>	<b>Sample Frequency</b>	<b>Sample Type</b>	<b>Notes</b>
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	
Nitrogen, Total Kjeldahl		Percent	Per Application	Composite	
Nitrogen, Ammonia (NH3-N) Total		Percent	Per Application	Composite	
Phosphorus, Total		Percent	Per Application	Composite	
Phosphorus, Water Extractable		% of Tot P	Per Application	Composite	
Potassium, Total Recoverable		Percent	Per Application	Composite	
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:**

Sludge limitations and monitoring requirements were re-evaluated for the proposed permit term and the following changes were made from the previous permit. See additional explanation of limits under “Explanation of Limits and Monitoring Requirements” below.

- List 1 (Metals) monitoring is required during the second year of the permit term (2025).
- It is recommended that List 2 (Nutrients) monitoring occur with the List 1 monitoring.
- PFAS monitoring is required during the second year of the permit term (2025).
- Due to changes within the land application forms, the 3400-049 (“Characteristics Report”), 3400-052 (“Other Methods of Disposal”) and 3400-055 (Annual Land Application”) forms will need to be submitted each year.

## 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.

**List 2 Nutrient monitoring** – Monitoring for list 2 (nutrients) is highly recommended at the same time as the monitoring of List 1 (metals) in year 2 of the permit (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 Sludge Management Schedule (see schedules for more information).

**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”

**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.

**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.

Sludge analysis during the second year of the permit term has been included. There are check boxes available on the electronic forms to identify if desludging didn’t occur.

- Sludge characteristics report (3400-049) – at the top of the form check “yes” or “no” in the box identifying if any land application occurred that year. Complete the form if required or identify the year samples will be or have been taken in the comments section.
- 3400-052 (“Other Methods of Disposal”) and 3400-055 (“Annual Land Application”) - The reports are technically 2 separate forms that are now combined in one location but separated onto two different tabs. If you answer “No” to both listed questions the forms are complete. If you need to answer “Yes” to either question the corresponding form tabs will go from gray to blue indicating information can be entered on the report.

## 4 Schedules

### 4.1 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.	03/31/2025

<p>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.</p>	
<p>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.</p> <p>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.</p> <p>The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan.</p> <p>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.</p> <p>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.</p>	<p>03/31/2026</p>

## 4.2 Effluent Limitations for BOD5 and Total Suspended Solids

The permittee shall comply with surface water limitations for BOD<sub>5</sub> and Total Suspended Solids as specified. If a submittal is required, a timely submittal fulfills the notification.

Required Action	Due Date
<p>Operational Evaluation Report: The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of the treatment plan to the extent possible enabling compliance with the final BOD<sub>5</sub> and Total Suspended Solids limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible. The report shall state whether the operational improvements are expected to result in compliance with the final BOD<sub>5</sub> and Total Suspended Solids limitations.</p> <p>If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final BOD<sub>5</sub> and Total Suspended Solids limitations, the permittee shall comply with the final limitations by March 31, 2026 and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule ('Submit Facility Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', 'Construction Upgrade Progress Report', 'Complete Construction', 'Achieve Compliance').</p> <p>FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final BOD<sub>5</sub> and Total Suspended Solid limitations, the permittee shall initiate development of a facility plan for meeting final limitations and comply with the remaining required actions in this schedule of compliance.</p>	<p>03/31/2025</p>
<p>Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final BOD<sub>5</sub> and Total Suspended Solids limitations with operational improvements alone, the</p>	<p>03/31/2026</p>

permittee shall submit a Facility Plan per s. NR 110.09, Wis. Adm. Code. The permittee may submit an abbreviated facility plan if the Department determines that the modifications are minor.	
Final Plans and Specifications: The permittee shall submit final construction plans to the Department for approval pursuant to ch. NR 108, Wis. Adm. Code, specifying treatment plant upgrades that must be constructed to achieve compliance with final BOD5 and Total Suspended Solids limitations and a schedule for completing construction of the upgrades by the complete construction date specified below.	03/31/2027
Treatment Plant Upgrade to Meet Limitations: The permittee shall initiate bidding, procurement, and/or construction of the project. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats., prior to initiating activities defined as construction under ch. NR 108, Wis. Adm. Code. 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.	03/31/2028
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades.	06/30/2028
Achieve Compliance: The permittee shall achieve compliance with final BOD and Total Suspended Solids limitations.	08/31/2028

### 4.3 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
<p>Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by March 31, 2027. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than March 31, 2027 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report.</p> <p>If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by March 31, 2027 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet WQBELs', 'Complete Construction', 'Achieve Compliance').</p> <p>STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions</p>	03/31/2025

<p>of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than March 31, 2033].</p>	
<p>Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs.</p>	03/31/2026
<p>Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department.</p> <p>If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final phosphorus WQBELs, the submittal shall include a preliminary engineering design report.</p> <p>If water quality trading will be undertaken, the plan must state that trading will be pursued.</p>	03/31/2027
<p>Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department.</p> <p>If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final phosphorus WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code.</p> <p>If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners.</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	03/31/2028
<p>Progress Report on Plans &amp; Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	03/31/2029
<p>Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include 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.)</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	03/31/2030
<p>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</p>	06/30/2030

Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	
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.	06/30/2031
Construction Upgrade Progress Report #2: 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.	03/31/2032
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.	02/28/2033
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.	03/31/2033

#### 4.4 Sludge Management Plan

A management plan is required for the land application system.

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

#### 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.



**Effluent Limitations for BOD5 and Total Suspended Solids** - A schedule is included in the permit to provide time for the permittee to investigate options for meeting new effluent BOD<sub>5</sub> and TTS effluent limits while coming into compliance with the limits as soon as reasonably possible.

**Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus** - Currently the facility can't meet the final water quality based effluent limit for phosphorus (0.23 mg/L monthly average, 0.075 mg/L six-month average, and 0.085 lbs/day six-month average; therefore, an interim limit (5mg/L) and a schedule have been included in this permit issuance. The schedule lays out a plan and timeline for the facility to investigate their ability to meet the limit and alternatives that are most feasible so that they will be able to meet the limit by the end of their schedule. The schedule extends beyond the permit term as allowed by NR 217.17(2) Wis. Adm. Code. A schedule that allows up to 9 years before the final limit is effective was chosen, because the facility discharges less than 150 lbs of phosphorus per month, they have never had a limit before, construction of filtration or a similar phosphorus removal process would be needed to meet the limit, an extensive financing plan will be needed for a facility upgrade, and the facility recently completed a facility upgrade.

**Sludge Management Plan** - If the lagoons are to be de-sludged during this permit term a management plan is needed to show compliance with ch NR 204, Wis. Adm. Code. There are outlines available to assist in plan development.

