Permit Fact Sheet

General Information

Permit Number	WI-0031470-09-0
Permittee Name and Address	Norway TN Sanitary District 1 6419 Heg Park Road, Wind Lake, WI 53185
Permitted Facility Name and Address	Norway Tn Sanitary District 1 WWTF 6801 Milwaukee Avenue (STH 36), Wind Lake, WI 53185
Permit Term	January 01, 2027 to December 31, 2031
Discharge Location	North bank of the Waubeesee Drainage Canal, approximately .2 miles east of STH 36. SE1/4, NE1/4, Section 17, T4N, R20E
Receiving Water	Waubeesee Lake Drainage Canal (Wind Lake Canal Watershed, FX04 – Middle Fox River – Illinois River Basin) in Racine County
Stream Flow ($Q_{7,10}$)	0 cfs
Stream Classification	Warm Water Sport Fish community, non-public water supply, and recreational use
Discharge Type	Existing, continuous
Annual Average Design Flow (MGD)	1.6 MGD
Industrial or Commercial Contributors	None
Plant Classification	A1 - Suspended Growth Processes; B - Solids Separation; C - Biological Solids/Sludges; P - Total Phosphorus; D - Disinfection; L - Laboratory; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

The Town of Norway Sanitary District #1 operates an extended aeration, activated sludge wastewater treatment facility. Two influent channels deliver wastewater from the collection system to the WWTF. Preliminary treatment included fine screening. After screening, Return Activated Sludge is introduced, followed by poly-aluminum chloride addition for chemical phosphorus removal. Primary treatment is performed through two extended aerations basins with fine bubble diffusers. Secondary treatment consists of two final clarifiers. The facility utilizes ultraviolet (UV) disinfection and post-aeration prior to discharging to the Waubeesee Lake Drainage Canal. The facility does not accept hauled wastes and there are no industrial contributors. Sludge that is produced in the treatment process is aerobically digested and hauled to another permitted facility.

Substantial Compliance Determination

Enforcement During Last Permit: Effluent limit violations occurred throughout the permit term. In response, the facility is currently undergoing a complete rehab of the aeration basins. Beyond the rehab planned for summer of 2026, there are no outstanding required actions as part of the enforcement process.

After a desk top review of all discharge monitoring reports, CMARs, compliance schedule items, and a site visit on September 12, 2024, and a desk top review on July 14, 2026, this facility has been found to be in substantial compliance with their current permit.

Sample Point Descriptions

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	0.82 MGD (October 2020 – February 2026 Average)	Influent: 24-hr flow proportional composite samples shall be collected after the fine screen, prior to RAS and PAC addition. A magnetic flow meter is located in the valve vault after the influent pumps.
101	N/A	Field Blank: Collect total recoverable mercury field blanks at the same time and location as the mercury effluent sample using standard sample handling procedures.
001	0.83 MGD (October 2020 – February 2026 Average)	Effluent: 24-hr flow proportional composite samples shall be collected prior to UV disinfection. Grab samples shall be collected after UV disinfection and post-aeration, flow is measured through a Parshall flume at the same location.
002	174 Dry U.S. tons (2025 Permit Application)	Aerobically digested, Liquid, Class B. Representative grab composite sludge samples shall be collected from the sample taps on the sludge loading pumps prior to hauling to another facility or land application. Hauled sludge reports shall be submitted on Form 3400-52 'Other Methods of Disposal or Distribution Report' following each year that the sludge is hauled from the existing WWTF. Contact the Department prior to land application.
003	0 Dry U.S. tons (2025 Permit Application)	Outfall inactivated and removed from permit. Outfalls 002 and 003 are identical sludge. The permittee may land apply or haul sludge from Outfall 002. Contact the Department prior to land application from Outfall 002.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 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	Continuous	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	5/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	See Mercury Monitoring permit section.

Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

BOD & TSS: Sample frequency has changed to 5/week.

Mercury: Sample frequency has changed to quarterly.

Explanation of Limits and Monitoring Requirements

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

2 Inplant - Monitoring and Limitations

2.1 Sample Point Number: 101- Mercury Field Blank

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Quarterly	Blank	See Mercury Monitoring Permit section.

Changes from Previous Permit:

In-plant limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

Mercury: The sample frequency has changed to quarterly.

Explanation of Limits and Monitoring Requirements

Mercury Field Blank: Monitoring is included in the permit pursuant to s. NR 106.145, Wis. Adm. Code. Field blanks must meet the requirements under s. NR 106.145(9) and (10), Wis. Adm. Code. The permittee shall collect a mercury field blank for each set of mercury samples (a set of samples may include a combination of influent, effluent or other samples all collected on the same day). Field blanks are required to verify a sample has not been contaminated during collection, transportation or analysis.

3 Surface Water - Monitoring and Limitations

3.1 Sample Point Number: 001- Effluent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total	Weekly Avg	5.0 mg/L	5/Week	24-Hr Flow Prop Comp	May - October
BOD5, Total	Weekly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	November - April
BOD5, Total	Monthly Avg	5.0 mg/L	5/Week	24-Hr Flow Prop Comp	May - October
BOD5, Total	Monthly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	November - April
Suspended Solids, Total	Weekly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	10 mg/L	5/Week	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	7.0 mg/L	5/Week	Grab	
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	11.4 mg/L	5/Week	24-Hr Flow Prop Comp	November - March
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	5.3 mg/L	5/Week	24-Hr Flow Prop Comp	April
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	3.6 mg/L	5/Week	24-Hr Flow Prop Comp	May - September
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	7.4 mg/L	5/Week	24-Hr Flow Prop Comp	October
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.5 mg/L	5/Week	24-Hr Flow Prop Comp	November - March
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	2.1 mg/L	5/Week	24-Hr Flow Prop Comp	April
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.4 mg/L	5/Week	24-Hr Flow Prop Comp	May - September
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	3.0 mg/L	5/Week	24-Hr Flow Prop Comp	October
E. coli	Geometric	126 #/100 ml	2/Week	Grab	Limit effective May

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
	Mean - Monthly				through September annually.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May through September annually. See the E. coli Percent Limit permit section. Enter the result in the DMR on the last day of the month.
Chloride	Daily Max	760 mg/L	4/Month	24-Hr Flow Prop Comp	Sampling shall be conducted on four consecutive days one week per month.
Chloride	Weekly Avg	640 mg/L	4/Month	24-Hr Flow Prop Comp	This is an interim limit. Sampling shall be conducted on four consecutive days one week per month. See the Chloride Variance - Implement Source Reduction Measures permit section and the Chloride SRM (Target Value) Schedule.
Chloride	Daily Max	36,000 lbs/day	4/Month	Calculated	Calculate the daily mass discharge of chloride in lbs/day on the same days chloride sampling occurs. Mass (lbs/day) = Concentration (mg/L) x Flow (MGD) x 8.34
Mercury, Total Recoverable		ng/L	Quarterly	Grab	Monitoring only. See Mercury permit section.
Arsenic, Total Recoverable		ug/L	Once	24-Hr Flow Prop Comp	Monitoring only in 2029. See Minimum Limit of Detection (LOD) permit section and Table 1.
Cadmium, Total Recoverable		ug/L	Once	24-Hr Flow Prop Comp	Monitoring only in 2029. See Minimum Limit of Detection (LOD) permit section and Table 1.
Lead, Total Recoverable		ug/L	Once	24-Hr Flow Prop Comp	Monitoring only in 2029. See Minimum Limit of

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Detection (LOD) permit section and Table 1.
Bis(2-Ethylhexyl) phthalate		ug/L	Once	24-Hr Flow Prop Comp	Monitoring only in 2029. See Minimum Limit of Detection (LOD) permit section and Table 1.
Phosphorus, Total	Monthly Avg	0.66 mg/L	5/Week	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level.
Phosphorus, Total		lbs/day	5/Week	Calculated	Report daily mass discharged using Equation 1a. in the Water Quality Trading (WQT) section.
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	Report WQT TP Credits used per month using Equation 2c. in the Water Quality Trading (WQT) section. Available TP Credits are specified in Table 2 and in the approved Water Quality Trading Plan.
WQT Computed Compliance (TP)	Monthly Avg	0.225 mg/L	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 3a. in the Water Quality Trading (WQT) section. Value entered on the last day of the month.
WQT Computed Compliance (TP)	6-Month Avg	0.075 mg/L	Monthly	Calculated	Compliance with the six-month average limit is evaluated at the end of the six-month period on June 30 and Dec 31.
WQT Computed Compliance (TP)	6-Month Avg	1.0 lbs/day	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 3b. in the Water Quality Trading (WQT) section. Compliance with the six-month average limit is evaluated at the end of the

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					six-month period on June 30 and Dec 31.
WQT Credits Used (TP)	Annual Total	274.1 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed values listed in Table 2 in the permit.
Temperature Maximum		deg F	Daily	Continuous	Monitoring only in 2029.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing permit section.
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Whole Effluent Toxicity (WET) Testing permit section.

Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

BOD, TSS, pH, DO, Ammonia, and Phosphorus: The sample frequency for these parameters has changed to 5/week.

Chloride: The weekly average interim limit has been updated to 640 mg/L. A daily maximum mass limit has been included in the permit.

Mercury: The sample frequency has changed to quarterly.

Arsenic, Cadmium, Lead, Bis(2-ethylhexyl)phthalate: Monitoring once in 2029 is included in the permit.

Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo for the Town of Norway Sanitary District #1 dated May 08, 2026, prepared by Nicole Krueger, and used for this reissuance.

BOD: Norway was originally exempt from having a weekly average limit of 5.0 mg/L for May – October but can currently meet this limit most of the time. To be consistent with the 5/10 mg/L minimum limit policy, the limits have been updated for May – October.

E. coli: Revisions to bacteria surface water quality criteria to protect recreational uses and accompanying E. coli WPDES permit implementation procedures became effective May 1, 2020. Section NR 102.04(5)(a), Wis. Adm. Code, states that all surface waters shall be suitable for recreational use and meet the E. coli criteria established to protect this use.

Chloride: A daily maximum mass limit is included in accordance with s. NR 106.07(2)(a), Wis. Adm. Code. The permittee has applied for a chloride variance, under the provisions of s. NR 106.83, Wis. Adm. Code, with its application for permit reissuance. The Department reviewed Town of Norway Sanitary District's application for a chloride variance and the information supplied in the application supports the establishment of an interim effluent limit. The permittee and the Department have reached agreement on an interim chloride limit of 640 mg/L (expressed as a weekly average), a target value of 575 mg/L (weekly average), implementation of the chloride source reduction measures (SRMs) plan dated 8/26/2026, and submittal of annual progress reports each year by March 31st. The Department concludes that the Town of Norway Sanitary District is eligible for a variance from the water quality standard for chloride and proposes reissuance of this permit with the proposed variance.

Arsenic, Cadmium, Lead & Bis(2-ethylhexyl)phthalate: Per s. NR 200.027(1), Wis. Adm. Code, one sample for each parameter with a more sensitive approved analytical method is needed for these parameters. See permit and WQBEL memo for more information and LODs required.

Phosphorus: Phosphorus requirements are based on the Phosphorus Rules that became effective December 1, 2010 as detailed in NR 102 Water Quality Standards and NR 217 Effluent Standards and Limitations for Phosphorus. Chapter NR 217 of the Wis. Adm. Code addresses point source dischargers of phosphorus to surface waters. Currently in NR 217 Wis. Adm. Code there are two methods used to determine if a phosphorus limit is needed: a technology based effluent limit (TBEL) and a water quality based effluent limit (WQBEL). Based on the size and classification of the stream, the water quality criteria for the Waubeesee Lake Drainage Canal is 0.075 mg/L. In this case, the WQBEL is 0.225 mg/L (monthly average), 0.075 mg/L & 1.0 lbs/day (6-month average). For the reasons explained in the April 30, 2012 paper entitled 'Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin', WDNR has determined that it is impracticable to express the phosphorus WQBEL for the permittee as a maximum daily, weekly or monthly value. The final effluent limit for phosphorus is expressed as a six-month average. It is also expressed as a monthly average equal to three times the derived WQBEL (which equates to 0.225 mg/L). This final effluent limit was derived from and complies with the applicable water quality criterion. A phosphorus concentration limit is necessary to prevent backsliding during the term of the permit. The minimum control level (MCL) of 0.66 mg/L will be retained in the permit.

The wastewater treatment facility is not able to meet the WQBEL. This permit authorizes the use of trading as a tool to demonstrate compliance with the phosphorus WQBELs. This permit includes terms and conditions related to the Water Quality Trading Plan (WQT-2026-0021) or approved amendments thereof. The total 'WQT TP Credits' available are designated in the approved WQT Plan. The Sanitary District is implementing annual cover crop management practices on agricultural crop lands. The WQT Plan proposed the generation of 274.1 lbs/yr of phosphorus credits for the next five years.

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

PFOS and PFOA: NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. Pursuant to s. NR 106.98(3)(b), Wis. Adm. Code, the department evaluated the need for PFOS and PFOA monitoring taking into consideration the presence of potential PFOS or PFOA industrial wastes, remediation sites

and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, the department has determined the permittee does not need to sample for PFOS or PFOA in the effluent as part of this permit reissuance. The department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

Monitoring Frequencies: The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure 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. BOD, TSS, pH, DO, Ammonia, and Phosphorus have a sample frequency of 5/week. The Department determined the increased monitoring frequency for these parameters is appropriate based on compliance history during the permit term, effluent variability, and significant I/I. Sample frequencies will be evaluated at each permit reissuance.

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

4 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Liquid	Fecal Coliform	Injection / Incorporation	Hauled to Permitted Facility / Land Application	174
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? **Unknown, water supply is private wells.** If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? **No, design flow is less than 5 MGD.** Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

4.1 Sample Point Number: 002- Hauled Sludge/Land Application

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2028.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2028.
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS permit sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Sludge limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit.

Outfall 003 was identified as a Land Application Outfall previously. The waste type is identical to Outfall 002, therefore the Land Application Outfall 003 and Hauled Sludge Outfall 002 have been listed under one outfall (002). The permittee may land apply or haul sludge from Outfall 002. Contact the Department prior to land application from Outfall 002.

The sample type has changed to composite.

PFAS: Monitoring is required annually pursuant s. NR 204.06(2)(b)9., Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

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

List 2 Nutrients: Results will assist in the determination of the acres needed for land application of sludge should it be necessary. The number of acres needed is also required for the Land Application Management Plan Schedule (see schedules for more information). List 2 nutrient sampling is required when land application occurs.

PFAS: The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has developed a draft risk assessment to determine future land application rates and released this risk assessment in January of 2025. The department is evaluating this new information. Until a decision is made, the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS" should be followed.

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

Change in form submittal: 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 is used to officially report that no land application of sludge has occurred, and annual submittal of the forms is required per the standard requirements section.

5 Schedules

5.1 Chloride Source Reduction Measures (Target Value)

As a condition of the variance to the water quality based effluent limitation(s) for chloride granted in accordance with s. NR 106.83(2), Wis. Adm. Code, the permittee shall perform the following actions.

Required Action	Due Date
Annual Chloride Progress Report: Submit an annual chloride progress report related to the source reduction activities for the previous year. The annual chloride progress report shall: Indicate which chloride source reduction measures or activities in the Source Reduction Plan have been implemented and state which, if any, source reduction measures from the Source Reduction Plan were not pursued and why. Include an assessment of whether each implemented source reduction measure appears to be effective or ineffective at reducing pollutant discharge concentrations and identify actions planned for the upcoming year; Include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data; and Include an analysis of how effluent chloride varies with time and with significant loadings of chloride. Note that the interim limitation listed in the Surface Water section of this permit remains enforceable until new enforceable limits are established in the next permit issuance. The first annual chloride progress report is to be submitted by the Date Due.	03/31/2027
Annual Chloride Progress Report #2: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.	03/31/2028
Annual Chloride Progress Report #3: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.	03/31/2029
Annual Chloride Progress Report #4: Submit the chloride progress report, related to the source reduction activities for the previous year, as defined above.	03/31/2030
Final Chloride Report: Submit the final chloride report documenting the success in meeting the chloride target value of 575 mg/L, as well as the anticipated future reduction in chloride sources and chloride effluent concentrations. The report shall: Summarize chloride source reduction measures that have been implemented during the current permit term and state which, if any, source reduction measures from the Source Reduction Plan were not pursued and why; Include an assessment of which source reduction measures appear to have been effective or ineffective. Evaluate any needed changes to the pollutant reduction strategy accordingly; Include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data during the current permit term; and Include an analysis of how influent and effluent chloride varies with time and with significant loadings of chloride as identified in the source reduction plan. If the permittee intends to reapply for a chloride variance, for the reissued permit, proposed target limits and a detailed source reduction measures plan, outlining the source reduction activities proposed for the upcoming permit term, shall also be included per ss. NR 106.90 (5) and NR 106.83 (4), Wis. Adm. Code. An updated source reduction measures plan shall: Include an explanation of why or how each source reduction measure will result in reduced discharge of the target pollutant; and Evaluate any available information on pollutant sources, timing, and concentration to update the mass balance assumptions and expected sources of the pollutant, and	03/31/2031

Identify any information needs that would help to better determine pollutant sources and make plans to collect that information. Note that the target value is the benchmark for evaluating the effectiveness of the chloride source reduction measures but is not an enforceable limitation under the terms of this permit.	
Annual Chloride Reports After Permit Expiration: In the event that this permit is not reissued by the date the permit expires the permittee shall continue to submit annual chloride reports for the previous year following the due date of Annual Chloride Progress Reports listed above. Annual Chloride Progress Reports shall include the information as defined above.	

Explanation of Schedule

This schedule is required to ensure that the permittee maintains compliance with the conditions and requirements of receiving a variance from the water quality-based chloride effluent limits. Since a compliance schedule is being granted, an interim limit is required, and that limit is established as 640 mg/L (as a weekly average). The schedule requires that annual reports shall indicate which source reduction measures have been implemented during each calendar year, and an analysis of chloride concentration and mass discharge data based on chloride sampling and flow data. The annual reports shall document progress made towards meeting the chloride target value of 575 mg/L (weekly average) by the end of the permit term.

5.2 Water Quality Trading (WQT) Annual Report

Required Action	Due Date
Annual WQT Report: Submit an annual WQT report that shall cover the first year of the permit term. The WQT Report shall include: The number of pollutant reduction credits (lbs/month) used each month of the previous year to demonstrate compliance; The source of each month's pollutant reduction credits by identifying the approved water quality trading plan that details the source; Results of the annual inspection of each nonpoint source management practice that generated any of the pollutant reduction credits used during the previous year; and Identification of noncompliance or failure to implement any terms or conditions of this permit with respect to water quality trading that have not been reported in discharge monitoring reports.	01/31/2027
Annual WQT Report #2: Submit an annual WQT report that shall cover the previous year.	01/31/2028
Annual WQT Report #3: Submit an annual WQT report that shall cover the previous year.	01/31/2029
Annual WQT Report #4: Submit an annual WQT report that shall cover the previous year.	01/31/2030
Annual WQT Report #5: Submit an annual WQT report. If the permittee wishes to continue to comply with phosphorus limits through WQT in subsequent permit terms, the permittee shall submit a revised WQT plan including a demonstration of credit need, compliance record of the existing WQT, and any additional practices needed to maintain compliance over time.	01/31/2031
Annual WQT Report Required After Permit Expiration: In the event that this permit is not reissued by the expiration date, the permittee shall continue to submit annual WQT reports by January 31 each year covering the total number of pollutant credits used, the source of the pollution reduction credits, a summary of annual inspection reports performed, and identification of noncompliance or failure to implement any terms or conditions of the approved water quality trading	

plan for the previous calendar year.	

Explanation of Schedule

Reports are required that include the following information:

- Verification that site inspections occurred;
- Results of site inspection findings;
- Identification of noncompliance or failure to implement any terms or conditions of the permit or trading plan that have not been reported in discharge monitoring reports;
- Any applicable notices of termination or management practice registration; and
- A summary of credits used each month over the calendar year

5.3 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan Submittal: Submit a management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall 1) specify information on pretreatment processes (if any); 2) identify land application sites; 3) describe site limitations; 4) address vegetative cover management and removal; 5) specify availability of storage; 6) describe the type of transporting and spreading vehicle(s); 7) specify monitoring procedures; 8) track site loading; 9) address contingency plans for adverse weather and odor/nuisance abatement; and 10) include any other pertinent information. Once approved, all landspreading activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes. The plan is due sixty (60) days prior to land applying.	

Explanation of Schedule

An up-to-date Land Application Management Plan is required that documents how the permittee will manage the land application of biosolids consistent with ch. NR 204, Wis. Adm. Code.

Attachments

Water Quality Based Effluent Limits dated May 08, 2026

Chloride Variance EPA Data Sheet

Chloride Source Reduction Measures Plan dated August 26, 2026

WQT Plan Conditional Approval Letter dated July 24, 2026

Water Quality Trading Plan dated July 2026

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance.

Prepared By: BetsyJo Howe, Wastewater Specialist **Date:** 8/31/2026

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 05/08/2026

TO: BetsyJo Howe – SER

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for the Town of Norway Sanitary District #1
WPDES Permit No. WI-0031470-09

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 Town of Norway Sanitary District #1 in Racine County. This municipal wastewater treatment facility (WWTF) discharges to the Waubeesee Lake Drainage Canal, a tributary to the Wind Lake Canal located in the Fox (IL) River Watershed in the Fox (IL) River Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

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						1,2
BOD_5 May – October November – April			 5.0 mg/L 10 mg/L	 **5.0 mg/L** **10 mg/L**		3
TSS			10 mg/L	**10 mg/L**		1,3,4
pH	9.0 s.u.	6.0 s.u.				1
Dissolved Oxygen		7.0 mg/L				1
Ammonia Nitrogen April May – September October November – March			 5.3 mg/L 3.6 mg/L 7.4 mg/L 11.4 mg/L	 2.1 mg/L 1.4 mg/L 3.0 mg/L 4.5 mg/L		1
E. coli May – September				126#/100 mL geometric mean		1,5
Chloride	760 mg/L 36,000 lbs/day		640 mg/L			6
Mercury						1,2
Arsenic						2,7
Cadmium						2,7
Lead						2,7
Bis(2-ethylhexyl)phthalate						2,7
Phosphorus MCL s. NR 217 WQBEL				 0.66 mg/L 0.225 mg/L	 0.075 mg/L 1.0 lbs/day	1,4
Temperature						1,2

Printed on Recycled Paper

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
TKN, Nitrite+Nitrate, and Total Nitrogen						2,9
Acute WET						2,10,11
Chronic WET						2,10,11

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
4. A Total Maximum Daily Load (TMDL) is being developed for the Fox IL River Basin to address phosphorus water quality impairments within the TMDL area. This TMDL will likely result in limitations for TSS and phosphorus that must be included in WPDES permits, which may be different than those calculated for this reissuance. TMDL-derived limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to s. NR 217.16, Wis. Adm. Code.
5. Bacteria limits apply during the disinfection season of May through September. Additional limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
6. This is the WQBEL for chloride. An alternative effluent limitation of 640 mg/L (which is the 4-day P_{99}) as a weekly average may be included in the permit in place of this limit if the chloride variance application that was submitted is approved by EPA.
7. One sample is recommended. A more sensitive approved analytical method is recommended for arsenic, cadmium, lead, and bis(2-ethylhexyl)phthalate samples so that the LODs are stringent enough to determine reasonable potential per s. NR 200.027(1), Wis. Adm. Code.
8. Norway is complying with the s. NR 217.13, Wis. Adm. Code, limits through water quality trading. The MCL of 0.66 mg/L is the end of pipe limit.
9. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, quarterly total nitrogen monitoring is recommended for all municipal major permittees. Sections 283.37(5) and 283.55(1)(e), Wis. Stats, and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the permit term. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total Kjeldahl nitrogen (TKN) (all expressed as N).
10. Annual acute and chronic WET testing is recommended. The Instream Waste Concentration (IWC) to assess chronic test results is 100%. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5%. The primary control water used in chronic WET tests conducted on Outfall 001 shall be a grab sample collected from the Waubeesee Lake Drainage Canal.
11. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge. Testing should continue after the permit expiration date (until the permit is reissued).

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nicole Krueger at Nicole.Krueger@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

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

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Jacob Van Susteren-Wedesky, Wastewater Engineer – SER
Justin Meyers, Regional Wastewater Supervisor – SER
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Town of Norway Sanitary District #1

WPDES Permit No. WI-0031470-09

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

The Town of Norway Sanitary District # 1 owns and operates a 1.6 million gallon per day (MGD) extended aeration, activated sludge plant, which went online in December 2000. The wastewater treatment train includes fine screening, alum addition for phosphorus removal, fine bubble activated aeration, final clarification in two settling tanks, ultraviolet (UV) light disinfection in a channel and additional aeration in a post aeration tank. Effluent passes through a 12-inch Parshall flume before discharging to the Waubeesee Lake Drainage canal, a tributary to the Wind Lake Canal, and then into the Fox (IL) River. Waste Activated Sludge (WAS) is digested via two aerobic digesters and hauled to another permitted facility for disposal. The facility does not accept hauled wastes and there is no industrial wastewater that goes to the Town of Norway Sanitary District.

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

Existing Permit Limitations

The current permit, which expired on 09/30/2025, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD_5			10 mg/L	**10 mg/L**		2,3
TSS			10 mg/L	**10 mg/L**		2,3
pH	9.0 s.u.	6.0 s.u.				2
Dissolved Oxygen		7.0 mg/L				2
Ammonia Nitrogen April May – September October November – March			 5.3 mg/L 3.6 mg/L 7.4 mg/L 11.4 mg/L	 2.1 mg/L 1.4 mg/L 3.0 mg/L 4.5 mg/L		
E. coli May – September				126#/100 mL geometric mean		4
Chloride	760 mg/L		680 mg/L			5
Mercury						1
Phosphorus MCL s. NR 217 WQBEL				 0.66 mg/L 0.225 mg/L	 0.075 mg/L 1.0 lbs/day	6

Attachment #1

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
TKN, Nitrite+Nitrate, and Total Nitrogen						1
Temperature						1
Acute WET						7
Chronic WET						7

Footnotes:

1. Monitoring only.
2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
3. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
4. No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
5. The weekly average limit is the interim variance limit to the chronic WQBEL of 395 mg/L.
6. Norway is complying with the s. NR 217.13, Wis. Adm. Code, limits through water quality trading.
7. Annual acute and chronic WET testing is recommended. The IWC for chronic WET was 100%.

Receiving Water Information

- Name: Waubeesee Lake Drainage Canal, tributary to the Wind Lake Canal
- Waterbody Identification Code (WBIC): 760700
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following $7\text{-}Q_{10}$ and $7\text{-}Q_2$ values are estimates from Outfall 001's location due to the noncontinuous nature of the stream.
  $7\text{-}Q_{10}$ = 0 cubic feet per second (cfs)
  $7\text{-}Q_2$ = 0 cfs
- Hardness = 201 mg/L as $CaCO_3$. This value represents the geometric mean of data from chronic WET testing from 02/08/2011 – 08/20/2019.
- % 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.
- Source of background concentration data: Background concentrations are not included because they do not impact the calculated WQBEL when the receiving water low flows are equal to zero.
- Multiple dischargers: None.
- Impaired water status: The Fox (IL) River approximately 6.5 miles downstream of Outfall 001, is 303(d) listed as impaired for phosphorus.

Effluent Information

- Design flow rate(s):
  Annual average = 1.6 million gallons per day (MGD)
  Daily maximum = 5.7 MGD

  For reference, the actual average flow from 10/01/2020 – 02/28/2026 was 0.83 MGD.

- Hardness = 418 mg/L as $CaCO_3$. This value represents the geometric mean of four samples collected in February and April 2025 which were reported on the permit application.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Wastewater source: Domestic wastewater with zero industrial contributors.
- Water supply: Private wells.
- Additives: Norway has included 1 additive in the permit application that have the potential to be present in Outfall 001. These additives are listed below:
  - Chemtrade, Inc.: Hyper Ion 1997 – phosphorus removal
  - An additive review is not necessary for any additives where either the toxicity is well documented and understood, can be controlled by a WQBEL, or are not believed to be present in the discharge. Therefore, an additive review is not needed at this time.
- Effluent characterization: This facility is categorized as a major municipal, so the permit application required effluent sample analyses for all the "priority pollutants" except for the Dioxins and Furans as specified in s. NR 200.065, Table 1, Wis. Adm. Code. The permit-required monitoring for chloride, mercury, ammonia, and phosphorus is used in this evaluation.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

Copper Effluent Data

Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)	Sample Date	Copper (µg/L)
12/08/2024	4.0	02/28/2024	<4.0	02/14/2025	<4.0
12/12/2024	4.0	01/01/2025	<4.0	02/21/2025	<4.0
12/15/2024	4.0	01/06/2025	<4.0	03/25/2025	<4.0
12/18/2024	5.0	02/10/2025	<4.0		
Average = 1.5 µg/L					

"<" means that the pollutant was not detected at the indicated limit of detection. The mean concentration was calculated using zero in place of the non-detected results.

Chloride Effluent Data

	Concentration (mg/L)	Mass (lbs/day)
1-day P_{99}	822	5661
4-day P_{99}	637	4250
30-day P_{99}	536	3492
Mean	484	3106
Std	118	868
Sample size	262	262
Range	107 - 758	680 - 7764

Mercury data from 04/02/2009 – 12/26/2024 is included in this evaluation in order to have sufficient data to calculate P_{99}'s for comparison to limits.

Mercury Effluent Data

	Mercury (ng/L)
1-day P_{99}	3.33

Attachment #1

	Mercury (ng/L)
4-day P_{99}	1.90
30-day P_{99}	1.18
Mean	0.86
Std	0.66
Sample size	22
Range	0.20 - 3.21

The following table presents the average concentrations and loadings at Outfall 001 from 10/01/2020 – 02/28/2026 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameters with Effluent Limits

	Average Measurement	Average Mass Discharged
BOD_5	4.09 mg/L*	
TSS	2.90 mg/L*	
pH field	7.6 s.u.	
Dissolved Oxygen	10.7 mg/L	
Ammonia Nitrogen	0.33 mg/L*	
E. coli	2.2 #/100 mL	
Phosphorus	0.093 mg/L*	0.72 lbs/day

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

PART 2 - BOD_5

The current weekly and monthly average BOD_5 limits are 10 mg/L year-round, which was the minimum facilities would be given historically. However, the BOD_5 limits are reevaluated in this memo.

In establishing BOD_5 (Biochemical Oxygen Demand) limitations, the primary intent is to prevent a lowering of dissolved oxygen levels in the receiving water below water quality standards as specified in ss. NR 102.04(4)(a) and (b). The 26-lb method is the most frequently used approach for calculating BOD_5 limits when resources are not available to develop a detailed water quality model. This simplified model was developed in the 1970's by the Wisconsin Committee on Water Pollution on the Fox, Wisconsin, Oconto, and Flambeau Rivers. Further studies throughout the 1970's proved this model to be relatively accurate. The model has since then been used by the Department on many occasions when resources are not available to perform a site-specific model. The "26" value stems from the following equation:

$$\frac{26\ {}^{\text{lbs}}\!/_{\text{day}}}{{}^{\text{ft}^3}\!/_{\text{sec}}} * \frac{1\ \text{day}}{86{,}400\ \text{sec}} * \frac{454{,}000\ \text{mg}}{\text{lbs}} * \frac{1\ \text{ft}^3}{28.32\ \text{L}} = 4.8 = 2.4 * 2\ {}^{\text{mg}}\!/_{\text{L}}$$

The 4.8 has been calculated by taking 2.4 which is the number one receives when converting 26 lbs of BOD/day/cfs into mg/L, multiplied by 2.0 which is the change in the DO level. A typical background DO level for Wisconsin waters is 7 mg/L, so a 2 mg/L decrease is allowed in order to meet the 5 mg/L standard for warm water streams. The above relationship is temperature dependent and an appropriate temperature correction factor is applied. The 26-lb method is based on a typical 24°C summer value for

warm water streams. Adjustments for temperature are made using the following equation:

$$k_t = k_{24}\left(0.967^{(T-24)}\right)$$

Where k_{24} = 26 lbs of BOD/day/cfs

<u>Calculations based on Full Assimilative Capacity at 7Q10 Conditions:</u>

$$Limitation(mg/L) = 2.4\left(DO_{stream} - DO_{std}\right)\left(\frac{\left({}_7Q_{10} + Q_{eff}\right)}{Q_{eff}}\right)\left(0.967^{(T-24)}\right)$$

Where:
Q_{eff} = effluent design flow = 1.6 MGD
DO_{stream} = background dissolved oxygen = 7 mg/L
DO_{std} = dissolved oxygen criteria from s. NR 102.04(4) = 5.0 mg/L
${}_7Q_{10}$ = 0 cfs
T = Receiving water temperature from s. NR 102.25

Because no dilution is available in the receiving water, the calculated limits would be the lowest that the Department typically gives to facilities. **The recommended effluent limitations are 5 mg/L as a weekly average from May through October and 10 mg/L November through April (rounded to two significant digits).** The Department normally doesn't give BOD_5 mass limits when the stream is effluent dominated. Given that these limitations are the lowest that the Department would typically give to a facility, these limitations shall be considered at those needed to prevent significant lowering of water quality.

Sections NR 106.07(3) and NR 205.067(7), Wis. Adm. Code require WPDES permits contain weekly average and monthly average limitations for municipal dischargers whenever practicable and necessary to protect water quality. **Therefore, monthly average limits of 5.0 mg/L for May – October and 10 mg/L for November – April are required** to meet expression of limits requirements in addition to the weekly average limits.

Norway was originally exempt from having a weekly average limit of 5.0 mg/L for May – October but can currently meet this limit most of the time and have rehabbed the aeration basin during the current permit term. To be consistent with the 5/10 mg/L minimum limits policy, it is recommended that Norway's BOD_5 limits be updated for May – October.

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

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

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

Acute Limits based on 1-Q_{10}

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

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

Where:

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

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

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

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

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

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for Norway.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 0 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Arsenic		340	340	68.0	<20		
Cadmium	418	53.2	53.2	10.6	<2		
Chromium	301	4446	4446	889	3		
Copper	418	59.8	59.8	12.0	1.55		
Lead	356	365	365	72.9	<20		
Mercury (ng/L)		830	830	166		3.33	3.21
Nickel	268	1080	1080	216	6		
Zinc	333	345	345	68.9	20		
Chloride (mg/L)		757	757			**822**	**758**
Napthalene***		344	344	68.8	0.0303		

SUBSTANCE	REF. HARD.* mg/L	ATC	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Bis(2-ethylhexyl)phthalate***		33.9	33.9	6.8	**74.8**		

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.
* * Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-Q_{10} flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.
* * * The limit for this substance is based on a secondary value. Acute limits are set equal to the secondary value rather than two times or using the 1-Q_{10} s. NR 106.06(3)(b)2 and s. NR 105.05(2)(f)6), Wis. Adm Code.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06(4)(c), Wis. Adm. Code.