## **Attachments:**

Water Flow Schematic created in 2012

“Water Quality-Based Effluent Limitations for the Village of Tony (WI-0026000-11)” memo dated January 8, 2024

## **Expiration Date:**

March 31, 2029

## **Justification Of Any Waivers From Permit Application Requirements**

A decision has been made not to require effluent monitoring for metals in the application because:

1. The low design flow (22,300 gallons per day) and low actual flows (an average of 16,000 gallons per day) from this facility.
2. The wastewater is all domestic with no industrial contributors to the collection system.
3. The metals in the sludge are well below high quality sludge limits which correlates to low metal concentrations in the effluent.
4. Based on the total points accumulated on the WET checklist and Chapter 1.3 of the WET Guidance Document there is little likelihood the effluent is toxic.

**Prepared By:** Sheri A. Snowbank      Wastewater Specialist

**Date:** January 17, 2024

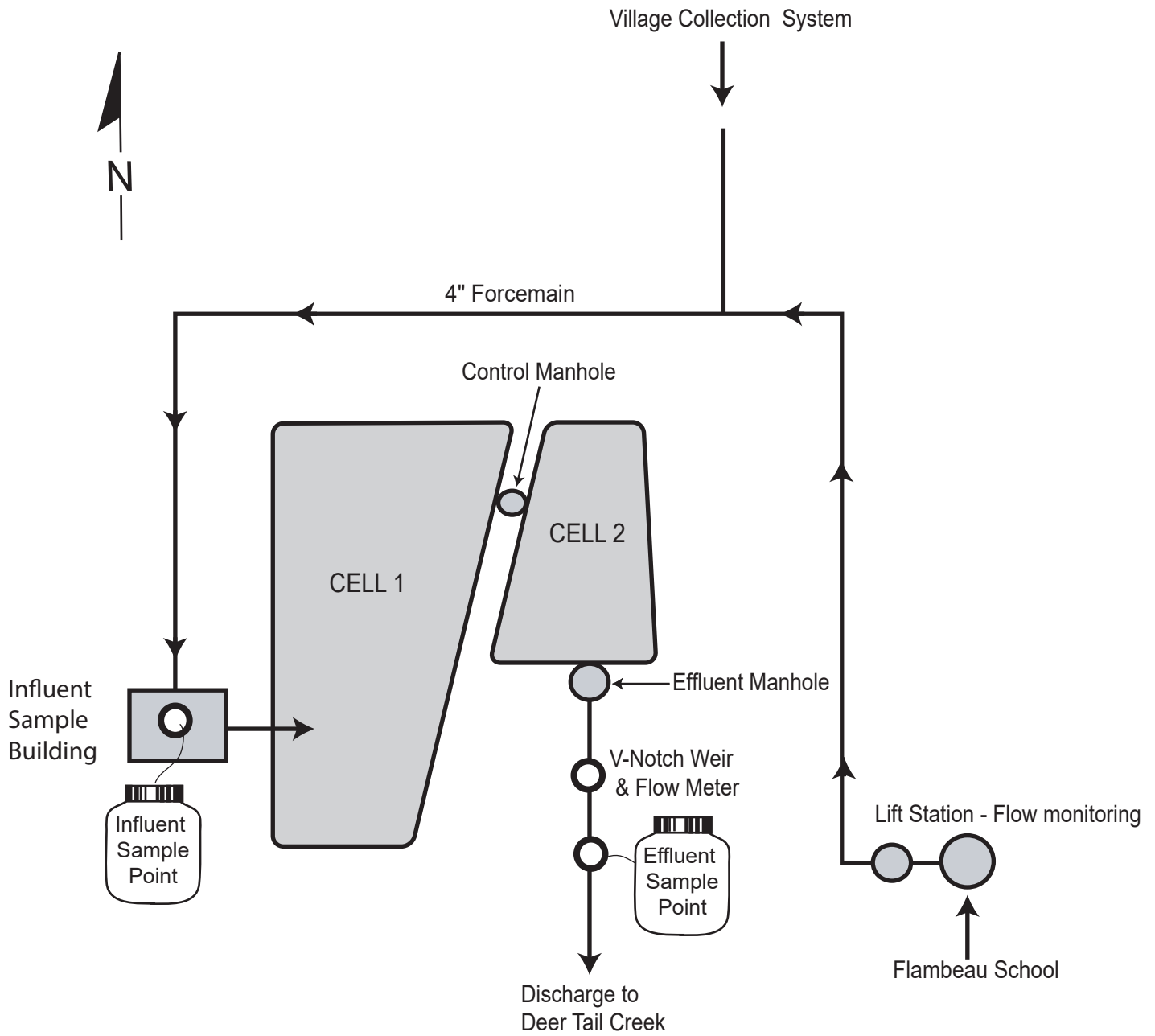
**Date updated based on Factcheck comments:** No comments requested (February 9, 2024)

**Date updated based on public notice comments:**

*Notice of reissuance was published in the Ladysmith News, PO Box 189, Ladysmith, WI 54848-0189.*

# VILLAGE OF TONY Wastewater Treatment Facility

The Village of Tony wastewater treatment facility consists of two stabilization ponds. The treated effluent is discharged to a ditch tributary flowing into Deer Tail Creek in Rusk County. The diagram below shows the treatment units and sampling locations.



Design Flow: 0.0226 MGD  
BOD: 50 lbs/day  
Construction Year: 1975

NOT TO SCALE

**CORRESPONDENCE/MEMORANDUM**

DATE: January 8, 2024

TO: Sheri Snowbank – NOR/Spooner Service Center

FROM: Michael Polkinghorn – NOR/Rhineland Service Center *Michael Polkinghorn*

SUBJECT: Water Quality-Based Effluent Limitations for the Village of Tony  
 WPDES Permit No. WI-0026000-11-0

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the Village of Tony in Rusk County. This municipal wastewater treatment facility (WWTF) discharges to an effluent ditch to a wetland to a road ditch into an unnamed tributary to Deertail Creek, located in the Deertail Watershed in the Upper Chippewa 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						1
BOD <sub>5</sub>						
Interim April – May September – November			45 mg/L	30 mg/L		
December – March June – August			30 mg/L	20 mg/L		2
Final April – May September – November			30 mg/L	20 mg/L		
TSS						
Interim April – May September – November			45 mg/L	30 mg/L		
December – March June – August			30 mg/L	20 mg/L		2
Final April – May September – November			30 mg/L	20 mg/L		
pH	9.0 s.u.	6.0 s.u.				2, 3
Dissolved Oxygen		4.0 mg/L				2, 3
Ammonia Nitrogen Year round	Variable					
April May			21 mg/L 14 mg/L	13 mg/L 5.5 mg/L		4
Phosphorus						
Interim				5.0 mg/L		5
Final				0.23 mg/L	0.075 mg/L	

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
					0.085 lbs/day	
<i>E. coli</i>						6
PFOS and PFOA						7
TKN, Nitrate+Nitrite, and Total Nitrogen						8

Footnotes:

1. Monitoring whenever the discharge occurs.
2. These limits are based on the Limited Aquatic Life (LAL) community of the immediate receiving water as described in s. NR 104.02(3)(b), Wis. Adm. Code. The BOD<sub>5</sub> and TSS limits based on s. NR 104.02(4)(c), Wis. Adm. Code, will serve as interim limits during the compliance schedule.
3. No changes from the current permit.
4. 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. These limits apply year-round.