SUBSTANCE	REF. HARD.* mg/L	CTC	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Arsenic		152	152	30.4	<20	
Cadmium	175	3.82	3.82	0.76	<2	
Chromium	201	234	234	46.8	3	
Copper	201	18.8	18.8	3.76	1.55	
Lead	201	55.0	55.0	11.0	<20	
Mercury (ng/L)		440	440	88.0		1.90
Nickel	201	94.2	94	18.8	6	
Zinc	201	222	222	44.3	20	
Chloride (mg/L)		395	395			**637**
Naphthalene**		19.1	19.1	3.8	0.0303	
Bis(2-ethylhexyl)phthalate**		4.36	4.36	0.87	**74.8**	

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.
* * The limit for this substance is based on a secondary value.

Monthly Average Limits based on Wildlife Criteria (WC)

RECEIVING WATER FLOW = 0 cfs (¼ of the 90-Q_{10}), as specified in s. NR 106.06(4), Wis. Adm. Code

SUBSTANCE	WC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Mercury (ng/L)	1.3	1.3			1.18

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 0 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Cadmium	370	370	74.0	<2	
Chromium (+3)	3818000	3818000	763600	3	

Attachment #1

SUBSTANCE	HTC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	30-day P_{99}
Lead	140	140	28.0	<20	
Mercury (ng/L)	1.5	1.5			1.18
Nickel	43000	43000	8600	6	
Naphthalene*	1950	1950	390	0.0303	
Benzene	610	610	122	2.12	

* The limit for this substance is based on a secondary value.

Monthly Average Limits based on Human Cancer Criteria (HCC)

RECEIVING WATER FLOW = 0 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3	13.3	2.66	<20
Benzene	140	140	28.0	2.12
Bis(2-ethylhexyl)phthalate*	5.11	5.11	1.02	**74.8**

* The limit for this substance is based on a secondary value.

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

Conclusions and Recommendations

Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for chloride. Limits and/or monitoring recommendations are made in the paragraphs below:

Arsenic, cadmium, lead – Considering available effluent data from the permit application, the effluent concentrations were nondetectable; however, the limit of detections (LOD) were higher than 1/5th of the calculated limits so reasonable potential cannot be determined at this time. Per s. NR 200.027(1), Wis. Adm. Code, **one sample for each parameter with a more sensitive approved analytical method is recommended for these parameters, with LODs at least as stringent as shown below to determine reasonable potential:**

Minimum LODs for Resampling

Parameter	LOD µg/L
Arsenic	2.6
Cadmium	0.76
Lead	11

Bis(2-ethylhexyl)phthalate – Considering the available effluent data from the permit application, the effluent result was 74.8 µg/L which was likely due to contamination from the sampling bottle. The resampled result was reported as <3.73 µg/L which is greater than 1/5th of the most stringent calculated limit of 0.87 µg/L. Per s. NR 200.027(1), Wis. Adm. Code, **one sample using with a more sensitive**

approved analytical method is recommended for bis(2-ethylhexyl)phthalate, with an LOD that is at least as stringent as 0.87 µg/L in order to determine reasonable potential.

Chloride – Considering available effluent data from the current permit term (10/04/2020 – 02/11/2026), the 1-day P_{99} chloride concentration is 822 mg/L, and the 4-day P_{99} of effluent data is 637 mg/L. Because the 1-day P_{99} and 4-day P_{99} exceed the calculated daily maximum and weekly average WQBELs, **effluent limits are needed in accordance with s. NR 106.05(4)(b), Wis. Adm. Code.**

Norway currently has a daily maximum limit of 760 mg/L, equal to the daily maximum WQBEL, rounded, and this limit is recommended to continue in the reissued permit. An acute mass limitation of 36,000 lbs/day (rounded) is based on the concentration limit and the maximum daily design flow rate of 5.7 MGD (757 mg/L × 5.7 MGD × 8.34) in accordance with s. NR 106.07(2)(a), Wis. Adm. Code.

The currently weekly average limit of 680 mg/L is an interim variance limit and Norway has reapplied for a variance for the weekly average WQBEL.

Subchapter VII of ch. NR 106, Wis. Adm. Code, provides for a variance from water quality standards for this substance, and Norway has requested such a variance. That variance may be granted subject to the following conditions:

1) The permit shall include an "Interim" limitation intended to prevent an increase in the discharge of Chloride;
2) The permit shall specify "Source Reduction Measures" to be implemented during the permit term, with periodic progress reports; and
3) The permit shall include a "Target Limit" or "Target Value" to gage the effectiveness of the Source Reduction Measures, and progress toward the WQBELs.

Interim Limit for Chloride

Section NR 106.82(9), Wis. Adm. Code, defines a "Weekly average interim limitation" as either the 4-day P_{99} concentration or 105% of the highest weekly average concentration of the representative data. The current interim limit is based on the 4-day P_{99} of data from the previous permit.

It's recommended that the variance interim limit for Norway in the reissued permit be 640 mg/L, equivalent to the 4-day P_{99} from the current permit term, rounded.

A target limit and permit language for Source Reduction Measures are recommended outside of this evaluation. These should follow contact with Norway. Though if the Department and Norway are unable to reach agreement on all the terms of a Chloride Variance, the calculated limits described earlier should be included in the permit, in accordance with s. NR 106.83(3), Wis. Adm. Code.

Chloride Monitoring Recommendations

Four samples per month (on consecutive days) are recommended. This allows for averaging of the results to compare with the interim limit and allows the use of the average in determining future interim limits, and degree of success with chloride reduction measures.

In the absence of a variance, Norway would be subject to the WQBEL of 395 mg/L as a weekly average; the weekly average mass limit of 5,300 lbs/day (395 mg/L × 1.6 MGD × 8.34); and an alternative wet weather mass limit. The wet weather mass limit applies when the dry weather mass limit is

exceeded and the facility demonstrates to the Department the exceedance occurred during a wet weather event.

Mercury – The WQBEL for total recoverable mercury is set equal to the most stringent criterion of 1.3 ng/L, according to s. NR 106.06(6), Wis. Adm. Code, because the background concentration in the receiving water and similar inland streams is known to exceed 1.3 ng/L.

The current permit requires 1/6 months monitoring in 2023 and 2024 of the influent and effluent for total recoverable mercury. A total of 22 effluent sampling results are available from 04/02/2009 – 12/26/2024 for total recoverable mercury. The average concentration was 0.86 ng/L, and the maximum was 3.21 ng/L. Because the 30-day P_{99} of available data (1.18 ng/L) is less than the most stringent WQBEL of 1.3 ng/L, **no WQBEL for mercury is required for permit reissuance. Mercury monitoring is recommended for permit reissuance to collect at least 11 samples to determine reasonable potential at the next reissuance.**

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 produced a PFOS result of 1.24 ng/L and a PFOA result of 5.10 ng/L. These results are less than one fifth of the respective criteria for each substance. Based on the effluent flow rate, the lack of indirect dischargers contributing to the collection system, the available PFOS/PFOA monitoring data, **PFOS and PFOA monitoring is not recommended.** The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

PART 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, weekly average and monthly average limits. These limits are re-evaluated at this time due to the following changes:

- The maximum expected effluent pH has changed

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

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

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

Where:

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

The effluent pH data was examined as part of this evaluation. A total of 1408 sample results were reported from 10/02/2020 – 02/27/2026. The maximum reported value was 8.4 s.u. (Standard pH Units). The effluent pH was 8.0 s.u. or less 99% of the time. The 1-day P_{99}, calculated in accordance with s. NR 106.05(5), Wis. Adm. Code, is 8.1 s.u. The mean plus the standard deviation multiplied by a factor of 2.326, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 8.1 s.u. Therefore, a value of 8.0 s.u. is believed to represent the maximum reasonably expected pH, and therefore

most appropriate for determining daily maximum limitations for ammonia nitrogen. Substituting a value of 8.0 s.u. into the equation above yields an ATC = 8.4 mg/L.

Daily Maximum Ammonia Nitrogen Effluent Limitations Calculation Method
In accordance with s. NR 106.32(2), Wis. Adm. Code daily maximum ammonia limitations are calculated using the 1-Q_{10} receiving water low flow if it is determined that the previous method of acute ammonia limit calculation (2×ATC) is not sufficiently protective of the fish and aquatic life. The more restrictive calculated limits shall apply.

The calculated daily maximum ammonia nitrogen effluent limits using the mass balance approach with the 1-Q_{10} (estimated as 80 % of 7-Q_{10}) and the 2×ATC approach are shown below.

Daily Maximum Ammonia Nitrogen Determination

	Ammonia Nitrogen Limit mg/L
2×ATC	17
1-Q_{10}	8.4

The 1-Q_{10} method yields the most stringent limits for Norway.

Weekly and Monthly Average Limits based on Chronic Toxicity Criteria (CTC)
The weekly and monthly average ammonia nitrogen limits calculation from the previous memo do not change because there have been no changes in the effluent and receiving water flow rates. The calculations from the previous WQBEL memo are shown in Attachment #3.

Effluent Data
The following table evaluates the statistics based upon ammonia data reported from 01/20/2021 – 02/24/2026.

Ammonia Nitrogen Effluent Data

Ammonia Nitrogen mg/L	April	May – September	October	November – March
1-day P_{99}	5.04	6.76	0.11	1.19
4-day P_{99}	3.13	4.17	0.090	0.80
30-day P_{99}	1.30	1.74	0.063	0.34
Mean*	0.45	0.65	0.050	0.10
Std	1.49	1.82	0.019	0.40
Sample size	21	107	26	123
Range	<0.046 - 6.27	<0.046 - 12.401	<0.046 - 0.107	<0.046 - 3.77

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

Reasonable Potential
The need to include ammonia limits in Norway's permit is determined by calculating 99th upper percentile (or P_{99}) values for ammonia and comparing those to the calculated limits. Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits.

However, since the permit currently has weekly and monthly average limits year-round, **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

	Weekly Average mg/L	Monthly Average mg/L
April	5.3	2.1
May – September	3.6	1.4
October	7.4	3.0
November – March	11.4	4.5

PART 5 – PHOSPHORUS

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

Since Norway has phosphorus limits in effect that are more stringent than 1.0 mg/L, the need for a TBEL will not be considered further.

In addition, the need for a WQBEL for phosphorus must be considered.

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

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

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 the Waubeesee Lake Drainage Canal
Qs = 100% of the 7-Q_2 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 = 1.6 MGD = 2.5 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 10/01/2020 – 02/26/2026.

Total Phosphorus Effluent Data

	Concentration mg/L	Mass lbs/day
1-day P_{99}	0.27	3.83
4-day P_{99}	0.17	2.08
30-day P_{99}	0.12	1.10
Mean*	0.09	0.69
Std	0.05	0.80
Sample size	835	835
Range	<0.042 - 0.8	0 – 13

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

Norway has been complying with their WQBEL through water quality trading and reports 0.075 mg/L as the computed compliance using available credits.

Reasonable Potential Determination
The calculated WQBEL of 0.075 mg/L is less than the current technology-based limit of 1.0 mg/L, so the WQBEL must be included in the permit per s. NR 217.15(2), Wis. Adm. Code.

The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion and is currently meeting the WQBELs through water quality trading. Therefore, **the WQBELs are required to continue in the reissued permit per ss. NR 217.15 and 205.067(5), Wis. Adm. Codes.**

Limit Expression
According to s. NR 217.14(2), Wis. Adm. Code, because the calculated WQBEL is less than or equal to 0.3 mg/L, the effluent limit of 0.075 mg/L may be expressed as a six-month average. If a concentration limitation expressed as a six-month average is included in the permit, a monthly average concentration limitation of 0.225 mg/L, equal to three times the WQBEL calculated under s. NR 217.13, Wis. Adm. Code shall also be included in the permit. For the water quality trading compliance option, the averaging periods for meeting the WQBELs are January – June and July – December.

Mass Limits
A mass limit is also required, pursuant to s. NR 217.14(1)(a), Wis. Adm. Code, because the discharge is to a surface water that is to or upstream of a phosphorus impaired water. **This final mass limit shall be 0.075 mg/L × 8.34 × 1.6 MGD = 1.0 lbs/day expressed as a six-month average.**

Water Quality Trading Minimum Control Level
A WQT plan has been submitted as an alternative compliance option to offset any total phosphorus discharged from Outfall 001 that exceed the phosphorus WQBELs. The phosphorus WQBELs may be expressed as computed compliance limits, but a MCL must be set as a limit not to be exceeded at the outfall location. **Therefore, the phosphorus MCL of 0.66 mg/L as a monthly average is recommended during the reissued permit term to serve as the MCL.**

TMDL Under Development
A Total Maximum Daily Load (TMDL) is being developed for Fox (IL) River Basin for phosphorus. The TMDL will address phosphorus water quality impairments within the basins and provide waste load allocations (WLA) required to meet water quality standards. This TMDL will likely result in phosphorus and TSS limitations that must be included in WPDES permits, which may be different than those calculated in this WQBEL memo. TMDL-derived phosphorus limits may be included in lieu of or in addition to the calculated limits upon permit reissuance or modification once the TMDL has been approved by U.S. EPA, according to s. NR 217.16, Wis. Adm. Code.

PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

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

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from 10/01/2020 – 02/28/2026.

The table below summarizes the maximum temperatures reported during monitoring from 01/01/2024 – 02/28/2026.

Monthly Temperature Effluent Data & Limits

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
JAN	52	53	**49**	76
FEB	51	52	**50**	76
MAR	50	52	**52**	77

Attachment #1

Month	Representative Highest Monthly Effluent Temperature		Calculated Effluent Limit	
	Weekly Maximum (°F)	Daily Maximum (°F)	Weekly Average Effluent Limitation (°F)	Daily Maximum Effluent Limitation (°F)
APR	54	57	55	79
MAY	59	61	65	82
JUN	66	68	76	84
JUL	68	70	81	85
AUG	71	72	81	84
SEP	70	71	73	82
OCT	65	67	**61**	80
NOV	62	63	**49**	77
DEC	53	55	**49**	76

Reasonable Potential
Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
  (a) The highest recorded representative daily maximum effluent temperature
  (b) The projected 99th percentile of all representative daily maximum effluent temperatures
- A sub−lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
  (a) The highest weekly average effluent temperature for the month.
  (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. The months in which limitations are recommended are shown in bold. Based on this analysis, weekly average temperature maximum limits are necessary for the months of October – March. The full temperature table is in Attachment #4.

Norway has submitted a request for consideration of dissipative cooling, referencing a previous dissipative cooling study from 11/20/2014 and a statement that there have not been substantial changes to the facility. Based on this information, the department has found that it is not necessary to include temperature limits in the reissued permit. **Temperature monitoring is recommended to continue in the reissued permit.**

Future WPDES Permit Reissuance

Dissipative cooling (DC) requests must be re-evaluated every permit reissuance. The permittee is responsible for submitting an updated DC request prior to permit reissuance. Such a request must either include:

a) A statement by the permittee that there have been no substantial changes in operation of, or thermal loadings to, the treatment facility and the receiving water; or
b) New information demonstrating DC to supplement the information used in the previous DC determination. If significant changes in operation or thermal loads have occurred, additional DC data must be submitted to the Department.

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

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

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC_{50} (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC_{25} (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The **IWC of 100%,** shown in the WET Checklist summary below, was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

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

Where:

Q_e = annual average flow = 1.6 MGD = 2.5 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 0 cfs ÷ 4 = 0 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.

- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations. Significant changes were made to WET test methods in 2004 and these changes were assumed to be fully implemented by certified labs by no later than June 2005. Data collected prior to July 1, 2025, is not included in this evaluation.

WET Data History

Date Test Initiated	Acute Results LC_{50} %				Chronic Results IC_{25} %				Footnotes or Comments
	C. dubia	Fathead minnow	Pass or Fail?	Used in RP?	*C. dubia*	Fathead Minnow	Pass or Fail?	Use in RP?	
02/07/2007	>100	>100	Pass	Yes					
03/12/2008	>100	>100	Pass	Yes					
01/14/2009	>100	>100	Pass	No					1
02/07/2010	>100	>100	Pass	No					1
02/08/2011	>100	>100	Pass	No					1
09/16/2015	>100	>100	Pass	Yes					
11/09/2016	>100	>100	Pass	Yes					
04/05/2017	>100	>100	Pass	Yes					
01/31/2018	>100	>100	Pass	Yes					
08/20/2019	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
08/23/2020	>100	>100	Pass	Yes					
12/08/2020	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
04/06/2021	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
09/27/2022	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
02/21/2023	>100	>100	Pass	Yes	>100	>100	Pass	Yes	
10/15/2024	>100	>100	Pass	Yes	>100	>100	Pass	Yes	

Footnotes:

1. *Tests done by S-F Analytical, July 2008 – March 2011.* The DNR has reason to believe that WET tests completed by SF Analytical Labs from July 2008 through March 31, 2011 were not performed using proper test methods. Therefore, WET data from this lab during this period has been disqualified and was not included in the analysis.

- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

  Acute Reasonable Potential = [(TUa effluent) (B)(AMZ)]
  Chronic Reasonable Potential = [(TUc effluent) (B)(IWC)]

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

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

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

WET Checklist Summary

	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 100%. **15 Points**
Historical Data	13 tests used to calculate RP. No tests failed. **0 Points**	6 tests used to calculate RP. No tests failed. **0 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	WWSF **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	Reasonable potential for limits for chloride based on ATC; Ammonia nitrogen limit carried over from the current permit. Chromium, copper, mercury, nickel, zinc, and ammonia detected. Additional Compounds of Concern: Benzene & naphthalene **10 Points**	Reasonable potential for limits for chloride based on CTC; Ammonia nitrogen limit carried over from the current permit. Chromium, copper, mercury, nickel, zinc, and ammonia detected. Additional Compounds of Concern: Benzene & naphthalene **10 Points**
Additives	1 Water Quality Conditioner (Hyper Ion 1997) added. Permittee has proper P chemical SOPs in place. **1 Point**	All additives used more than once per 4 days. **1 Point**
Discharge Category	No Industrial Contributors. **0 Points**	Same as Acute. **0 Points**
Wastewater Treatment	Secondary or Better **0 Points**	Same as Acute. **0 Points**
Downstream Impacts	No impacts known	Same as Acute.

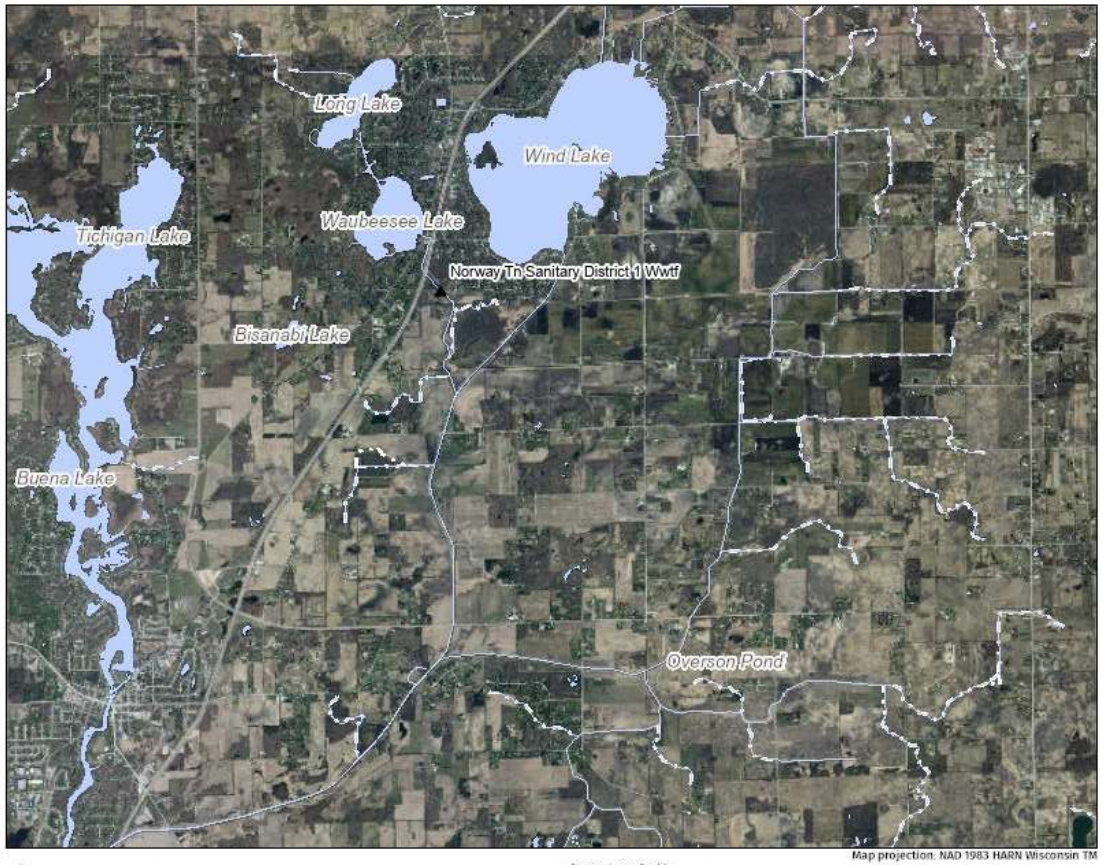
Attachment #1

	Acute	Chronic
	0 Points	**0 Points**
Total Checklist Points:	**16 Points**	**31 Points**
Recommended Monitoring Frequency (from Checklist):	1x yearly	1x yearly
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) and other information described above, annual acute and chronic WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge. Testing should continue after the permit expiration date (until the permit is reissued).
- A minimum of annual acute and chronic monitoring is recommended because Norway is a major municipal discharger with a design flow greater than 1.0 MGD. Federal regulations at 40 CFR Part 122.21(j) require at least 4 acute and chronic WET tests with each permit application on samples collected since the previous reissuance. Therefore, annual monitoring is recommended in the permit term, so that data will be available for the next permit application.

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Norway Outfall Location



Legend: (some map layers may not be displayed)

- Surface Water Outfalls
- Rivers and Streams
- Intermittent Streams
- Open Water
- Rivers and Streams
- Intermittent Streams
- Open Water
- 24K Intermittent Streams
- 24K Lakes and Open Water
- Latest Leaf Off Index
- Latest Leaf Off Imagery

Notes:

Map projection: NAD 1983 HARN Wisconsin TM

N

Map: 0 4,000 8,000 Feet; 0 1,000 2,000 Meters

Service Layer Credits:
DNR Basic Feature VTL (WTM): Wisconsin Department of Natural Resources, GIS Section, Latest Leaf Off Output & Determinations®. WI DNR Bureau of Watershed Management, Surface Water. WIDNR, USGS, and other data

This map is a product generated by a DNR web mapping application.

This map is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The user is solely responsible for verifying the accuracy of information before using for any purpose. By using this product for any purpose user agrees to be bound by all disclaimers found here: https://dnr.wisconsin.gov/legal

Date Printed: 4/13/2026 9:38 AM

Attachment #3

2014 Chronic Ammonia Calculations

Weekly Average & Monthly Average Limits based on Chronic Toxicity Criteria (CTC):
Weekly average and monthly average limits for Ammonia Nitrogen are based on chronic toxicity criteria.

The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified as a Warmwater sport fishery is calculated by the following equation.

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

Where:

pH = the pH (su) of the <u>receiving water</u>,
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 (ºC) of the receiving water – (Early Life Stages Present), or
T = the maximum of the actual temperature (ºC) and 7 - (Early Life Stages Absent)

The 4-Day criterion is simply 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_{10} (4-Q_3, if available) to derive weekly average limitations. And the 30-day criteria are used with the 30-Q_5 (estimated as 85% of the 7-Q_2 if the 30-Q_5 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 ºC. Only 25% of the flow is used if the Temperature < 11 ºC. And 50% of the flow is used if the Temperature ≥ 11 ºC but < 16 ºC.

The rules provide 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 ºC, during the winter and spring months. Burbot, an early spawning species, are not believed to be present in the Des Plaines River. So "ELS Absent" criteria apply from October through March, and "ELS Present" criteria will apply from April through September. Since minimal ambient data is available, the "default" basin assumed values are used for Temperature, pH and background ammonia concentrations. The default temperature data are consistent with the results given in NR 102 for small warm water streams. pH results are consistent with those found in non-impounder hard water streams. Since the stream flows used for the limit calculations are zero, background ammonia l3evels do not factor into the calculations, so zero is used.

Attachment #3

		Spring	Summer	Fall	Winter
		April	**May – Sept.**	**October**	**Nov. - March**
Background Information:	7-Q_{10} (cfs)	0	0	0	0
	7-Q_2 (cfs)	0	0	0	0
	Ammonia (mg/L)	0.09	0.07	0.09	0.25
	Temperature (°C)	9	21	10	3
	pH (su)	8.09	8.08	8.06	7.9
	% of Flow used	25	100	25	25
	Reference Weekly Flow (cfs)	0	0	0	0
	Reference Monthly Flow (cfs)	0	0	0	0
Criteria mg/L:	4-Day Chronic				
	Early Life Stages Present	5.32	3.56	5.57	6.99
	Early Life Stages Absent	7.60	3.56	7.45	11.36
	30-Day Chronic				
	Early Life Stages Present	2.13	1.42	2.23	2.80
	Early Life Stages Absent	1.50	1.42	2.98	4.54
Effluent Limitations mg/L:	Weekly Average				
	Early Life Stages Present	5.32	3.56		
	Early Life Stages Absent			7.45	11.36
	Monthly Average				
	Early Life Stages Present	2.13	1.42		
	Early Life Stages Absent			2.98	4.54

Facility Specific Chloride Variance Data Sheet

Directions: Please complete this form electronically. Record information in the space provided. Select checkboxes by double clicking on them. Do not delete or alter any fields. For citations, include page number and section if applicable. Please ensure that all data requested are included and as complete as possible. Attach additional sheets if needed.

Section I: General Information

A. Name of Permittee: Town of Norway Sanitary District #1

B. Facility Name: Town of Norway Sanitary District #1 WWTF

C. Submitted by: Wisconsin Department of Natural Resources

D. State: Wisconsin **Substance:** Chloride **Date completed:** 8/31/2026

E. Permit #: WI-0031470-09-0 **WQSTS #:** (EPA USE ONLY)

F. Duration of Variance **Start Date:** January 01, 2027 **End Date:** December 31, 2031

G. Date of Variance Application: September 03, 2025

H. Is this permit a:
☐ **First time submittal for variance**
☒ **Renewal of a previous submittal for variance** *(Complete Section IX)*

I. Description of proposed variance:
The Town of Norway Sanitary District WWTF (Norway) discharges to Waubeesee Lake Drainage Canal, in the Wind Lake Canal, Fox (IL) River Watershed in the Fox (IL) River Basin, in Racine County. The proposed variance for chloride is from the water quality-based effluent limits (WQBELs) of 395 mg/L expressed as a weekly average limit. The proposed permit includes an interim limit of 640 mg/L expressed as a weekly average, a target value of 575 mg/L (weekly average), and the requirement to implement source reduction measures (SRMs). The term of the proposed variance is five years, concurrent with the term of the proposed WPDES permit. The underlying designated uses and criteria of Wisconsin's chloride water quality standards (WQS) will be retained, and all other applicable WQS will remain in effect with adoption of the proposed variance.

Citation: An interim chloride effluent limitation under s. NR 106.83(2), Wis. Adm. Code, represents a variance to water quality standards authorized by s. 283.15, Wis. Stats., and 40 CFR §131.14.

J. List of all who assisted in the compilation of data for this form

Name	Email	Phone	Contribution
Betsyjo Howe	Betsyjo.howe@wisconsin.gov	608-419-4155	Permit Drafter/Variance Coordinator
Jacob Van Susteren-Wedesky	jacob.vansusterenwedesky@wisconsin.gov	414 239-1480	Compliance Staff
Nicole Krueger	Nicole.Krueger@wisconsin.gov	414 897-5750	Limit Calculator

Section II: Criteria and Variance Information

A. Water Quality Standard from which variance is sought: 395 mg/L (chronic toxicity criteria)

B. List other criteria likely to be affected by variance: None

C. Source of Substance: Residential and commercial sources with I/I of road salt during the winter road maintenance season.

D. Ambient Substance Concentration: N/A ☐ **Measured** ☒ **Estimated** ☐ **Default** ☐ **Unknown**

E. If measured or estimated, what was the basis? Include citation. Background concentrations are not included because they do not impact the calculated WQBEL when the receiving water low flows are equal to zero.

F. Average effluent discharge rate: 0.83 MGD (average of data reported from Oct 2020 through Feb 2026) **Maximum effluent discharge rate:** 1.6 MGD (average annual design flow)

G. Effluent Substance Concentration:
1-day P99 = 822 mg/L
4-day P99 = 637 mg/L
30-day P99 = 536 mg/L
Mean = 484 mg/L

☒ **Measured** ☐ **Estimated** ☐ **Default** ☐ **Unknown**

H. If measured or estimated, what was the basis? Include Citation. Effluent concentration data collected from October 2020 through February 2026 (262 samples).

I. Type of HAC:

- ☐ **Type 1: HAC reflects waterbody/receiving water conditions**
- ☐ **Type 2: HAC reflects achievable effluent conditions**
- ☒ **Type 3: HAC reflects current effluent conditions**

J. Statement of HAC: The Department has determined the highest attainable condition of the receiving water is achieved through the application of the variance limit in the permit, combined with a permit requirement that the permittee implement its Chloride SRM plan. Thus, the HAC at commencement of this variance is 640 mg/L, which reflects the greatest chloride reduction achievable with the current treatment processes, in conjunction with the implementation of the permittee's Chloride SRM plan. The current effluent condition is reflective of on-site optimization measures that have already occurred. This HAC determination is based on the economic feasibility of available compliance options for Norway WWTF at this time (see Economic Section below). The permittee may seek to renew this variance in the subsequent reissuance of this permit; the Department will reevaluate the HAC in its review of such a request. A subsequent HAC cannot be defined as less stringent than this HAC.

K. Variance Limit: 640 mg/L as a weekly average

L. Level currently achievable (LCA): 640 mg/L as a weekly average

M. What data were used to calculate the LCA, and how was the LCA derived? (*Immediate compliance with LCA is required.)*

Based on sample results from October 2020 through February 2026, the 1-day P99 chloride concentration was 822 mg/L and the 4-day P99 concentration was 637 mg/L.

N. Explain the basis used to determine the variance limit (which must be ≤ LCA). Include citation.

The 4-day P99 effluent concentration from October 2020 through February 2026 (637 mg/L) is rounded to the permit interim limit of 640 mg/L. Therefore the HAC should be set equal to the LCA. The limit is established in accordance with s. 283.15 (5), Wis. Stats. and ch. NR 106 Subchapter II, Wis. Adm. Code.

Chapter NR 106, Subchapter VII, Wis. Adm. Code, allows for a variance; the imposition of a less restrictive interim limit; a compliance schedule that stresses source reduction and public education; and allowance for a target value or limit to be a goal for reduction.

O. Select all factors applicable as the basis for the variance provided under 40 CFR 131.10(g). Summarize justification below: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☒ 6

The use of a reverse osmosis system was evaluated. The cost of the system was estimated to an average cost per household that would result in 6.76% of the MHI. Without a variance, meeting the final WQBELs would result in substantial and widespread economic and social impacts.

Due to water hardness in private wells, most residents use water softeners. Since the Sanitary District is not serviced by a centralized municipal water supply, the cost estimate for the cost of current wastewater treatment, cost of hook ups, and cost of pipes was evaluated. The cost for the installation of this infrastructure to sewer user rates was estimated to result in an average cost to households that would be 3.84% of the MHI, and the cost to construct a lime softening plant was not evaluated An increase of this magnitude would cause substantial and wide spread adverse social and economic impacts the area where the discharge is located.

Section III: Location Information

A. Counties in which water quality is potentially impacted: Racine

B. Receiving waterbody at discharge point: Waubeesee Lake Drainage Canal

C. Flows into which stream/river? Wind Lake Canal, Fox (IL) River **How many miles downstream?** Wind Lake Canal – ~0.9 Fox (IL) River – ~6.5

D. Coordinates of discharge point (UTM or Lat/Long): 42.8089° N / 88.1610° W

E. What is the distance from the point of discharge to the point downstream where the concentration of the substance falls to less than or equal to the chronic criterion of the substance for aquatic life protection?
Approximately 7 miles downstream, at the Fox River.

F. Provide the equation used to calculate that distance *(Include definitions of all variables, identify the values used for the clarification, and include citation):*
(effluent flow x concentration + receiving water flow x background concentration) / total flow
Effluent flow = 2.48 cfs
Concentration = 640 mg/L
Background concentration = 130 mg/L

The background concentration at the Fox River is 130 mg/L. There is little to no dilution from the outfall until the Fox River, approximately 7 miles downstream. For the mixed concentration to be less than 395 mg/L to meet the chronic toxicity criteria, the receiving water flow must be greater than 2.3 cfs. The 7Q10 of the Fox River is 39 cfs.

G. What are the designated uses associated with the direct receiving waterbody, and the designated uses for any downstream waterbodies until the water quality standard is met?
Warm Water Sport Fish (WWSP) community, non-public water supply and recreational use.

H. Identify all other variance permittees for the same substance which discharge to the same stream, river, or waterbody in a location where the effects of the combined variances would have an additive effect on the waterbody: None

Permit Number	Facility Name	Facility Location	Variance Limit [mg/L]
N/A			

I. Please attach a map, photographs, or a simple schematic showing the location of the discharge point as well as all variances for the substance currently draining to this waterbody on a separate sheet
See the "Norway Sanitary District WWTF Variance Outfalls" map.

J. Is the receiving waterbody on the CWA 303(d) list? If yes, please list the impairments below. ☐ Yes ☒ No ☐ Unknown

River Mile	Pollutant	Impairment
N/A	N/A	N/A

***K.* Please list any contributors to the POTW in the following categories:**
May need to contact facility for this information

Food processors (cheese, vegetables, meat, pickles, soy sauce, etc.)	None
Metal Plating/Metal Finishing	None
Car Washes	1 – three stall car wash
Municipal Maintenance Sheds (salt storage, truck washing, etc.)	None
Laundromats	None
Other presumed commercial or industrial chloride contributors to the POTW	One elementary school in Wind Lake and one middle school in Muskego. Approximately there are nine small restaurants, two small convenience store/gas stations, and two taverns.