**Daily Maximum Ammonia Nitrogen Limits**

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	83	7.0 < pH ≤ 7.1	51	8.0 < pH ≤ 8.1	11
6.1 < pH ≤ 6.2	82	7.1 < pH ≤ 7.2	46	8.1 < pH ≤ 8.2	8.8
6.2 < pH ≤ 6.3	80	7.2 < pH ≤ 7.3	40	8.2 < pH ≤ 8.3	7.3
6.3 < pH ≤ 6.4	78	7.3 < pH ≤ 7.4	35	8.3 < pH ≤ 8.4	6.0
6.4 < pH ≤ 6.5	75	7.4 < pH ≤ 7.5	31	8.4 < pH ≤ 8.5	5.0
6.5 < pH ≤ 6.6	72	7.5 < pH ≤ 7.6	26	8.5 < pH ≤ 8.6	4.1
6.6 < pH ≤ 6.7	69	7.6 < pH ≤ 7.7	22	8.6 < pH ≤ 8.7	3.4
6.7 < pH ≤ 6.8	65	7.7 < pH ≤ 7.8	19	8.7 < pH ≤ 8.8	2.8
6.8 < pH ≤ 6.9	60	7.8 < pH ≤ 7.9	16	8.8 < pH ≤ 8.9	2.4
6.9 < pH ≤ 7.0	56	7.9 < pH ≤ 8.0	13	8.9 < pH ≤ 9.0	2.0

5. The interim limit of 5.0 mg/L as a monthly average is recommended during the reissued permit term during the compliance schedule along with requirements for optimization of phosphorus removal.
6. Weekly *E. coli* monitoring whenever the discharge occurs during May – September is recommended during the reissued permit term. The Village of Tony will likely not discharge during all 5 months in a single calendar year so multiple years will be needed to capture samples for each applicable month. A respective month does not need to be sampled again if weekly samples were taken in a previous discharge year.
7. Weekly (when discharge occurs) up to a maximum of 6 samples per year, in accordance with s. NR 106.98(2), Wis. Adm. Code.
8. 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. The recommended limits meet the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, and additional limits are not required.

Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, 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 Michael Polkinghorn at (715) 360-3379 or Michael.Polkinghorn@wisconsin.gov and Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (3) – Narrative, discharge area map, & thermal table.

PREPARED BY: Michael A. Polkinghorn, E.I.T. – Water Resources Engineer

E-cc: Arthur Ryzak, Wastewater Engineer – NOR/Ladysmith Service Center  
Michelle BalkLudwig, Regional Wastewater Supervisor – NOR/Spooner Service Center  
Diane Figiel, Water Resources Engineer – WY/3  
Nathaniel Willis, Wastewater Engineer – WY/3

**Water Quality-Based Effluent Limitations for  
Village of Tony**

**WPDES Permit No. WI-0026000-11-0**

Prepared by: Michael A. Polkinghorn, E.I.T.

**PART 1 – BACKGROUND INFORMATION**

**Facility Description**

The Village of Tony owns and operates a wastewater treatment facility. Treatment consists of two stabilization ponds operated in series. Effluent can be discharged during April – May and September – November each year under fill and draw operation limitations. Continuous discharges under a different set of limits can occur during the rest of the year. Effluent is discharged on a noncontinuous basis via Outfall 001 to an effluent ditch to a wetland to a road ditch into an unnamed tributary to Deertail Creek.

The Village of Tony primarily operates the facility as a noncontinuous discharge. Therefore, this evaluation will assume a noncontinuous discharge operation will continue into the reissued permit term for any limits or monitoring recommendations.

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

**Existing Permit Limitations**

The current permit, expired on 06/30/2023, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Footnotes
Flow Rate	0.136 MGD				1
BOD <sub>5</sub>					1
April – May September – November			45 mg/L	30 mg/L	
December – March June – August			30 mg/L	20 mg/L	
TSS					1
April – May September – November			45 mg/L	30 mg/L	
December – March June – August			30 mg/L	20 mg/L	
pH	9.0 s.u.	6.0 s.u.			1
Dissolved Oxygen		4.0 mg/L			1
Ammonia Nitrogen	Variable				2
Phosphorus					3

Footnotes:

1. These are variance limits as described in s. NR 104.02(4)(c), Wis. Adm. Code, applicable to fill and draw or domestic waste stabilization pond facilities discharging to a Limited Aquatic Life (LAL) or Limited Forage Fish (LFF) community receiving water. In absence of this variance, limits based on the LAL or LFF community of the receiving water as described in s. NR 104.02(3)(a) or (b), Wis. Adm. Code, shall apply.
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. These limits apply year-round.

**Daily Maximum Limits based on pH**

Effluent pH (s.u)	NH <sub>3</sub> -N Limit (mg/L)	Effluent pH (s.u)	NH <sub>3</sub> -N Limit (mg/L)	Effluent pH (s.u)	NH <sub>3</sub> -N Limit (mg/L)
6.0 < pH ≤ 6.1	85	7.0 < pH ≤ 7.1	51	8.0 < pH ≤ 8.1	11
6.1 < pH ≤ 6.2	83	7.1 < pH ≤ 7.2	46	8.1 < pH ≤ 8.2	8.8
6.2 < pH ≤ 6.3	82	7.2 < pH ≤ 7.3	40	8.2 < pH ≤ 8.3	7.3
6.3 < pH ≤ 6.4	80	7.3 < pH ≤ 7.4	35	8.3 < pH ≤ 8.4	6.0
6.4 < pH ≤ 6.5	78	7.4 < pH ≤ 7.5	31	8.4 < pH ≤ 8.5	4.9
6.5 < pH ≤ 6.6	75	7.5 < pH ≤ 7.6	26	8.5 < pH ≤ 8.6	4.1
6.6 < pH ≤ 6.7	72	7.6 < pH ≤ 7.7	22	8.6 < pH ≤ 8.7	3.4
6.7 < pH ≤ 6.8	69	7.7 < pH ≤ 7.8	19	8.7 < pH ≤ 8.8	2.8
6.8 < pH ≤ 6.9	65	7.8 < pH ≤ 7.9	16	8.8 < pH ≤ 8.9	2.4
6.9 < pH ≤ 7.0	60	7.9 < pH ≤ 8.0	13	8.9 < pH ≤ 9.0	2.0

3. Monitoring only

**Receiving Water Information**

- Name: Effluent ditch to a wetland into an unnamed tributary to Deertail Creek.
- Waterbody Identification Code (WBIC)
  - o Effluent ditch: NA
  - o Wetland: NA
  - o Road ditch: NA
  - o Unnamed tributary (UT): 2223400
  - o Deertail Creek: 2221700
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code:
  - o Effluent ditch (segment 1): LAL community and effluent ditch as described on Table 8, Row 23, of s. NR 104.10(2), Wis. Adm. Code, from Outfall 001 to wetland.
  - o Wetland (segment 2): LAL community and wetland as described on Table 8, Row 23, of s. NR 104.10(2), Wis. Adm. Code, from wetland to Town Line Rd. This is approx. 0.15 mi downstream of Outfall 001.
  - o Road ditch and UT (segment 3): LFF community as described on Table 8, Row 23, of s. NR 104.10(2), Wis. Adm. Code, from Town Line Rd to Deertail Creek. The previous limit evaluation (March 2018) inadvertently treated the UT as a LAL community. This surface waterbody is recommended to be changed to a WWSF community in a future revision to ch. NR 104, Wis. Adm. Code, but the codified fish and aquatic life classification (LFF community) will be utilized in this evaluation. This is approx. 0.33 mi downstream of Outfall 001 assuming the shortest dispersed flow path.

Attachment #1

- o Deertail Creek (segment 4): Warm Water Sport Fish (WWSF) community. This is approx. 3.2 mi downstream of Outfall 001.
- o All surface waterbodies are considered non-public water supplies. Limits based on the protection of downstream surface waterbodies' water quality will be considered when appropriate.
- o Information about the site visit for determining the biological potential of the prior stated surface waterbodies is discussed in greater detail in the Receiving Water Classification Memorandum (January 2024) and will be available in the future in the permit file for the Village of Tony.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: Low flows for the effluent ditch and the road ditch are expected to be zero at the point of discharge and 0.33 mi downstream. The following historic low flows were estimated for Deertail Creek at the confluence with the UT based on a drainage area comparison with nearby Skinner Creek:
  - 7-Q<sub>10</sub> = 0.3 cubic feet per second (cfs)
  - 7-Q<sub>2</sub> = 0.8 cfs
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: Not applicable where the receiving water low flows are zero.
- Multiple dischargers: None.
- Impaired water status: There are no known impairments to the effluent ditch, wetland, or UT. Deertail Creek is on the Clean Water Act Section 303(d) list for a phosphorus impairment.

**Effluent Information**

- Flow rate(s):
  - Flow rate limit = 0.136 million gallons per day (MGD)
  - Annual average design = 0.0316 MGD
  - o The flow rate limit of 0.136 MGD is used in place of the annual average design flow to account for the seasonal nature of the discharge. For reference, the actual average flow from July 2018 – October 2023 was 0.08 MGD excluding days discharge did not occur. This flow becomes 0.008 MGD including days discharge did not occur.
  - o An effluent flow was reported as 5 MGD on 09/13/2018 and is considered an error in the DMR entry. The remaining effluent flow values were reported as 0.05 MGD during September 2018. Therefore, the value is excluded from use in this evaluation.
- 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 no industrial contributors. Water supply is the municipality waterworks.
- Additives: None.
- Effluent characterization: This facility is categorized as a minor municipality and received instructions in the application notification letter that exempt it from standard monitoring requirements. The permit required phosphorus monitoring during the current permit term.
- Additional effluent ammonia nitrogen data (n = 19, August 2013 – November 2017) is used to better determine the need of ammonia nitrogen limits in the permit.



Attachment #1

The following table presents the average concentrations and loadings at Outfall 001 from July 2018 – October 2023 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter	Average Measurement*
Flow Rate	0.08 MGD
BOD <sub>5</sub>	14 mg/L
TSS	26 mg/L
pH field	8.2 s.u.
Dissolved Oxygen	8.4 mg/L
Ammonia Nitrogen	3.2 mg/L

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

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

Mercury – The permit application did not require monitoring for mercury because the Village of Hawkins is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3, Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, “there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5), Wis. Adm. Code.” A review of available sludge characteristics data reveals the sludge concentration was 0.4 mg/kg (September 2020). **Therefore, mercury monitoring is not recommended during the reissued permit term.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Previous monitoring of Tony Waterworks Well # FF356 produced a PFOS result of 11 ng/L and a PFOA result of 0.71 ng/L (09/19/2023, Sample ID: CB11453-01). The PFOS result is greater than one fifth of the respective criteria for PFOS (1.6 ng/L). **Therefore, PFOS and PFOA monitoring is recommended weekly when discharge occurs, up to a maximum of 6 samples per year.**

**PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS  
FOR CONVENTIONAL POLLUTANTS**

The BOD<sub>5</sub>, TSS, and flowrate limits in the current permit during April – May and September – November are variance limits as described in s. NR 104.02(4)(c), Wis. Adm. Code, applicable to fill and draw or domestic waste stabilization pond facilities discharging to a LAL or LFF community receiving water. The current variance limits are not applicable to the Village of Tony because the effluent ditch has a 7-Q<sub>10</sub> low flow of zero and does not have a high flow to meet the receiving water condition as described in s. NR 104.02(4)(c)1, Wis. Adm. Code.

Attachment #1

The designated use of the immediate receiving water (effluent ditch) is an LAL community as detailed in the Receiving Water Classification Memorandum (January 2024). In absence of the current variance, **the following effluent limits are required to protect the LAL community water quality standards as described in s. NR 104.02(3)(b), Wis. Adm. Code:**

**LAL Community Conventional Pollutant Limits**

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average
BOD <sub>5</sub>			30 mg/L	20 mg/L
TSS			30 mg/L	20 mg/L
Dissolved Oxygen		4.0 mg/L		
pH	9.0 s.u.	6.0 s.u.		

Because the variance is no longer applicable to the Village of Tony, **the daily maximum flowrate of 0.136 MGD is recommended to be removed during the reissued permit term.**

**BOD<sub>5</sub>**

The following table summarizes effluent BOD<sub>5</sub> monitoring data from August 2018 – May 2023.