L. If the POTW does not have a DNR-approved pretreatment program, is a sewer use ordinance enacted to address the chloride contributions from the industrial and commercial users? If so, please describe.

The Town of Norway Sanitary District #1 is not a pretreatment authority because design flows are <5 MGD. There are no industrial users in the system and the district works with the few commercial users and schools to minimize discharges, but currently does not enact a sewer use ordinance.

Section IV: Pretreatment (complete this section only for POTWs with DNR-Approved Pretreatment Programs. See w:\Variances\Templates and Guidance\Pretreatment Programs.docx)

A. Are there any industrial users contributing chloride to the POTW? If so, please list.
N/A

B. Are all industrial users in compliance with local pretreatment limits for chloride? If not, please include a list of industrial users that are not complying with local limits and include any relevant correspondence between the POTW and the industry (NOVs, industrial SRM updates and timeframe, etc)
N/A

C. When were local pretreatment limits for chloride last calculated?
N/A

D. Please provide information on specific SRM activities that will be implemented during the permit term to reduce the industry's discharge of the variance pollutant to the POTW
N/A

Section V: Public Notice

A. Has a public notice been given for this proposed variance? ☒ **Yes** ☐ **No**

B. If yes, was a public hearing held as well? ☒ **Yes** ☐ **No** ☐ **N/A**

C. What type of notice was given?
☒ **Notice of variance included in notice for permit** ☐ **Separate notice of variance**

D. Date of public notice: September 8, 2026 **Date of hearing:** October 26, 2026

E. Were comments received from the public in regards to this notice or hearing? *(If yes, see notice of final determination)* ☐ **Yes** ☐ **No**

Section VI: Human Health

A. Is the receiving water designated as a Public Water Supply? ☐ **Yes** ☒ **No**

B. Applicable criteria affected by variance: No human health criteria for chloride

C. Identify any expected impacts that the variance may have upon human health, and include any citations:
None

Section VII: Aquatic Life and Environmental Impact

A. Aquatic life use designation of receiving water: Warm Water Sport Fish

B. Applicable criteria affected by variance: Chronic toxicity criteria for chloride = 395 mg/L from NR 105, Wis. Adm. Code, applicable in all Wisconsin waters.

C. Identify any environmental impacts to aquatic life expected to occur with this variance, and include any citations:
The instream concentration at the outfall is equal to the effluent concentration because there is no available dilution. The instream concentration is assumed to be equal to the interim limit of 640 mg/L, which exceeds the genus mean chronic values for *Ceriodaphnia* (417 mg/L) and *Daphnia* (637 mg/L).

D. List any Endangered or Threatened species known or likely to occur within the affected area, and include any citations:
There are no Endangered or Threatened species known that would affect the water quality criterion, as the chronic toxicity criterion for chloride is more stringent than all genus mean chronic values for organisms with chloride toxicity data. As a result, no endangered species with data would need more protection than already provided by the existing criterion.

Citation: U.S. Fish & Wildlife Service – Environmental Conservation Online System (http://www.fws.gov/endangered/) and National Heritage Index (http://dnr.wi.gov/topic/nhi/)

Section VIII: Economic Impact and Feasibility

A. Describe the permittee's current pollutant control technology in the treatment process: The Town of Norway Sanitary District #1 operates an extended aeration, activated sludge wastewater treatment facility. Two influent channels deliver wastewater from the collection system to the WWTF. Preliminary treatment included fine screening. After screening, Return Activated Sludge is introduced, followed by poly-aluminum chloride addition for chemical phosphorus removal. Primary treatment is performed through two extended aerations basins with fine bubble diffusers. Secondary treatment consists of two final clarifiers. The facility utilizes ultraviolet (UV) disinfection and post-aeration prior to discharging to the Waubeesee Lake Drainage Canal. The facility does not accept hauled wastes and there are no industrial contributors. Sludge that is produced in the treatment process is aerobically digested and hauled to another permitted facility.

B. What modifications would be necessary to comply with the current limits? Include any citations.
Upgrades to the WWTF to install reverse osmosis (RO) would be needed to comply with the WQBEL of 400 mg/L. Centralized or regional lime softening is not a practical alternative as a means to comply with the WQBEL because of the lack of a centralized drinking water supply system.

C. How long would it take to implement these changes?
A time determination was not completed due to the infeasibility of treatment for chlorides.

D. Estimate the capital cost *(Citation)***:** $1,800,000 for RO treatment (WDNR Form 3400-193 Chloride Variance Application from permittee)

E. Estimate additional O & M cost *(Citation)***:** $584,000 for RO treatment (WDNR Form 3400-193 Chloride Variance Application from permittee)

F. Estimate the impact of treatment on the effluent substance concentration, and include any citations:
Due to the nature of reverse osmosis treatment, the effluent concentration would presumably be reduced to 0 mg/L. However, there would be a stronger concentration in this new discharge of reject water than the present discharge.
To reach the final water quality based effluent limit of 400 mg/L, there would need to be a 33 % reduction from the proposed interim limit. It is expected the facility can eventually reach this reduction with SRMs.

G. Identify any expected environmental impacts that would result from further treatment, and include any citations:
End-of-pipe RO wastewater treatment technology for chloride produces concentrated brine that can be as much or more of an environmental liability than the untreated effluent. Since the concentrated brine cannot be further treated, the only recourse for the disposal of the brine is transfer to another community, which is often not feasible. Appropriate chloride source reduction activities are preferable environmentally to effluent end-of-pipe treatment in most cases, since the end product of treatment (production of a concentrated brine) does not remove the load of chloride from the environment. There would be some impacts based on disposal of brine from RO. These include air pollution impacts from trucking brine and increased chloride impacts at the point where brine is discharged.

H. Is it technically and economically feasible for this permittee to modify the treatment process to reduce the level of the substance in the discharge? ☐ **Yes** ☒ **No** ☐ **Unknown**
Reverse Osmosis treatment of the Town of Norway Sanitary District effluent to meet the WQBEL is not economically feasible. See WDNR Variance Application and Municipal RO Screening Tool for costs of reverse osmosis. Use of reverse osmosis at the WWTF was evaluated; the resulting total cost for sewer user rates was estimated to result in an average cost to households that would be 6.76% of the MHI. An increase of this magnitude would cause substantial and widespread adverse social and economic impacts in the area where the discharge is located.
Since the Sanitary District is not serviced by a centralized municipal water supply, the cost estimate for the cost of current wastewater treatment, cost of hook ups, and cost of pipes was evaluated. The cost for the installation of this infrastructure to sewer user rates was estimated to result in an average cost to households that would be 3.84% of the MHI. An increase of this magnitude would cause substantial and widespread adverse social and

economic impacts in the area where the discharge is located. See the DNR Variance Application and Municipal Lime Softening Tool for facilities that have no significant drinking water infrastructure.

I. If treatment is possible, is it possible to comply with the limits on the substance? ☒ **Yes** ☐ **No** ☐ **Unknown**

J. If yes, what prevents this from being done? Include any citations.
See Section VIII:H. The costs associated with RO and centralized or regional lime softening treatment are prohibitively expensive.

K. List any alternatives to current practices that have been considered, and why they have been rejected as a course of action, including any citations:
Reverse Osmosis (RO) Treatment – not economically feasible (6.76% of the MHI)
Centralized Lime Softening Treatment – not economically feasible (3.84% of the MHI)

Section IX: Compliance with Water Quality Standards

A. Describe all activities that have been, and are being, conducted to reduce the discharge of the substance into the receiving stream. This may include existing treatments and controls, consumer education, promising centralized or remote treatment technologies, planned research, etc. Include any citations.
The Sanitary District is continuing its program of monitoring the chloride levels leaving the WWTF and educating the public on ways to decrease the amount of salt put into the water by publishing articles annually in the Norway News and on the District website. All new homeowners receive a copy of an informational letter and a copy of Ordinance 44. In 2022, the Sanitary District implemented a formalized cleaning and televising program. As of 04/13/2026, the Sanitary District cleaned and inspected around 21,500 feet of sanitary sewer main for infiltration and inflow (I/I). In 2024, seven manholes were found to be leaking and have been repaired. Discussion with the City of Muskego and Town of Norway Public Works Department relating to winter road salting occurred. Inspections of water softens at schools within the sewer service area also occurred. Efforts were made to ensure the building inspector provides information about hard water and softeners with building permits.

Citation: Town of Norway Sanitary District WWTF Chloride Annual SRM Reports 2020-2025

B. Describe all actions that the permit requires the permittee to complete during the variance period to ensure reasonable progress towards attainment of the water quality standard. Include any citations.
As conditions of this variance the permittee is required to (a) maintain effluent quality at or below the interim effluent limitation in the proposed permit, (b) implement the chloride source reduction measures specified in the Chloride Source Reduction Measures (SRM) Plan dated 8/26/2026, and (c) perform the actions listed in the Schedule section of the proposed permit.
SRM Activities planned for the proposed permit term:

1. Continue to distribute information regarding water softeners, non-softened hose bibs, and DIR ordinance requirement with building permits
2. Discuss importance of chloride reduction with water equipment vendors in Wind Lake and Waterford
3. Attend H.O.A and Lake Assoc. meetings
4. Chloride & chloride reduction info on website
5. Research and evaluate feasibility of a program to incentivize tune ups or upgrade of water softeners in residential areas tributary to the WWTF
6. Chloride & chloride reduction info letter with utility bill
7. Open house at WWTP
8. Review monthly chloride samples for trends
9. Inspection of softening equipment at middle school
10. Inspection of softening equipment at elementary school
11. Visit City of Muskego utilities to inform them of chloride issues
12. Optimize phosphorus treatment additive at WWTP
13. Inspection and discussion of softening equipment at the Car Wash
14. Sample & analyze after a snow or rain event
15. Survey residents of water softening equipment

16. Inspection & repairs to infrastructure causing I/I
17. De-Icing / Road Salt Activities

Section X: Compliance with Previous Permit *(Variance Reissuances Only)*

A. Date of previous submittal: August 10, 2020 **Date of EPA Approval:** September 30, 2020

B. Previous Permit #: WI-0031470-08-0 **Previous WQSTS #:** (EPA USE ONLY)

C. Effluent substance concentration: 637 mg/L (4-day P99) **Variance Limit:** 640 mg/L (weekly average)

D. Target Value(s): 610 mg/L (weekly average) **Achieved?** ☐ **Yes** ☐ **No** ☒ **Partial**

E. For renewals, list previous steps that were to be completed. Show whether these steps have been completed in compliance with the terms of the previous variance permit. Attach additional sheets if necessary.

Condition of Previous Variance	Compliance
Continue to distribute information regarding water softeners, non-softened hose bibs, and DIR ordinance requirement with building permits	☒ **Yes** ☐ **No**
Include targeted articles in quarterly newsletter	☒ **Yes** ☐ **No**
Discuss importance of chloride reduction with water equipment vendors in Wind Lake and Waterford	☐ **Yes** ☒ **No**
Work with town government on new website	☒ **Yes** ☐ **No**
Outreach/education attend H.O.A. and Lake Association meetings	☐ **Yes** ☒ **No**
Research and evaluate feasibility of a program to incentivize tune ups or upgrade of water softeners in residential area tributary to the WWTF	☐ **Yes** ☒ **No**
Review monthly chloride samples for trends	☒ **Yes** ☐ **No**
Visit elementary school to inspect equipment and discuss chloride reductions	☒ **Yes** ☐ **No**
Visit middle school to inspect equipment and discuss chloride reductions	☒ **Yes** ☐ **No**
Visit City of Muskego utilities to inform them of chloride issues	☒ **Yes** ☐ **No**
Optimize use of the current phosphorus treatment additive that results in the lowest level of residual chlorides leaving the plant	☒ **Yes** ☐ **No**
I&I	☒ **Yes** ☐ **No**
Collect data on chloride levels around the district	☐ **Yes** ☒ **No**
Engage in discussions with the Town of Norway and City of Muskego regarding road salt usage	☒ **Yes** ☐ **No**

TOWN OF NORWAY SANITARY DISTRICT #1 CHLORIDE SRM ACTION PLAN (8/26/2026)
For 2027-2031 WPDES Permit Reissuance

SRM Initiative	Status	Audience	Year 1-2027	Year 2-2028	Year 3-2029	Year 4-2030	Year 5-2031	Anticipated Outcome
EDUCATION								
Continue to distribute information regarding water softeners, non-softened hosebibs, and DIR ordinance requirement with building permints	EXISTING	Residents	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Reduce chloride use in softeners
Discuss importance of chloride reduction with water equipment vendors in Wind Lake and Waterford	EXISTING	Residents	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Explain the effect of excessive chloride use to users and actions they can take to reduce

Outreach/Educatin-Attend H.O.A and Lake Assoc. meetings	EXISTING	Residents	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Bring awareness to residents
Chloride & chloride reduction info on website	EXISTING	Residents	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Explain the effect of excessive chloride use to users and actions they can take to reduce
Research and evaluate feasibility of a program to incentivize tune ups or upgrade of water softeners in residential areas tributary to the WWTF	EXISTING	Residents/Water Softener Companies	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Reduce discharge of chlorides from water softeners
Chloride & chloride reduction info letter with utility bill	NEW	Residents		Annually		Annually		Bring awareness to residents
Open house at WWTP	NEW	Residents	Strategize	Develop	Promote	Hold Event	Evaluate	Bring awareness to residents
MONITORING								
Review monthly chloride samples for trends	EXISTING	Staff	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Identify trends and potential sources
Inspection and discussion of softening equipment at middle school	EXISTING	Commercial	Annually	Annually	Annually	Annually	Annually	Monitor and education
Inspection and discussion of softening equipment at elementary school	EXISTING	Commercial	Annually	Annually	Annually	Annually	Annually	Monitor and education

Visit City of Muskego Utilities fo inform them of chloride issues	EXISTING	Governmental	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Reduce chloride coming from satellite users
Optimize phosphorus treatment additive at WWTP	EXISTING	Staff	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Reduce chlorides added to the system
Inspection and discussion of softening equipment at the Car Wash	NEW	Owner(s)	Annually		Annually			Monitor and education
Sample & analyze after a snow or rain event	NEW	Staff	1 Per Year	1 Per Year	1 Per Year	1 Per Year	1 Per Year	Identify trends and potential sources
Survey residents of water softening equipment	NEW	Staff		Strategize	Develop	Deliver	Evaluate	Understand the amount of private water softeners in the system
HOUSE KEEPING								
Inspection & repairs to infrastructure causing I/I	EXISTING	Staff	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Reduce chlorides entering the collection system
De-Icing/ Road Salt Activites	EXISTING	Staff	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Disussion with TNorway, CMuskego, Racine County and Private Contractors of over salting consequences
De-Icing/ Road Salt Activites	NEW	Staff		Annually		Annually		Discussion of salting equipment and the possibility of smart salt training

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Southeast Region Headquarters
1027 W Saint Paul Ave
Milwaukee WI, 53233

Tony Evers, Governor
Karen Hyun, Ph.D., Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7643
TTY Access via relay - 711

July 24, 2026

Ivan Zaremba – District Manager
Town of Norway Sanitary District 1
(via email only)

Subject: Norway TN Sanitary District 1 WWTF - WPDES Permit WI-0031470
Water Quality Trading Plan (WQT-2026-0021) - CONDITIONAL APPROVAL

The Department recently received a water quality trading (WQT) plan for compliance with effluent phosphorus limits at the Town of Norway Sanitary District 1 (TNSD1). The initial plan was received in September of 2025, and an updated version was received July 14, 2026. Based on the Department's review, the final WQT Plan is in general conformance with the Water Quality Trading Guidance and Section 283.84 of the Wisconsin Statutes. The updated plan adds 95.7 acres of annual small grain cover crops and some additional best management practices to the 111.4 acres having the same approach from the original WQT plan. The final WQT plan also carries forward updates that were established in the January 2024 WQT plan submittal (conditionally approved April 26, 2024). The 2024 WQT plan and supporting materials were expanded to include a quantification of WQT credits that may be available for total suspended solids (TSS), should they be needed to demonstrate compliance with permit limits for that parameter in the future. The final WQT plan from 2026 continues that quantification for both practices.

Credits generated from approved practices result in available credit quantities shown in Table 1. These credits will be incorporated into the reissued WPDES permit and will be used to demonstrate compliance with final phosphorus effluent limits.

Table 1: Total Phosphorus and Total Suspended Solids Credits Available per WQT-2026-0021

	2027	2028	2029	2030	2031
TP	274.1	274.1	274.1	274.1	274.1
TSS	53,800	53,800	53,800	53,800	53,800

The Department conditionally approves the WQT Plan as a basis for water quality trading during the next WPDES permit term. The Department has assigned the WQT plan a tracking number of WQT-2026-0021 and will be referenced as such in the draft WPDES permit. The final WQT plan will be included as part of the public notice package for permit reissuance. The draft WPDES permit will include a requirement for an annual trading report and effluent monitoring for total phosphorus.

Please note that water quality trading credits for TSS can only apply towards effluent limitations that are based on a water quality criteria or come from a Total Maximum Daily Load (TMDL) designed to prevent or remove the listing of the water on a 303(d) impaired waters list. The current 10 mg/L weekly and monthly average effluent limitations for TSS are based on the category of discharge to improve water quality and prevent sedimentation but are not necessarily water quality based. The Department is in the process of developing a TMDL for TP and TSS impairments in the Fox-Illinois River Basin. Once finalized, the TMDL may include mass based TSS limits that are more restrictive than the current limits of 10 mg/L depending on the reductions for the different TMDL reaches and specific flow rates at outfall 001, etc. At that time, the WQT credits for TSS specified in the WQT plan and the table below may be used for compliance purposes in the WPDES permit for TNSD1.