**BOD<sub>5</sub> Effluent Data**

Sample Date	Weekly Avg. (mg/L)	Monthly Avg. (mg/L)
08/13/2018	10	10
08/20/2018	10	
09/18/2018	26	26
09/03/2019	7	
09/23/2019	6	6.5
10/08/2019	<2	
10/28/2019	11	5.5
11/19/2019	19	
10/12/2020	5	19
10/19/2020	4	
11/03/2020	5	4.5
04/06/2021	35	
04/19/2021	22	29
04/11/2023	38	
04/18/2023	8	23
05/09/2023	12	

The Village of Tony has an effluent BOD<sub>5</sub> monitoring frequency of weekly in the current permit where each sample is equivalent to a representative weekly average. A review of this effluent data show they would have exceeded the 30 mg/L weekly average limit once. A review of monthly average effluent BOD<sub>5</sub> data show they also would have exceeded the 20 mg/L monthly average limit 3 times. Therefore, a compliance schedule is recommended during the reissued permit term. An interim limit is required when a compliance schedule is needed in the permit to meet a limit. The interim limit should reflect a concentration that the facility is able to meet without investing in additional “temporary” treatment, but

also should prevent backsliding from current conditions. **Therefore, the current BOD<sub>5</sub> limits of 45 mg/L as a weekly average and 30 mg/L as a monthly average are recommended to serve as the interim limits for the compliance schedule.**

**TSS**

The following table summarizes effluent TSS monitoring data from October 2018 – May 2023.

Sample Date	Weekly Avg. (mg/L)	Monthly Avg. (mg/L)
08/13/2018	21	20
08/20/2018	18	
09/18/2018	28	28
09/03/2019	9	7
09/23/2019	5	
10/08/2019	3	12
10/28/2019	20	
11/19/2019	18	18
10/12/2020	2	1.5
10/19/2020	3	
04/06/2021	51	48
04/19/2021	45	
04/11/2023	19	16
04/18/2023	13	
05/09/2023	154	154

The Village of Tony has an effluent TSS monitoring frequency of weekly in the current permit where each sample is equivalent to a representative weekly average. A review of this effluent data show they would have exceeded the 30 mg/L weekly average limit 3 times. A review of monthly average effluent TSS data show they also would have exceeded the 20 mg/L monthly average limit 3 times. Therefore, a compliance schedule is recommended during the reissued permit term. An interim limit is required when a compliance schedule is needed in the permit to meet a limit. The interim limit should reflect a concentration that the facility is able to meet without investing in additional “temporary” treatment, but also should prevent backsliding from current conditions. **Therefore, the current TSS limits of 45 mg/L as a weekly average and 30 mg/L as a monthly average are recommended to serve as the interim limits for the compliance schedule.**

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

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

- Determine the need of weekly and monthly average limits in the reissued permit.

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

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

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

Where:

A = 0.633 and B = 90.0 for an LAL community, and  
 pH (s.u.) = that characteristic of the effluent.

The Village of Tony has the variable daily maximum ammonia nitrogen limits table based on effluent pH in the current permit. Those ammonia nitrogen limits are based on the protection of a LAL community using the 1-Q<sub>10</sub> low flow method of calculation. This is still the case for the Village of Tony so the daily maximum limits do not change due to this consideration. This table is presented below:

**Daily Maximum Ammonia Nitrogen Limits – LAL Community**

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
6.0 ≤ pH ≤ 6.1	83	7.0 < pH ≤ 7.1	51	8.0 < pH ≤ 8.1	11
6.1 < pH ≤ 6.2	82	7.1 < pH ≤ 7.2	46	8.1 < pH ≤ 8.2	8.8
6.2 < pH ≤ 6.3	80	7.2 < pH ≤ 7.3	40	8.2 < pH ≤ 8.3	7.3
6.3 < pH ≤ 6.4	78	7.3 < pH ≤ 7.4	35	8.3 < pH ≤ 8.4	6.0
6.4 < pH ≤ 6.5	75	7.4 < pH ≤ 7.5	31	8.4 < pH ≤ 8.5	5.0
6.5 < pH ≤ 6.6	72	7.5 < pH ≤ 7.6	26	8.5 < pH ≤ 8.6	4.1
6.6 < pH ≤ 6.7	69	7.6 < pH ≤ 7.7	22	8.6 < pH ≤ 8.7	3.4
6.7 < pH ≤ 6.8	65	7.7 < pH ≤ 7.8	19	8.7 < pH ≤ 8.8	2.8
6.8 < pH ≤ 6.9	60	7.8 < pH ≤ 7.9	16	8.8 < pH ≤ 8.9	2.4
6.9 < pH ≤ 7.0	56	7.9 < pH ≤ 8.0	13	8.9 < pH ≤ 9.0	2.0

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

Weekly average and monthly average limits for ammonia nitrogen are based on chronic toxicity criteria (CTC) in ch. NR 105, Wis. Adm. Code. An initial review of the surface waterbodies under the influence of Outfall 001 shows weekly and monthly average limits should be considered for the protection of the LAL, LFF, and WWSF communities. There is no assimilative capacity available at the first LAL community at Outfall 001 and the first LFF community approx. 0.33 mi downstream of Outfall 001 assuming the shortest dispersed flow path. The amount of ammonia decay over this distance is expected to be negligible so the weekly and monthly average limits based on the first LFF community would be protective of the LAL community. Therefore, only weekly and monthly average limits for the first LFF community (road ditch) and the WWSF community (Deertail Creek) will be evaluated.

LFF Community Section

The 30-day CTC for ammonia in waters classified as an LFF community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

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

Where:

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

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E = 1.0,  
 C = the minimum of 3.09 or  $3.73 \times 10^{(0.028 \times (25 - T))}$  – (Early Life Stages Present), or  
 C =  $3.73 \times 10^{(0.028 \times (25 - T))}$  – (Early Life Stages Absent), and  
 T = the temperature (°C) of the receiving water – (Early Life Stages Present), or  
 T = the maximum of the actual temperature (°C) and 7 - (Early Life Stages Absent)

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q<sub>10</sub> (4-Q<sub>3</sub>, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q<sub>5</sub> (estimated as 85% of the 7-Q<sub>2</sub> if the 30-Q<sub>5</sub> is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 °C, 25% of the flow is used if the Temperature < 11 °C, and 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. For an LFF community, ELS are present during May – September and absent during October – April.

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

**Weekly and Monthly Ammonia Nitrogen Limits – LAL Community**

		Spring	Summer	Winter
		May	June – Sept.	Oct. – April
<b>Effluent Flow</b>	Qe (MGD)	0.136	0.136	0.136
<b>Background Information</b>	7-Q <sub>10</sub> (cfs)	0	0	0
	7-Q <sub>2</sub> (cfs)	0	0	0
	Ammonia (mg/L)	NA	NA	NA
	Maximum Temperature (°C)	15	21	13
	pH (s.u.)	7.5	7.5	7.5
	% of Flow used	NA	NA	NA
	Reference Weekly Flow (cfs)	0	0	0
	Reference Monthly Flow (cfs)	0	0	0
<b>Criteria mg/L</b>	4-day Chronic			
	Early Life Stages Present	13.85	13.85	
	Early Life Stages Absent			36.76
	30-day Chronic			
	Early Life Stages Present	5.54	5.54	
Early Life Stages Absent			14.71	
<b>Effluent Limitations mg/L</b>	Weekly Average			
	Early Life Stages Present	14	14	
	Early Life Stages Absent			37
	Monthly Average			
	Early Life Stages Present	5.5	5.5	
Early Life Stages Absent			15	

WWSF Community Section

The 30-day CTC for ammonia in waters classified as a WWSF community is calculated by the following equation, according to subchapter IV of NR 106, Wis. Adm. Code.