The TMDL will also set reductions for nonpoint sources of TP and TSS to meet water quality targets. To account for these considerations, it is the Department's policy that long-term WQT credits in TMDL areas must go

beyond these reductions to generate credit in the WPDES permit for more than 10 years after the TMDL has been approved. The concept of pollutant reduction credit thresholds for WQT is discussed in detail starting in section 3.2 of the 2020 WQT implementation guidance document found on the department's website.

If you have any questions or comments, please contact me at (414) 897-5723 or at nicholas.lent@wisconsin.gov

Thank you,

Nick Lent
Wastewater Engineer
Wisconsin Department of Natural Resources

e-CC:

Leo Kucek, Applied Technologies, Inc
Rachel Mason, Applied Technologies, Inc.
Jacob Van Susteren-Wedesky, WDNR
BetsyJo Howe, WDNR
Matt Claucherty, WDNR
Justin Meyers, WDNR

ENGINEERING REPORT

MAY 2026

Town of Norway Sanitary District No. 1

WATER QUALITY TRADING PLAN

Applied Technologies
Engineers - Architects

PN6236

Town of Norway Sanitary District No. 1

WATER QUALITY TRADING PLAN

May 2026

Prepared by:
Applied Technologies, Inc.
13400 Bishop's Lane, Suite 270
Brookfield, WI 53005
(262) 784-7690

PN6236

Table of Contents

SECTION 1 – EXECUTIVE SUMMARY 1-1

SECTION 2 – WATER QUALITY TRADING PLAN 2-1

Water Quality Trading 2-1
Land Conservation Department 2-1
Number of Water Quality Trading Credits Required 2-1
WQT Agreement 2-2
Trade Ratio 2-10
WQT Plan Contingency Procedure 2-11
Next Steps and Conclusions 2-12

Appendices

Appendix A: Drought Farm Discussion

Appendix B: NMP Checklists

Appendix C: WQT Registration Forms

Appendix D: WQT Agreements

Appendix E: Norway HUC-12 Watershed

Appendix F: Droughtville SnapPlus Baseline Model – No Cover Crop

Appendix G: Droughtville SnapPlus Model with Cover Crops – Proposed Conditions

Appendix H: Popp Farm SnapPlus Baseline Model – No Cover Crops, December 2024

Appendix I: Popp Farm SnapPlus Model with Cover Crops – Proposed Conditions, December 2024

Appendix J: Popp Farm SnapPlus Baseline Model – No Cover Crops August 2025

Appendix K: Popp Farm SnapPlus Model with Cover Crops – Proposed Conditions, August 2025

Appendix L: BMP Technical Standard Natural Resources Conservation Service (NRCS)

Appendix M: WPDES Permit – Town of Norway Sanitary District

List of Tables

Table 1-1: Drought Farm and Popp Farm WQT Credits 1-2
Table 2-1: WQT Credits Used for the Current Permit Term (2020-2025) 2-2
Table 2-2: Droughtville Phosphorus WQT Credits, January 2024 2-5
Table 2-3: Droughtville Farm Sediment WQT Credits, January 2024 2-6
Table 2-4: Popp Farm Phosphorus WQT Credits, August 2025 2-8
Table 2-5: Popp Farm Sediment WQT Credits, August 2025 2-9

Section 1 – Executive Summary

The Town of Norway Sanitary District No. 1 (District) owns and operates a wastewater treatment plant (WWTP) with several total phosphorus (TP) effluent limits. To comply with a six-month average effluent phosphorus limit of 0.075 mg/L, the District evaluated several compliance alternatives. The District submitted a Final Compliance Alternatives Plan (CAP) to the Wisconsin Department of Natural Resources (WDNR) in July 2019. The Final CAP documented the District's continued efforts to reduce phosphorus loadings in its effluent, evaluated compliance alternatives, and identified the actions that will be implemented to meet the new phosphorus limits.

Operational improvements and minor facility modifications alone would not enable the District to meet the new ultra-low effluent limits. Based on the Final CAP, it was recommended that the District achieve compliance using chemical phosphorus removal to reduce most of the effluent phosphorus load, and water quality trading (WQT) for the remaining required reductions.

A Water Quality Trade agreement was reached on September 27, 2019, with Lindsey Drought. Ms. Drought decided to plant annual small grain cover crops on 114 acres. Preliminary data suggested that these cover crops would reduce phosphorus loadings to the watershed by 102 pounds per year. Following the submission of a Nutrient Management Plan to the WDNR on December 30, 2020, the updated SnapPlus files for the baseline and proposed conditions were used to determine that the phosphorus loadings to the watershed would be reduced by 210 pounds per year. Further updates, as described in the February 2023 submittal, resulted in estimated reduced phosphorus loadings to the watershed of 216 pounds per year. **Finally, as described herein, the estimated reduced phosphorus and sediment loadings to the watershed from the Drought farm are now estimated to be 200.8 pounds of phosphorus and 22.1 tons of sediment per year.**

A Water Quality Trade agreement was reached on December 17, 2024 with Julian Popp. Mr. Popp decided to plant annual cover crops, including on a 95 acre field named TP1. Preliminary data suggested that these cover crops would reduce phosphorus loadings to the watershed by 378 pounds per year. **Following updates, as described herein, the estimated reduced phosphorus and sediment loadings to the watershed from the Popp farm are now estimated to be 271.6 pounds of phosphorus and 25.5 tons of sediment per year.**

The District applied to register these best management practices (BMPs) for nonpoint-to-point source trades. The District will continue to provide a cost-share payment for Ms. Drought to implement these BMPs, as detailed in the updated WQT agreement from December 2023. Additionally, the District anticipates providing a cost-share payment to Mr. Popp to implement

these BMPs, as detailed in the WQT agreement from December 2024. In exchange, the District will receive the Water Quality Trading credits generated by the BMPs.

Based on the applicable trade ratios, the District will be able to apply 95.6 pounds of phosphorus and 10.2 tons of sediment in WQT credits per year toward demonstrating compliance with its phosphorus and TSS limits, respectively from Ms. Drought's farm. After applying applicable trade ratios, the WQT agreement with Mr. Popp's farm will enable the District to apply 178.5 pounds of phosphorus and 16.7 tons of sediment in WQT credits per year toward demonstrating compliance with its phosphorus and TSS limits, respectively. In the submitted Final CAP, it was estimated that the District would need to apply approximately 36 pounds of phosphorus to its permit per year under current conditions, and 58 pounds of phosphorus per year under design year conditions. This was based on an average effluent phosphorus concentration and limit of 0.087 and 0.075 mg/L, respectively. The average of 0.087 mg/L was rounded to the same number of significant figures as the limit of 0.075 mg/L.

Since the Final CAP, the District has confronted several issues with chemical phosphorus removal. The 95.6 pounds per year gained through the Droughtville Farm WQT agreement would have been expected to be more than sufficient to enable the District to meet its phosphorus limits based on the data before 2019. With an updated total of 274.1 pounds of phosphorus credits available through both the Drought and Popp trades/agreements, it is anticipated that the Town of Norway SD is well positioned for compliance with their WPDES permit phosphorus limits for the upcoming permit term. Moreover, elevated TSS concentrations (up to approximately 14 mg/L in 2023) and loadings have been observed at the WWTP. The FoxIL TMDL is in development, and it is unknown how restrictive TSS limits may be in the near future. Therefore, the District seeks to maximize the number of WQT credit for both phosphorus and TSS, and the District remains committed to searching for additional opportunities for phosphorus and TSS reductions, both within the wastewater treatment plant (WWTP) and via new BMPs within the watershed.

Table 1-1: Drought Farm and Popp Farm WQT Credits

Farm	WQT Credits	
	Phosphorus (lbs/yr)	TSS (tons/yr)
Droughtville Farm	95.6	10.2
Popp Farm	178.5	16.7
Total	**274.1**	**26.9**

Section 2 – Water Quality Trading Plan

The Town of Norway Sanitary District No. 1 (District) owns and operates a wastewater treatment plant (WWTP) with several total phosphorus (TP) effluent limits. To comply with a six-month average computed compliance effluent phosphorus limit of 0.075 mg/L, the District evaluated several compliance alternatives.

The District has removed phosphorus via chemical addition for many years. In August 2017, the District initiated a full-scale pilot study of polyaluminum chloride (PAC) addition for chemical phosphorus removal (CPR). The addition of PAC led to an average effluent phosphorus concentration of 0.087 mg/L. This ultra-low level is not low enough to consistently meet the six-month effluent phosphorus limit of 0.075 mg/L. Consequently, operational improvements and minor facility modifications alone would not enable the District to meet the new ultra-low effluent limits. Therefore, other compliance alternatives are necessary.

WATER QUALITY TRADING

Water quality trading (WQT) allows point source dischargers to purchase pollutant credits from point source or non-point source discharges and apply them toward regulatory requirements.

Land Conservation Department

As part of the Compliance Alternatives Plan, the Racine County Land Conservation Department (LCD) was contacted to discuss potential collaboration and involvement in projects for either WQT or adaptive management (AM). The LCD helped connect the District to a number of credit generators, including Lindsey Drought and Julian Popp.

Number of Water Quality Trading Credits Required

Based on the April 26, 2024 Water Quality Trading Plan Conditional Approval Letter, it is understood that the District has a total of 95.6 lb/y TP credits available to be allocated through the WQT agreement. The credits may be applied any month that the WWTP is unable to meet the TP monthly effluent limit of 0.225 mg/L or the six-month effluent limit of 0.075mg/L. Monthly average TP WQT credits required per day (lb/d) were calculated using equation 2a from the District's permit and equation 2b from the District's permit was used to calculate the average TP WQT credits used per month in pounds to meet the monthly effluent limit of 0.225 mg/L. Equation 3a and 3c from the District's permit were used to calculate the six-month WQT Credits needed (lbs/d) and the WQT credits used (lbs) to meet the six-month effluent limit of 0.075 mg/L, respectively.

Throughout the permit (2020-2025) the District has had an average annual WQT phosphorus credit usage of 59.5 lb/y to meet the more restrictive six-month effluent limits. The District's WWTP is utilizing chemical addition which has been performing efficiently. Consequently in 2024, approximately 73 pounds of phosphorus WQT credits were used with the majority being required in the first half of the year. Additionally, approximately 12 pounds of WQT credits were used in 2025 to meet July-December computed compliance limits. See Table 2-1 below for the amount of WQT credits used to meet TP effluent requirements during the current permit term (2020-2025).

Table 2-1: WQT Credits Used for the Current Permit Term

Year	Total Monthly		Total Six-Month	
	Effluent Limit	WQT Credits Used	Effluent Limit	WQT Credits Used
	mg/L	lb/yr	mg/L	lb/yr
2020	0.225	0.0	0.075	102.3
2021	0.225	0.0	0.075	16.9
2022	0.225	0.0	0.075	39.4
2023	0.225	0.0	0.075	113.7
2024	0.225	0.0	0.075	73.1
2025	0.225	0.0	0.075	11.6

WQT Agreement

As shown in the Appendix, a Water Quality Trade agreement was originally reached on September 27, 2019 with Lindsey Drought. A Water Quality Trade agreement was originally reached on December 17, 2024, with Julian Popp as shown in the Appendix. Mr. Popp's Fields HK1 and TP2 were initially considered as a part of the WQT plan in December 2024, however after reconsideration, the two fields will no longer be included in the program. Since the BMP registration in December 2024, Mr. Popp's field TP1 has been split into 5 fields (TP1 A, TP1 B, TP1 C, TP1 D, TP1 E) to better represent the agronomy of the field.

Lindsey Drought produces crops[1] (corn, soybeans, alfalfa) on Droughtville Farms in the northeast corner of the same HUC-12 as the District. Julian Popp produces crops (corn,

[1] Within the same HUC-12 as the District, Ms. Drought also grows alfalfa on fields called "Driveway" (prev. "Drought 01" and "Drought 06"), "Triangle" (prev. "Drought 02", and "Behind Pole Barns" (prev. "Drought 08"), and while these fields are in the NMP, they are not used to generate WQT credits. Ms. Drought also included the following fields within her NMP submitted in December 2020: "North 2", East 1", "3A", and "Industrial Park"', but these fields are outside of the HUC-12 and are not used to generate WQT credits.

soybeans, wheat) on field TP1 in the northeast corner of the same HUC-12 as the District. Ms. Drought and Mr. Popp were interested in planting annual small grain cover crops and implementing additional best management practices (BMPs) to support their crop production. Per the definition from SnapPlus:

> *All "cover crops" in SnapPlus are assumed to be unharvested, with all residue staying in the field. Since cover crops are not harvested, they do not have recommendations for added nutrients and the SnapPlus nutrient balance calculations assume they do not remove P_2O_5 or K_2O from the field.*

Per SnapPlus, a small grain cover crop is defined as:

> *An over-wintering cover crop such as winter rye that is planted within about a week after the main crop harvest and is killed with tillage or herbicides the next spring prior to planting.*

Cover crops will typically be aerial seeded in the Fall, except in Fall seasons determined to be too dry by the Operator. In those circumstances, the cover crops will be planted by a no-till drill and interseeded between the row crop residue. This is to ensure good germination, as aerial seeding under dry conditions would result in poor germination, and hence, poor soil cover. Per the guidance from SnapPlus:

> *Interseeded or aerial seeded cover crops are planted into the growing main crops without soil disturbance. These types of cover crops over-winter and are killed by tillage or herbicides the next spring prior to planting. There is no way to make a non-broadcast interseeded cover crop in RUSLE2, so for drilled inter-seeded cover crops, use the aerial seeded version.*

Based on preliminary SnapPlus modeling, phosphorus loadings to the watershed were initially estimated to be reduced by 102 pounds per year with the introduction of the BMPs on Ms. Drought's 114 acres. Following the submission of an updated Nutrient Management Plan in 2020, SnapPlus modeling initially determined that the implementation of these BMPs would lead to 210 pounds per year in reduced phosphorus loadings to the watershed. Updated SnapPlus modeling[2] in February 2023 for the field "NW Corner" resulted in an improvement in the total reduction to the watershed loading from 210 to 216 pounds per year. As shown in Table 2-3, updates to address the Department's letter from April 21, 2023 led to reductions totaling 200.8 lb P/year. As shown in Table 2-3, it was also determined that these same BMPs result in a reduction

[2] In the February 2023 update, the only modification to the reduction in phosphorus loading to the watershed was for the field "NW Corner". The number of acres was incorrect in the SnapPlus file used for the December 2021 "with BMP" submittal.

of sediment to the receiving water totaling 22.1 tons sediment/year. Additional details are available in the Appendix, including responses to the Department's letter from April 21, 2023.

The District registered these BMPs for a nonpoint-to-point source trade. The District provides a cost-share payment for Ms. Drought to implement these BMPs, as detailed in the updated WQT agreement from December 2021, and the District receives the WQT credits in exchange.

Ms. Drought first planted these BMPs in Fall 2019, and she plans to continue to maintain these BMPs throughout the next WPDES permit term. The BMPs will continue to be maintained in accordance with standards from the NRCS. The District or its representatives will continue to conduct site inspections and track the BMPs with photographs and annual reports on file. Ms. Drought is tasked with keeping SnapPlus and other agronomic records for field tracking. Monitoring is limited to inspections and tracking, with no stream sampling intended. The credits will continue to be available starting on January 1 of each year following establishment of Fall plantings.

Table 2-2: Droughtville Phosphorus WQT Credits, May 2026

Field Name	Previous Field Name(s)	Acres	No Cover Crop	w/ Cover Crops	Reduction	w/ Cover Crops	Applicable Trade Ratio	WQT Credits
			lb P/yr			Loss lb P/ac-yr		lb P/yr
Back Field[1]	Portions of Drought 05 and 07	17.1	37.2	14.8	22.4	0.9	1.4	16.0
East Treeline	Portions of Drought 05 and 07	13.1	45.3	21.4	23.9	1.6	2.4	9.9
Front Road[1]	Drought 09	2.9	8.0	2.6	5.4	0.9	1.4	3.9
Grandmas[2]	Grandmas	17.6	38.3	10.7	27.6	0.6	3.4	8.1
Junior	Portions of Drought 04	6.9	21.7	9.2	12.5	1.3	2.4	5.2
NW Corner[3]	Portions of Drought 03 and 04	9.0	24.1	10.0	14.1	1.1	2.4	5.9
North HUC12[4]	North Pasture	5.3	17.5	4.8	12.7	0.9	2.4	5.3
Oak Tree[1]	Oak Tree	17.6	62.2	21.6	40.6	1.2	1.4	29.0
West Barn[2]	West Barn	21.9	59.7	18.0	41.7	0.8	3.4	12.3
Total		**111.4**	**314.0**	**113.2**	**200.8**			**95.6**

Notes:

1. Per the Racine County Conservationist (see correspondence from July 2020), these fields would meet the "Whole Field Management" requirements following the implementation of cover crops, conservation tillage/no till, and an approved NMP. Per the WQT Guidance from WDNR, conservation tillage criteria included conformation to NRCS 345 and a Soil Intensity Rating (STIR) value of 35 or less, which was based on the SnapPlus guidance "Matching SnapPlus Tillages." Note that STIR values are approximately 18 for “Back Field”, “Front Road”, “Oak Tree”, “Grandmas”, and “West Barn”, and STIR values are approximately 38 for all other fields, except for “NW Corner”.
2. Per the Racine County Conservationist (see correspondence from July 2020), to meet "Whole Field Management" criteria, two fields would require grassed waterways, along with a water and sediment control basin for "Grandmas" and field access for "West Barn", in addition to the requirements for cover crops, conservation tillage/no till, and an approved NMP. Until grassed waterways are implemented, an increased uncertainty factor of 3 is appropriate, based on the documentation of gully formation and the corresponding classification as a "Moderate-certainty practice" per p. 88 of the WDNR's "Guidance for Implementing Water Quality Trading in WPDES Permits, June 1, 2020".
3. Note that the SnapPlus file for the field "NW Corner" was revised since the December 2021 submittal, and now is based on the same acreage for both before and after the BMP. Note that the STIR value for “NW Corner” is approximately 57.
4. Approximately 70% of the field "North" (7.6 acres) is within the same HUC-12 as the District, which is referred to herein as North HUC12. The field will continue to be modeled as a whole field called “North”, but loadings and acres that can generate WQT credits were consequently estimated as 70% of the values from the SnapPlus files.

Table 2-3: Droughtville Farm Sediment WQT Credits, May 2026

Field Name	Previous Field Name(s)	Acres	No Cover Crop	w/ Cover Crops	Reduction	w/ Cover Crops	Applicable Trade Ratio	WQT Credits
			Tons TS/yr			Loss TS/yr		Tons TS/yr
Back Field[1]	Portions of Drought 05 and 07	17.1	2.1	0.7	1.4	0.7	1.4	1.0
East Treeline	Portions of Drought 05 and 07	13.1	5.4	2.2	3.1	1.5	2.4	1.3
Front Road[1]	Drought 09	2.9	0.9	0.3	0.6	1.7	1.4	0.5
Grandmas[2]	Grandmas	17.6	2.1	0.6	1.6	0.8	3.4	0.5
Junior	Portions of Drought 04	6.9	2.7	1.0	1.7	2.1	2.4	0.7
NW Corner[3]	Portions of Drought 03 and 04	9.0	3.7	1.4	2.4	3.3	2.4	1.0
North HUC12[4]	North Pasture	5.3	2.6	0.6	2.0	1.0	2.4	0.8
Oak Tree[1]	Oak Tree	17.6	5.7	1.7	3.9	0.9	1.4	2.8
West Barn[2]	West Barn	21.9	7.3	1.9	5.4	2.1	3.4	1.6
Total		**111.4**	**32.5**	**10.4**	**22.1**			**10.2**

Notes:

1. Per the Racine County Conservationist (see correspondence from July 2020), these fields would meet the "Whole Field Management" requirements following the implementation of cover crops, conservation tillage/no till, and an approved NMP. Per the WQT Guidance from WDNR, conservation tillage criteria included conformation to NRCS 345 and a Soil Intensity Rating (STIR) value of 35 or less, which was based on the SnapPlus guidance "Matching SnapPlus Tillages." Note that STIR values are approximately 18 for “Back Field”, “Front Road”, “Oak Tree”, “Grandmas”, and “West Barn”, and STIR values are approximately 38 for all other fields, except for “NW Corner”.
2. Per the Racine County Conservationist (see correspondence from July 2020), to meet "Whole Field Management" criteria, two fields would require grassed waterways, along with a water and sediment control basin for "Grandmas" and field access for "West Barn", in addition to the requirements for cover crops, conservation tillage/no till, and an approved NMP. Until grassed waterways are implemented, an increased uncertainty factor of 3 is appropriate, based on the documentation of gully formation and the corresponding classification as a "Moderate-certainty practice" per p. 88 of the WDNR's "Guidance for Implementing Water Quality Trading in WPDES Permits, June 1, 2020".
3. Note that the SnapPlus file for the field "NW Corner" was revised since the December 2021 submittal, and now is based on the same acreage for both before and after the BMP. Note that the STIR value for “NW Corner” is approximately 57.
4. Approximately 70% of the field "North" (7.6 acres) is within the same HUC-12 as the District, which is referred to herein as North HUC12. The field will continue to be modeled as a whole field called “North”, but loadings and acres that can generate WQT credits were consequently estimated as 70% of the values from the SnapPlus files.

Preliminary SnapPlus modeling including all three of Julians fields, TP1, TP2, and HK1 initially resulted in reduced phosphorus loadings to the watershed by 274.4 pounds per year with the introduction of the BMPs on Mr. Popps 95 acres. Following the revision of the Water Quality Trading Plan, in August 2025 SnapPlus modeling determined that the implementation of these BMPs were lead to 271.6 pounds per year of phosphorus reductions to the watershed, as shown in Table 2-. As shown in Table 2-5, it was also determined that these same BMPs result in a reduction of sediment to the receiving water totaling 25.52 tons sediment/year. Additional details are available in the Appendix.

The District registered these BMPs for a nonpoint-to-point source trade. The District will provide a cost-share payment for Mr. Popp to implement these BMPs, as detailed in the updated WQT agreement drafted in August 2025, and the District receives the WQT credits in exchange.

Mr. Popp first planted these BMPs in Fall 2024, and he plans to maintain these BMPs through at least Spring 2030. The BMPs will continue to be maintained in accordance with standards from NRCS. The District or its representatives will continue to conduct site inspections and track the BMPs with photographs and annual reports on file. Mr. Popp utilizes a crop consultant who is tasked with keeping SnapPlus and other agronomic records for field tracking. Monitoring is limited to inspections and tracking, with no stream sampling intended. The credits will continue to be available starting on January 1 of each year following establishment of Fall plantings.

Table 2-4: Popp Farm Phosphorus WQT Credits, May 2026

Field Name	Previous Field Name	Acres	No Cover Crop	w/ Cover Crops	Reduction	w/ Cover Crops	Applicable Trade Ratio	WQT Credits
			lb P/yr			Loss lb P/ac-yr		lb P/yr
TP1 A[2]	TP1	15.9	11.0	9.8	1.2	0.6	3.4	0.4
TP1 B[2]		9.4	90.4	54.8	35.6	6.1	3.4	10.5
TP1 C[1]		20.4	111.6	73.4	38.2	3.7	1.4	27.3
TP1 D[1]		35.9	363.4	221.2	142.2	6.1	1.4	101.6
TP1 E[1]		14.1	137.2	82.8	54.4	5.9	1.4	38.9
Total		**95.7**	**713.6**	**442.0**	**271.6**			**178.5**

Notes:

1. Per the WQT Guidance, these fields would meet the "Whole Field Management" requirements following the implementation of cover crops, conservation tillage/no till, filter strips/buffer strips, grassed waterways, and an approved NMP. Per the WQT Guidance from WDNR, conservation tillage criteria included conformation to NRCS 345 and a Soil Intensity Ration (STIR) value of 35 or less (which was based on the SnapPlus guidance "Matching SnapPlus Tillages"). Note that the STIR value is 0 for fields TP1 C, TP1 D, and TP1 E.
2. To meet "Whole Field Management" criteria, these fields would require grassed waterways in the addition to the requirements for cover crops, conservation tillage/no till, and an approved NMP. Until grassed waterways are implemented, an increased uncertainty factory of 3 is appropriate.

Table 2-5: Popp Farm Sediment WQT Credits, May 2026

Field Name	Previous Field Name	Acres	No Cover Crop	w/ Cover Crops	Reduction	w/ Cover Crops	Applicable Trade Ratio	WQT Credits
			Tons TS/yr			Loss (Tons TS/ac-yr)		Tons TS/yr
TP1 A[2]	TP1	15.9	0.1	0.1	0.02	0.01	3.4	0.0
TP1 B[2]		9.4	8.6	4.9	3.6	0.53	3.4	1.1
TP1 C[1]		20.4	4.9	3.0	1.9	0.15	1.4	1.4
TP1 D[1]		35.9	35.3	20.7	14.6	0.58	1.4	10.4
TP1 E[1]		14.1	12.8	7.4	5.4	0.53	1.4	3.9
Total		**95.7**	**61.7**	**36.2**	**25.5**			**16.7**

Notes:

1. Per the WQT Guidance, these fields would meet the "Whole Field Management" requirements following the implementation of cover crops, conservation tillage/no till, filter strips/buffer strips, grassed waterways, and an approved NMP. Per the WQT Guidance from WDNR, conservation tillage criteria included conformation to NRCS 345 and a Soil Intensity Ration (STIR) value of 35 or less (which was based on the SnapPlus guidance "Matching SnapPlus Tillages"). Note that the STIR value is 0 for fields TP1 C, TP1 D, and TP1 E.
2. To meet "Whole Field Management" criteria, these fields would require grassed waterways in the addition to the requirements for cover crops, conservation tillage/no till, and an approved NMP. Until grassed waterways are implemented, an increased uncertainty factory of 3 is appropriate.

Trade Ratio

As part of its conditional approval of Ms. Drought's WQT Plan in February 2020, the Wisconsin Department of Natural Resources (WDNR) requested a Nutrient Management Plan (NMP), including SnapPlus information through Crop Year 2024. Following the NMP submission in December 2020, the WDNR also requested updated SnapPlus files for baseline and proposed BMP conditions which would also clarify field names. Table 2 provides a summary to clarify how these same acres were divided into nine separate fields previously in 2019 and ten separate fields starting in Fall 2020. In this submittal, the fields called "Flowers" and a low spot in the northwest corner of "West Barn" were removed from the WQT Agreement.

Three of these Droughtville fields would meet the "Whole Field Management" requirements, based on the implementation of cover crops, conservation tillage/no till, and an approved NMP. These fields are eligible for the trade ratio of 1.4.

Other Droughtville fields almost meet the criteria for "Whole Field Management", with the exception of conservation tillage (STIR values exceeding 35).

To meet "Whole Field Management" requirements, two Droughtville fields ("Grandmas" and "West Barn") would both require grassed waterways, along with a water and sediment control basin for "Grandmas" and field access for "West Barn", per correspondence with the Racine County Conservationist (see Appendix). The applicable trade ratios were changed for "Grandmas" and "West Barn" due to gully formation. Additional details are described in Table 2-1.

Therefore, three of the Droughtville fields were eligible for the more favorable trade ratio of 1.4, four fields were eligible for the trade ratio of 2.4, and two fields were eligible for the less favorable trade ratio of 3.4. Based on these applicable downstream trade ratios, the District will be able to apply 95.6 pounds of phosphorus WQT credits per year and 10.2 tons per year of TSS WQT credits per year towards demonstrating compliance. These WQT credits can be applied during any month because this is a nonpoint-to-point source trade.

In the December 2024 WQT Popp Farm agreement, three fields (TP1, TP2, HK1) were registered for the program. After reconsideration, only field TP1 will remain in the program. Field TP1 was divided into five separate fields to more accurately represent the agronomy of the field. Table 4 provides a summary to clarify how the acres were divided into five fields (TP1 A, TP1 B, TP1 C, TP1 D, TP1 E).

Three of these Popp Farm fields (TP1 C, TP1 D, TP1 E) meet the "Whole Field Management" requirements, based on the implementation of cover crops, conservation tillage/no till, grassed waterways, and an approved NMP. These fields are eligible for the trade ratio of 1.4.

The other Popp farm fields (TP1 A and TP1 B) would require grassed waterways in the addition to the implementation of cover crops, conservation tillage/ no till, and an approved NMP to meet "Whole Field Management" requirements.

Therefore, three of the five Popp farm fields were eligible for the more favorable trade ratio of 1.4 and two fields were eligible for the less favorable trade ratio of 3.4. Based on these applicable downstream trade ratios, the District will be able to apply 178.5 pounds of phosphorus WQT credits per year and 16.7 tons per year of TSS WQT credits per year towards demonstrating compliance. These WQT credits can be applied during any month because this is a nonpoint-to-point source trade.

WQT Plan Contingency Procedure

Through the development of this WQT Plan, the WDNR has consistently provided verbal (but not written) assurance that if a permittee followed their WQT Plan but did not generate the estimated credits, then the WDNR would not issue a Notice of Violation (NOV) but would require the permittee to update their Plan to secure additional reductions.

As part of this Plan, the District and the WDNR shall commit to the following contingency procedure in case insufficient credits would be generated:

- The District shall notify the WDNR within 7 days of becoming aware of an anticipated change in credits forecast by the WQT Plan.
- If this notification would occur between January 1 and June 30 (e.g. 2026), then the District would commit to securing sufficient credits to be generated by the start of the following calendar year (e.g. 2027).
- If this notification would occur between July 1 and September 30 (e.g. 2026), then the District would *attempt* to secure sufficient credits to be generated by the start of the following calendar year (e.g. 2027). The District would *not* commit to securing sufficient credits to be generated by the start of the following calendar year (e.g. 2027).
- If this notification would occur between October 1 and December 31 (e.g. 2026), then the District would *not be able* to secure sufficient credits to be generated by the start of the following calendar year (e.g. 2027), but would instead commit to secure enough credits within the following calendar year (e.g. 2027) to be applied more than a year later (e.g. 2028). If the district concludes at any time between July 1 and December 31 that it will *not be able* to secure sufficient credits prior to the start of the following calendar year (e.g., 2027), then the District would commit to provide a brief written summary to the WDNR prior to the year's end (e.g. December 31, 2026) of the District's unsuccessful efforts to secure sufficient credits.

- Consequently, the District does not expect that the WDNR will issue a notice of violation (NOV) nor a notice of non-compliance (NON) to the District regarding phosphorus or TSS compliance as long as:
    - The District operates and maintains its chemical phosphorus removal system as designed.
    - The District executes agreements to fund best management practices (BMPs) that will secure sufficient credits, based on achievable phosphorus concentrations, and
    - The District follows the contingency procedure above if insufficient credits will be generated.

NEXT STEPS AND CONCLUSIONS

In the future, Ms. Drought and Mr. Popp have indicated that they will consider implementing additional BMPs such as conservation tillage and grassed waterways. If these or similar BMPs are pursued, the practices will be registered in the year they are first adopted, and WQT agreements will be revised or developed prior to the District's need to apply any new credits.

In the submitted Final CAP, it was estimated that the District would need to apply approximately 36 pounds of phosphorus to its permit per year under current conditions, and 58 pounds of phosphorus per year under design year conditions. This was based on an average effluent phosphorus concentration and limit of 0.087 and 0.075 mg/L, respectively. The average of 0.087 mg/L was rounded to the same number of significant figures as the limit of 0.075 mg/L. Since the Final CAP, the District has confronted several issues with chemical phosphorus removal. The 95.6 pounds per year gained through the Droughtville Farm WQT agreement would have been expected to be more than sufficient to enable the District to meet its phosphorus limits based on the data before 2019.

With an updated total of 274.1 pounds of phosphorus credits available through both the Drought and Popp trades/agreements, it is anticipated that the Town of Norway SD is well positioned for compliance with their WPDES permit phosphorus limits for the upcoming permit term. Moreover, elevated TSS concentrations (up to approximately 14 mg/L in 2023) and loadings have been observed at the WWTP. The Fox IL TMDL is in development, and it is unknown how restrictive TSS limits may be in the near future. Therefore, the District seeks to maximize the number of WQT credits for both phosphorus and TSS, and the District remains committed to searching for additional opportunities for phosphorus and TSS reduction, both within the wastewater treatment plant (WWTP) and via new BMPs within the watershed.

Appendix A: Drought Farm Discussion

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
1027 W. St. Paul Avenue
Milwaukee, WI 53233

Tony Evers, Governor
Adam N. Payne, Secretary
Telephone (414) 263-8500
Toll Free 1-888-936-7463
TTY Access via relay - 711

April 21, 2023

Leo Kucek
Applied Technologies, Inc.
13400 Bishop's Lane, Suite 270
Brookfield, WI 53005

Subject: Town of Norway Sanitary District #1
WPDES Permit No. WI-0031470-08-1
Annual Water Quality Trading Report & WQT Plan – **FOLLOW-UP REQUESTED**

Dear Mr. Kucek:

The Department of Natural Resources (Department) has completed its review of the Town of Norway Sanitary District #1 (District) 2022 Annual Water Quality Trading Report and updated Water Quality Trading Plan, submitted by Applied Technologies, Inc. on February 28, 2023. The annual water quality trading report is a requirement under permit section 5.3 – Annual Water Quality Trading (WQT) Report.

The current permit includes final total phosphorus WQBELs of 0.225 mg/L, expressed as a monthly average, 0.075 mg/L expressed as a 6-month average & 1.0 lbs/day expressed as a 6-month average. These limits became effective January 1, 2022.

Compliance with the 6-month average limits was evaluated at the end of April 30th and October 31st prior to the January 1, 2023 permit modification. In 2022, 32.8 lbs of available pollutant credits (Permit Section 3.2.1.7, Table 1) were used.

Based on the review of the submitted February 2023 Water Quality Trading Plan, the Department has additional comments. Please provide a written response to the items below by **May 31, 2023**:

1. The February 2023 WQT Plan supporting documentation does not include copies of PTP reports for both baseline and future practices. The Department ran PTP reports from each database and found similar average P reductions as shown in Table 1. See figure #1 & figure #2 below.

2. Future SNAP database, Fields Tab, submitted for Department review, did not have the same 'active' fields checked as baseline SNAP database. Correct the future database to match up with the baseline database.

3. The PTP report results and Table 1 values currently are not accurate and need correction because of errors, noted below, for specific fields. Please make corrections to the fields noted below in SNAP databases and then re-run and submit PTP reports from each SNAP database for department review and verification.