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

Where:

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

E = 0.854,

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

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

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

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

The 4-day criterion is equal to the 30-day criterion multiplied by 2.5. The 4-day criteria are used in a mass-balance equation with the 7-Q<sub>10</sub> (4-Q<sub>3</sub>, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q<sub>5</sub> (estimated as 85% of the 7-Q<sub>2</sub> if the 30-Q<sub>5</sub> is not available) to derive monthly average limitations. The stream flow value is further adjusted to temperature; 100% of the flow is used if the Temperature ≥ 16 °C, 25% of the flow is used if the Temperature < 11 °C, and 50% of the flow is used if the Temperature ≥ 11 °C but < 16 °C.

Section NR 106.32 (3), Wis. Adm. Code, provides a mechanism for less stringent weekly average and monthly average effluent limitations when early life stages (ELS) of critical organisms are absent from the receiving water. This applies only when the water temperature is less than 14.5 °C, during the winter and spring months. Burbot, an early spawning species, are believed to be present in Deertail Creek, based on raw fish data in the Fisheries Management Information System. So “ELS Absent” criteria apply from October – March, and “ELS Present” criteria will apply from April – September for a WWSF community.

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

**Weekly and Monthly Ammonia Nitrogen Limits – WWSF Community**

		Spring	Summer	Fall	Winter
		April & May	June – Sept.	Oct. – Dec	Jan. – March
<b>Effluent Flow</b>	Qe (MGD)	0.136	0.136	0.136	0.136
<b>Background Information</b>	7-Q <sub>10</sub> (cfs)	0.3	0.3	0.3	0.3
	7-Q <sub>2</sub> (cfs)	0.8	0.8	0.8	0.8
	Ammonia (mg/L)	0.07	0.04	0.03	0.13
	Maximum Temperature (°C)	14	21	10	3
	pH (s.u.)	7.5	7.5	7.5	7.5
	% of Flow used	50	100	25	25
	Reference Weekly Flow (cfs)	0.15	0.3	0.075	0.075
	Reference Monthly Flow (cfs)	0.34	0.68	0.17	0.17
<b>Criteria mg/L</b>	4-day Chronic				
	Early Life Stages Present	10.91	7.39		10.91
	Early Life Stages Absent			14.60	
	30-day Chronic				

		Spring	Summer	Fall	Winter
		April & May	June – Sept.	Oct. – Dec	Jan. – March
	Early Life Stages Present	4.36	2.96		4.36
	Early Life Stages Absent			5.84	
<b>Effluent Limitations mg/L</b>	Weekly Average				
	Early Life Stages Present	19	18		15
	Early Life Stages Absent			20	
	Monthly Average				
	Early Life Stages Present	11	12		7.8
	Early Life Stages Absent			11	

### Ammonia Decay

The Department must establish limits to protect downstream uses, according to s. NR 106.32(1)(b), Wis. Adm. Code. Ammonia decay may be considered when determining limits at the outfall to protect the downstream classification, according to s. NR 106.32(4)(c), Wis. Adm. Code. Where the calculated limits are more restrictive based on downstream uses, ammonia decay can be considered to determine if these more restrictive limits are needed or if the ammonia will decay before it reaches the point of the classification change. Deertail Creek is a WWSF community and is approx. 3.2 mi downstream of Outfall 001.

Ammonia decay rates are dependent on temperature with in-stream nitrification essentially non-existent in the winter. In-stream decay is expected so a first order decay model should be used. Based on the available literature, a decay rate of  $0.25 \text{ day}^{-1}$  at  $20^\circ\text{C}$  has been suggested as a default rate. A temperature correction factor of  $\theta = 1.08$  is ( $k_t = k_{20} \theta^{(T-20)}$ ). The ammonia nitrogen decay equation is provided below.

$$N_{\text{Limit}} = \left( \frac{N_{\text{down}}}{\text{EXP}(-k_t T)} \right)$$

Where:  $N_{\text{Limit}}$  = Ammonia limit needed to protect downstream use (mg/L)  
 $N_{\text{down}}$  = Ammonia limit calculated based on downstream classification and flow (mg/L)  
 $-k_t$  = Ammonia decay rate at background stream temperature ( $\text{day}^{-1}$ )  
 $T$  = Travel time from outfall to downstream use (day)

The velocity of receiving water is assumed to be 5 miles per day and the distance from the point of discharge to the classification change is approximately 3.2 miles for a travel time of 0.64 days. This equation shows that at the location where the classification change, 86 – 95% of the ammonia is remaining across all seasons. After decay, the limits are increased as shown in the following table.

### Ammonia Nitrogen Decay Limits Comparison

Months Applicable	LFF		WWSF		WWSF After Decay		Most Stringent Limits	
	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L	Weekly Average mg/L	Monthly Average mg/L
April	37	15	19	11	21	13	21	13
May	14	5.5	19	11	21	13	14	5.5
June – Sept.	14	5.5	18	12	21	14	14	5.5
Oct. – Dec.	37	15	20	11	21	11	21	11

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Jan. – March	37	15	15	7.8	15	8.2	15	8.2
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**Effluent Data**

The following table evaluates the statistics based upon ammonia data reported from August 2013 – May 2023, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Village of Tony permit for the respective month ranges. That need is determined by calculating 99<sup>th</sup> upper percentile (or P<sub>99</sub>) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit.

**Ammonia Nitrogen Effluent Data**

Statistics (mg/L)	April - May	June - September	October - March
1-day P <sub>99</sub>		10	14
4-day P <sub>99</sub>		5.5	7.9
30-day P <sub>99</sub>		2.7	4.5
Mean *	8.6	1.6	3.1
Std	4.0	2.3	2.9
Sample size	5	19	11
Range	4.2 - 14.6	<0.1 - 6.5	0.1 - 8.8

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

**Based on this comparison, weekly average and monthly average limits are required in April – May** because the mean effluent concentration is greater than 1/5<sup>th</sup> of the calculated limits. The permit currently has daily maximum limits year-round. **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 following ammonia nitrogen limitations 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	21	13
May	Variable	14	5.5
June – September	Variable		
October – March	Variable		



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

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

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

It is recognized the Village of Tony potentially has a detention time of at least 180 days, in which the resulting discharged effluent is thought to not pose a risk to human and animal health, as described in s. NR 210.06(3)(h), Wis. Adm. Code. The maximum 180-day rolling average flowrate for the facility is 0.025 MGD (July 2018 – October 2023) including days discharge did not occur. The volumetric capacity of the lagoons is approx. 6.8 MG, calculated based on design documentation available to the Department. Therefore, the estimated shortest detention time for the facility is approximately  $6.8 \text{ MG} / 0.025 \text{ MGD} = 268$  days and is greater than the 180-day minimum. This detention time is essentially providing disinfection where additional disinfection treatment is not expected to be needed. In these cases, bacteria limits or monitoring typically would not be recommended.

However, there are concerns almost all of the effluent flow dataset reported during July 2018 – October 2023 are likely not representative of typical discharge conditions or may be underestimated for multiple reasons. First the effluent flow meter was not operating correctly during the 2018 – 2020 discharge years so effluent flow was estimated at a constant daily rate during that time. Second the Village of Tony was rehabilitating all ponds and the lift station during the 2021 – 2022 discharge years where those activities produced atypical discharge schedules (April only discharge during 2021 and no discharge during 2022). Lastly there is believed to be leakage present in the system via aging pond liners and/or berms due to the reported influent volumes being significantly greater than the effluent volume discharged. These issues can have a significant effect on the accuracy of estimating the shortest detention time for the facility. Because of this, *E. coli* monitoring may be required in the permit to show the available detention time can meet *E. coli* water quality standards without disinfection. The recreation season applicable for the *E. coli* limits is May – September. **Therefore, weekly *E. coli* monitoring whenever the discharge occurs during May – September is recommended during the reissued permit term. The Village of Tony will likely not discharge during all 5 months in a single calendar year so multiple years will be needed to capture samples for each applicable month. A respective month does not need to be sampled again if weekly samples were taken in a previous discharge year.**

## **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.

Attachment #1

Because the Village of Tony does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month, which is the threshold for municipalities in accordance with s. NR 217.04(1)(a)1, Wis. Adm. Code. **Therefore, the technology-based monthly average limit of 1.0 mg/L is not recommended during the reissued permit term.** In addition, the need for a WQBEL for phosphorus must be considered.

**Annual Average Mass Total Phosphorus Loading**

Month	Average Phosphorus Conc. (mg/L)	Total Effluent Flow (MG/month)	Calculated Mass (lbs/month)
April 2023	2.48	2.8	58
May 2023	1.81	0.9	13
Average =			<b>36</b>

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

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

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

Phosphorus criteria in s. NR 102.06, Wis. Adm. Code, do not apply to LAL waters as described in s. NR 102.06(6)(d), Wis. Adm. Code. These waters were not included in the USGS/WDNR stream and river studies and, therefore, the Department lacked the technical basis to determine and propose applicable criteria. At some time in the future, the Department may adopt phosphorus criteria based on new studies focusing on limited aquatic life waters. The Guidance for Implementing Wisconsin’s Phosphorus Water Quality Standards for Point Source Discharges (June 2020) suggests that during the interim, WQBELs should be based on the criteria and flow conditions for the next stream segment downstream (or downstream lake or reservoir, if appropriate), because ss. 217.12 and 217.13, Wis. Adm. Code, state that the Department must set WQBELs to protect downstream waters. The road ditch is a LFF community and is approx. 0.33 mi downstream of Outfall 001 assuming the shortest dispersed flow path. Therefore, the point of phosphorus water quality standards will be applied at this location.

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

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 LFF community

Attachment #1

Qs = 100% of the 7-Q<sub>2</sub> of 0 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 = 0.136 MGD = 0.210 cfs

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

The effluent limit is set equal to criteria because the receiving water flow is equal to zero.

**Effluent Data**

The following table summarizes effluent total phosphorus monitoring data from August 2018 – May 2023.

**Total Phosphorus Effluent Data**

Statistics	Conc. (mg/L)
1-day P <sub>99</sub>	4.96
4-day P <sub>99</sub>	3.21
30-day P <sub>99</sub>	2.32
Mean	1.90
Std	0.92
Sample size	16
Range	0.82 - 3.72

**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 phosphorus WQBEL is recommended during the reissued permit term.**

**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 6-month average.** If a concentration limitation expressed as a six-month average is included in the permit, **a monthly average concentration limitation of 0.23 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 Limits**

A mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code, because Deertail Creek has a phosphorus impairment approx. 3.2 mi downstream of Outfall 001. **This final mass limit shall be 0.075 mg/L × 8.34 × 0.136 MGD = 0.085 lbs/day expressed as a 6-month average.**

**Interim Limit**

An interim limit is required per s. NR 217.17, Wis. Adm. Code, when a compliance schedule is needed in the permit to meet the WQBEL. The interim limit should reflect a concentration that the facility is able to meet without investing in additional “temporary” treatment, but also should prevent backsliding from current conditions. **Therefore, it is recommended that the interim limit be set equal to 5.0 mg/L as a monthly average for permit reissuance along with requirements for optimization of phosphorus removal.** This value is based on the 1-day P<sub>99</sub> of effluent phosphorus data and is chosen over other values

due to concerns with high effluent variability with a limited phosphorus dataset.

**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 Chapters NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. The daily maximum effluent temperature limitation shall be 86 °F for discharges to surface waters classified as Limited Aquatic Life according to s. NR 104.02(3)(b)1, Wis. Adm. Code, except for those classified as wastewater effluent channels and wetlands regulated under ch. NR 103 and described in s. NR 106.55(2), Wis. Adm. Code, which has a daily maximum effluent temperature limitation of 120 °F. The 120° F limit applies because the hydrologic classification is listed as a wastewater effluent channel in ch. NR 104, Wis. Adm. Code.

Downstream impacts with respect to the LFF community of the road ditch approx. 0.33 mi downstream are also considered with weekly average temperature limits. 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 July 2018 – October 2023.

The heat loss equation as described by s. NR 106.55(5), Wis. Adm. Code, is used for discharges to storm sewer/storm water conveyance channels where the default cooling rate is estimated as 1 °F per 400 ft and is used to estimate the given cooling over the 0.33 mi between Outfall 001 and the classification change. This is considered conservative for open-channel flow especially during the winter months where the heat loss is expected to be more significant than estimated.

The following daily maximum effluent limitations are representative of the thermal water quality protection of the effluent ditch LAL community and the weekly average effluent limitations are representative of the protection of the road ditch LFF community. The complete temperature limit calculation is included as attachment #3. The cooling adjusted limits are shown in the table below:

**Monthly Temperature Effluent Data & Limits**

Month	Calculated Effluent Limits	
	LFF Community	LAL Community
	Weekly Average Effluent Limitation	Daily Maximum Effluent Limitation
	(°F)	(°F)
APR	67	120
MAY	74	120
AUG	83	120

Attachment #1

Calculated Effluent Limits		
Month	LFF Community	LAL Community
	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
SEP	77	120
OCT	67	120
NOV	58	120

\* Effluent temperature data is not available for the month.

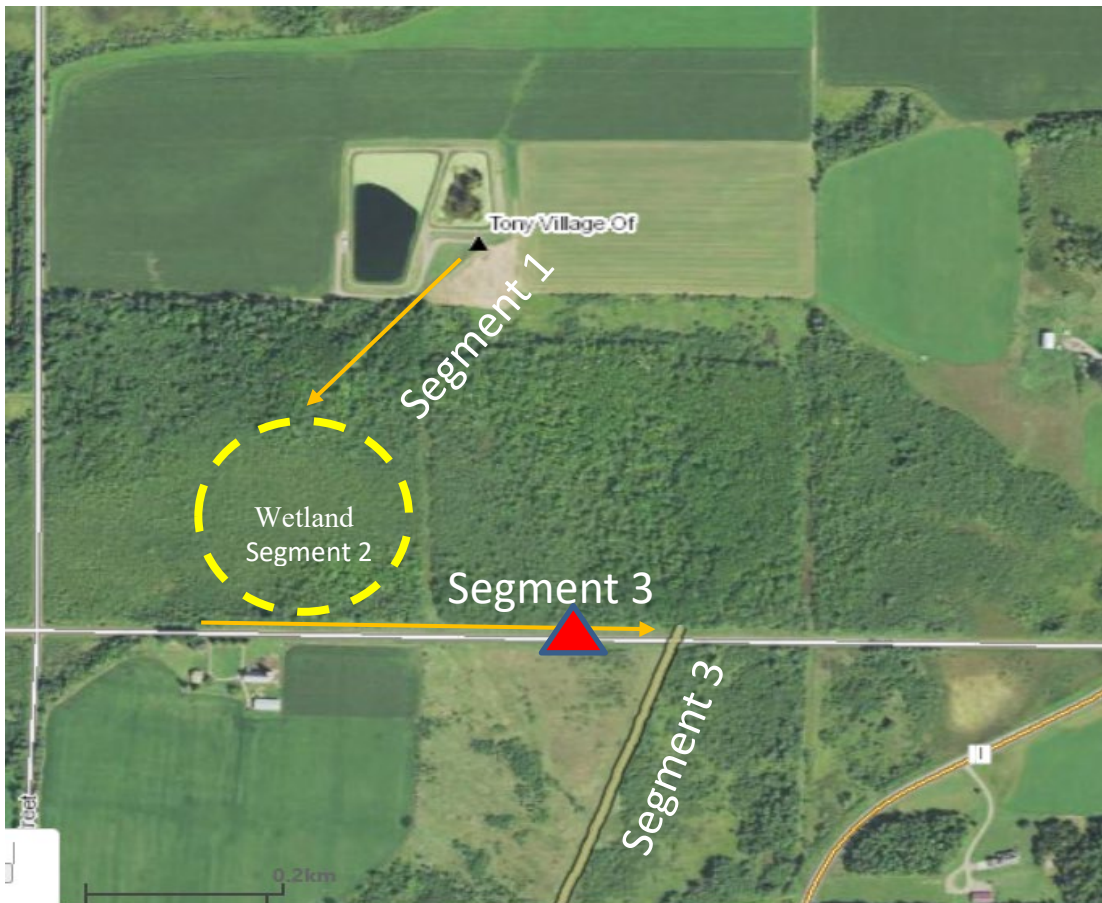
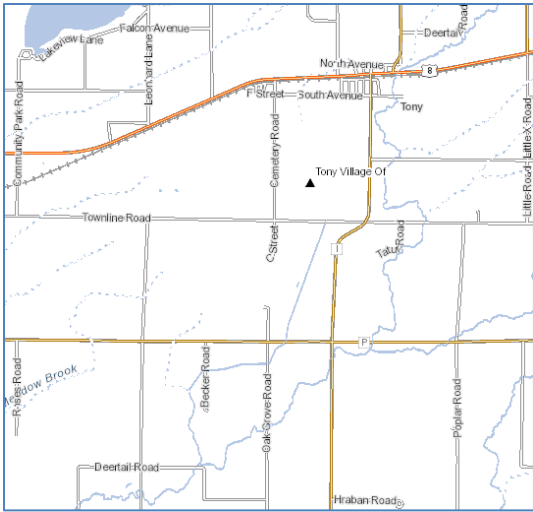
This facility provides hydraulic detention times of approx. 268 days as a worst case scenario, elevated effluent temperatures are unlikely, and discharge temperatures are expected to be similar to ambient conditions. The facility uses a fill and draw method of operation with effluent discharges occurring only during the cool weather periods in spring and fall when ambient temperatures are less than 58 °F. **Therefore, temperature limits or monitoring are not recommended during the reissued permit term.**

**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 of the WET Guidance Document (WET Testing of Minor Municipal Discharges) 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. **Therefore, WET testing is not recommended during the reissued permit term.**

Attachment #2  
Discharge Area Maps



### Temperature Limits for Receiving Waters with Unidirectional Flow

(calculation using default ambient temperature data)

<b>Facility:</b>	Village of Tony	<b>7-Q<sub>10</sub>:</b>	0.00	cfs	<b>Temp Dates</b>	<b>Flow Dates</b>
<b>Outfall(s):</b>	001	<b>Dilution:</b>	25%		<b>Start:</b>	NA
<b>Date Prepared:</b>	12/20/2023	<b>f:</b>	0		<b>End:</b>	NA
<b>Design Flow (Q<sub>e</sub>):</b>	0.136 MGD	<b>Stream type:</b>	Limited forage fish community			
<b>Storm Sewer Dist.</b>	1742 ft	<b>Q<sub>s</sub>:Q<sub>e</sub> ratio:</b>	0.0	:1		
		<b>Calculation Needed?</b>	YES			

Month	Water Quality Criteria			Receiving Water Flow Rate (Q <sub>s</sub> ) (cfs)	Representative Highest Effluent Flow Rate (Q <sub>e</sub> )		f	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit		Adjusted Thermal Limits	
	T <sub>a</sub> (default) (°F)	Sub-Lethal WQC (°F)	Acute WQC (°F)		7-day Rolling Average (Q <sub>esl</sub> ) (MGD)	Daily Maximum Flow Rate (Q <sub>ea</sub> ) (MGD)		Weekly Average (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)	Weekly Average (°F)	Daily Maximum (°F)
APR	50	63	81	0	0.686	0.957	0			63	81	67	85
MAY	59	70	84	0	0.085	0.091	0			70	84	74	88
AUG	68	79	86	0	0.050	0.050	0			79	86	83	90
SEP	63	73	85	0	0.050	0.050	0			73	85	77	89
OCT	55	63	83	0	0.106	0.106	0			63	83	67	87
NOV	46	54	80	0	0.106	0.106	0			54	80	58	84