4. Field size (total acres) within baseline and future SNAP databases are incorrect. Some fields have larger total field size than shown on soil maps and/or do reflect non-farmed/cropped areas: caused by gully erosion, wet depressions, or existing grassed areas/waterways in field. Correct SNAP databases to reflect reduced field size. Please note that reducing field size will reduce the amount of P reduction because there is less field area to generate P reduction (from cover crops and conservation tillage). This change may result in less credits than point source needs to offset discharges.

   Fields with incorrect size: West Barn, Grandmas, Oak Tree, Drought 7 – see figure #3 & figure #4 below for non-farmed/cropped areas within the field boundary.

5. Using 2020 & 2022 aerial photos, gully erosion is visible on following fields: Grandmas, West Barn. These fields cannot be used for Water Quality Trading or credit generation until one of the following options are completed:

   a. Gullies are fully stabilized in perennial vegetation/grassed waterway*
      *this is requirement of the NRCS 590 NM standard. Table 1 confirms Racine County also found Grandmas & West Barn had gully erosion and need to establish perennial vegetation/grassed waterways on Grandmas & West Barn fields to meet whole field management. They also noted need for WASCOB. SNAP P Trade report P loss results assume no gully erosion within that field area. April-Early May and/or prior to planting are ideal times of year to inspect fields for ongoing/annual gully erosion and to ID specific areas for establishing perennial vegetation/grassed waterways. After gullies are documented as stabilized in perennial vegetation, the field can be used within WQ Trade

   b. Field is removed from SNAP database.

   c. Separate field into two sections; and only the field section without gully erosion can be used for Water Quality Trading.

6. 590 checklist for the proposed WQT fields is out of date. Checklist is from 2020 for 2021 growing season. Please submit 2022 and, if available, 2023 checklist. Confirming fields meet NRCS 590 is critical for DNR to assign/approve correct trade ratio to proposed practices.

7. Provide a narrative on the fate & transport of sediments from gully erosion. Specifically, explain whether these sediments in concentrated flow areas are delivered to surface waters.

8. See the attached document for additional recommendations based on the Department's review of the SnapPlus files regarding yield goals and edge of field grass filter strip practice.

WQ1: P Trade Report Baseline

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov/** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP		
Field Name	Soil Series	Soil Symbol	Acres	2022	2023	2024
Back Field	VARNA	VaB	16	13	10	12
East Treeline	OZAUKEE	OzaB	12	34	109	33
Flowers	OZAUKEE	OzaB	4	2	3	2
Front Road	OZAUKEE	OzaB	3	5	3	5
Grandmas	VARNA	VaB	18	77	41	71
Junior	OZAUKEE	OzaB	6	6	14	7
North	OZAUKEE	OzaB	7	12	5	10
NW corner	OZAUKEE	OzaB	9	17	56	16
Oak Tree	OZAUKEE	OzaB	17	19	14	17
West Barn	VARNA	VaB	24	143	54	132
Total			**115**	**327**	**310**	**306**

Figure 1: Baseline PTP report.

WQ1: P Trade Report Future

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov/** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP		
Field Name	Soil Series	Soil Symbol	Acres	2022	2023	2024
Back Field	VARNA	VaB	16	7	8	6
East Treeline	OZAUKEE	OzaB	12	16	51	19
Flowers	OZAUKEE	OzaB	4	2	1	1
Front Road	OZAUKEE	OzaB	3	1	1	1
Grandmas	VARNA	VaB	18	14	13	13
Junior	OZAUKEE	OzaB	6	3	6	3
North	OZAUKEE	OzaB	7	2	2	2
NW corner	BEECHER	BcA	9	6	15	7
Oak Tree	OZAUKEE	OzaB	17	9	10	8
West Barn	VARNA	VaB	24	21	17	22
Total			**115**	**79**	**124**	**80**

1 of 1

Figure 2: Future PTP report.

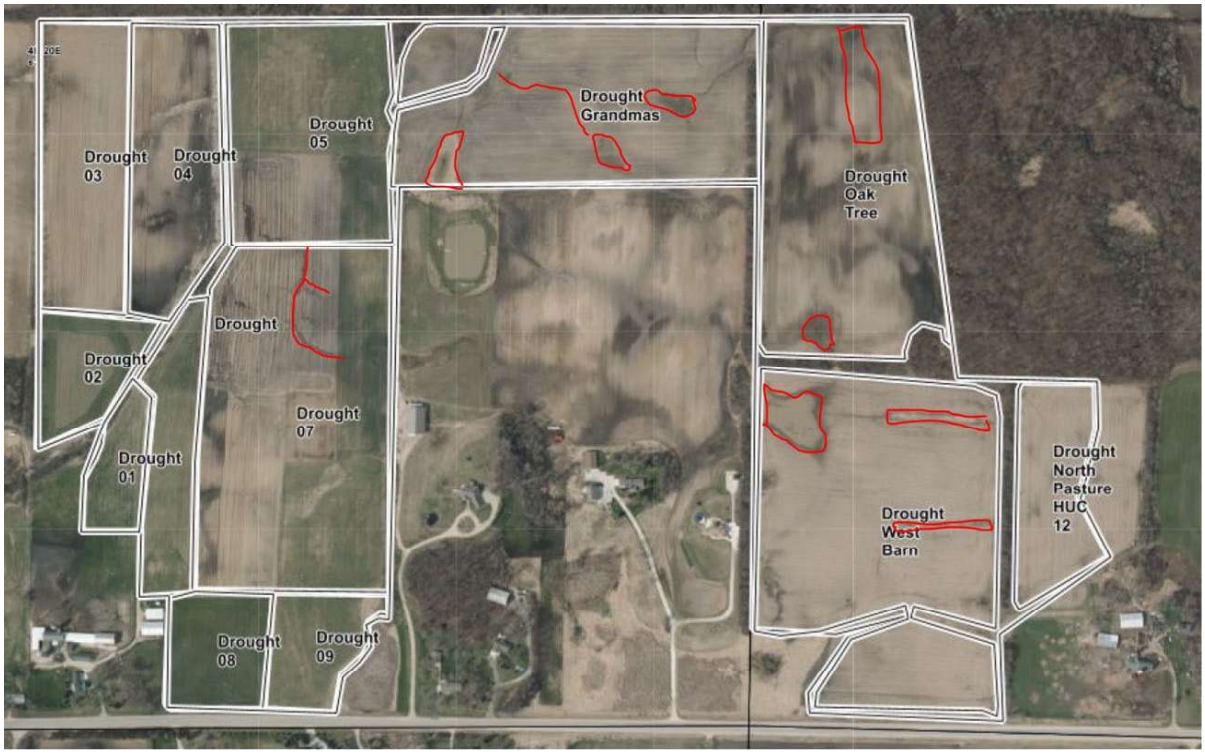


Figure 3: 2015 Spring Aerial available on the Racine County ArcGIS web portal.

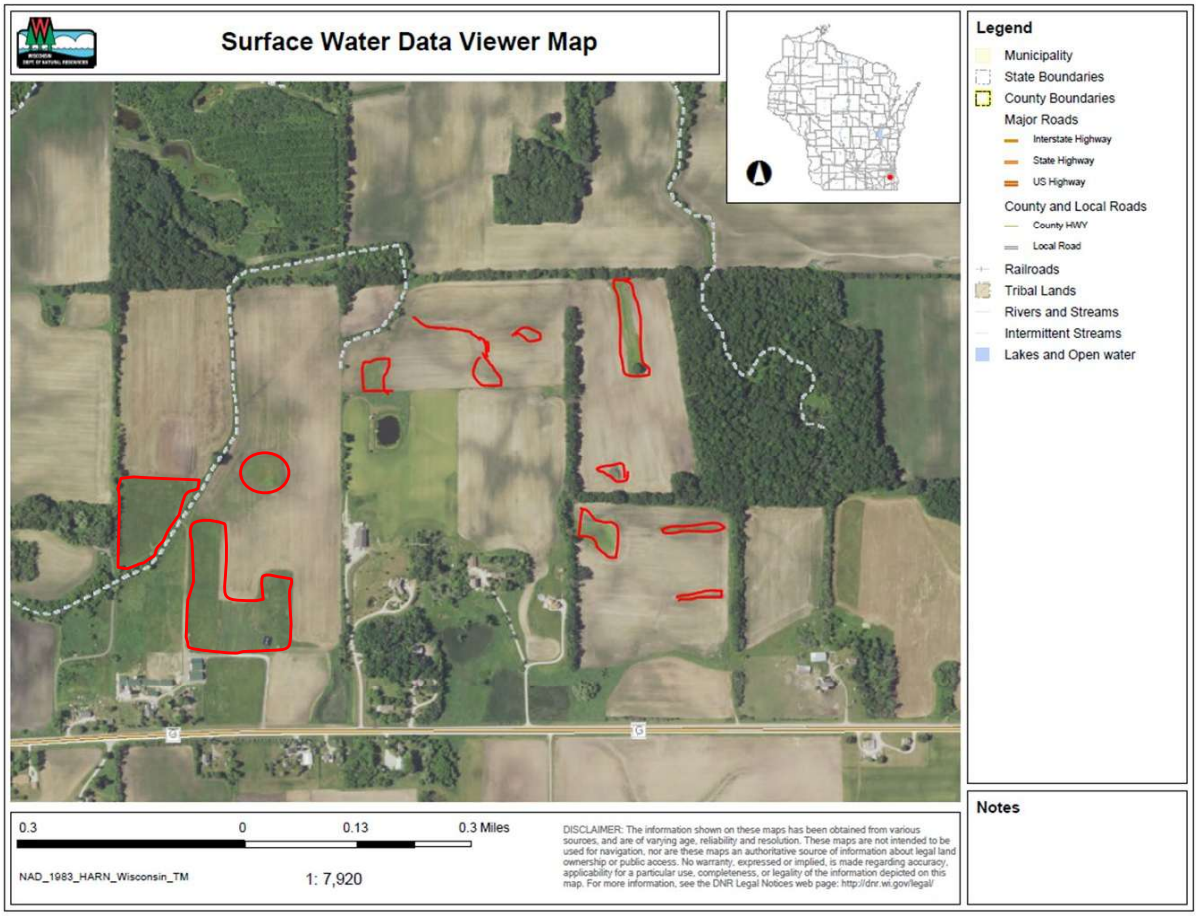


Figure 4: 2022 – Leaf On aerial available on Surface Water Data Viewer.

Table 1

Table 1: Phosphorus Water Quality Trading Credits, February 2023
Town of Norway Sanitary District No. 1

Field Name	Previous Field Name(s)	Acres	No Cover Crop lb P/yr	With Cover Crops lb P/yr	Reduction lb P/yr	Post-Cover Crop PI	Applicable Trade Ratio	WQT Credits lb P/yr
Back Field[1]	Portions of Drought 05 and 07	16	12	7	5	0.4	1.4	3
East Treeline	Portions of Drought 05 and 07	12	59	29	30	2.4	2.4	13
Flowers	Portions of Drought 07	4	2	1	1	0.3	2.4	0
Front Road[1]	Drought 09	3	4	1	3	0.3	1.4	2
2 Grandmas[2]	Grandmas	18	63	13	50	0.7	3.4	15
Junior	Portions of Drought 04	6	9	4	5	0.7	2.4	2
NW Corner[3]	Portions of Drought 03 and 04	9	30	9	20	1.0	2.4	8
North[4]	North Pasture	5	6	1	5	0.3	2.4	2
Oak Tree[1]	Oak Tree	17	17	9	8	0.5	1.4	5
2 West Barn[2]	West Barn	24	110	20	90	0.8	3.4	26
Total		**114**	**311**	**95**	**216**			**78**

Notes:
1. Per the Racine County Conservationist (see correspondence from July 2020), these fields would meet the "Whole Field Management" requirements following the implementation of cover crops, conservation tillage/no till, and an approved NMP. Per the WQT Guidance from WDNR, conservation tillage criteria included conformation to NRCS 345 and a Soil Intensity Rating (STIR) value of 35 or less, which was based on the SnapPlus guidance "Matching SnapPlus Tillages." Note that STIR values are approximately 18 for "Back Field", "Front Road", "Oak Tree", "Grandmas", and "West Barn", and STIR values are approximately 38 for all other fields, except for "NW Corner".
2. Per the Racine County Conservationist (see correspondence from July 2020), to meet "Whole Field Management" criteria, two fields would require grassed waterways, along with a water and sediment control basin for "Grandmas" and field access for "West Barn", in addition to the requirements for cover crops, conservation tillage/no till, and an approved NMP. Until grassed waterways are implemented, an increased uncertainty factor of 3 is appropriate, based on the documentation of gully formation and the corresponding classification as a "Moderate-certainty practice" per p. 88 of the WDNR's "Guidance for Implementing Water Quality Trading in WPDES Permits, June 1, 2020".
3. Note that the SnapPlus file for the field "NW Corner" was revised since the December 2021 submittal, and now is based on the same acreage for both before and after the BMP. Note that the STIR value for "NW Corner" is approximately 57.
4. Approximately 70% of the field "North" is within the same HUC-12 as the District.

If you have any questions or concerns, please email me at jacob.wedesky@wisconsin.gov or call me at (414) 239-1480. I appreciate your cooperation in protecting our natural resources.

Sincerely,

Jacob Wedesky
Wastewater Engineer
WDNR – Southeast Region

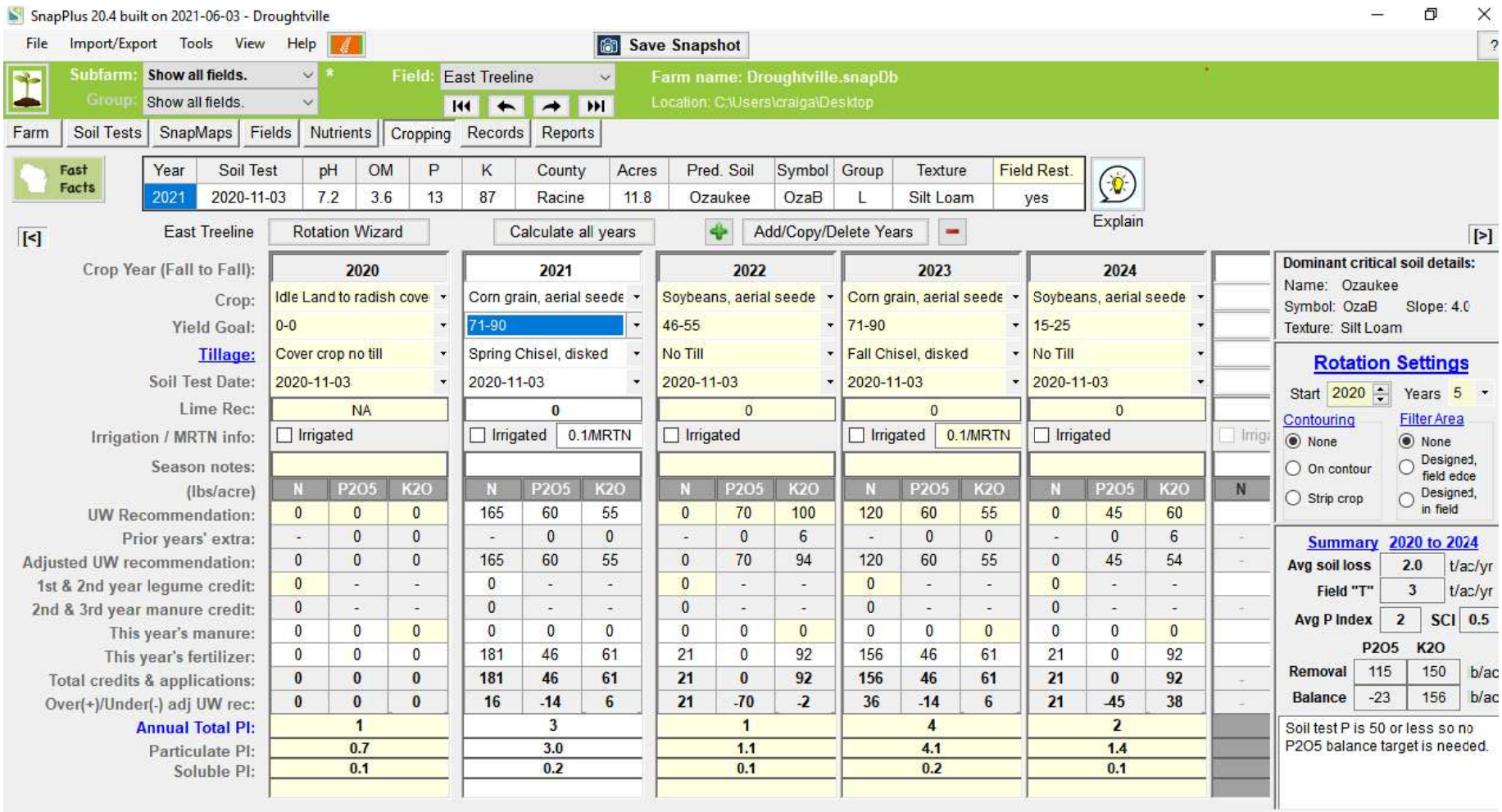
CC (email):

Bryan Hartsook – WDNR Wastewater Field Supervisor
Nick Lent – WDNR Southeast Region Phosphorus Coordinator
Matt Claucherty - WDNR Phosphorus Implementation Coordinator
Andrew Craig – WDNR Nonpoint Source Watershed Planning Coordinator
Ivan Zaremba – Town of Norway Sanitary District 1 WWTF

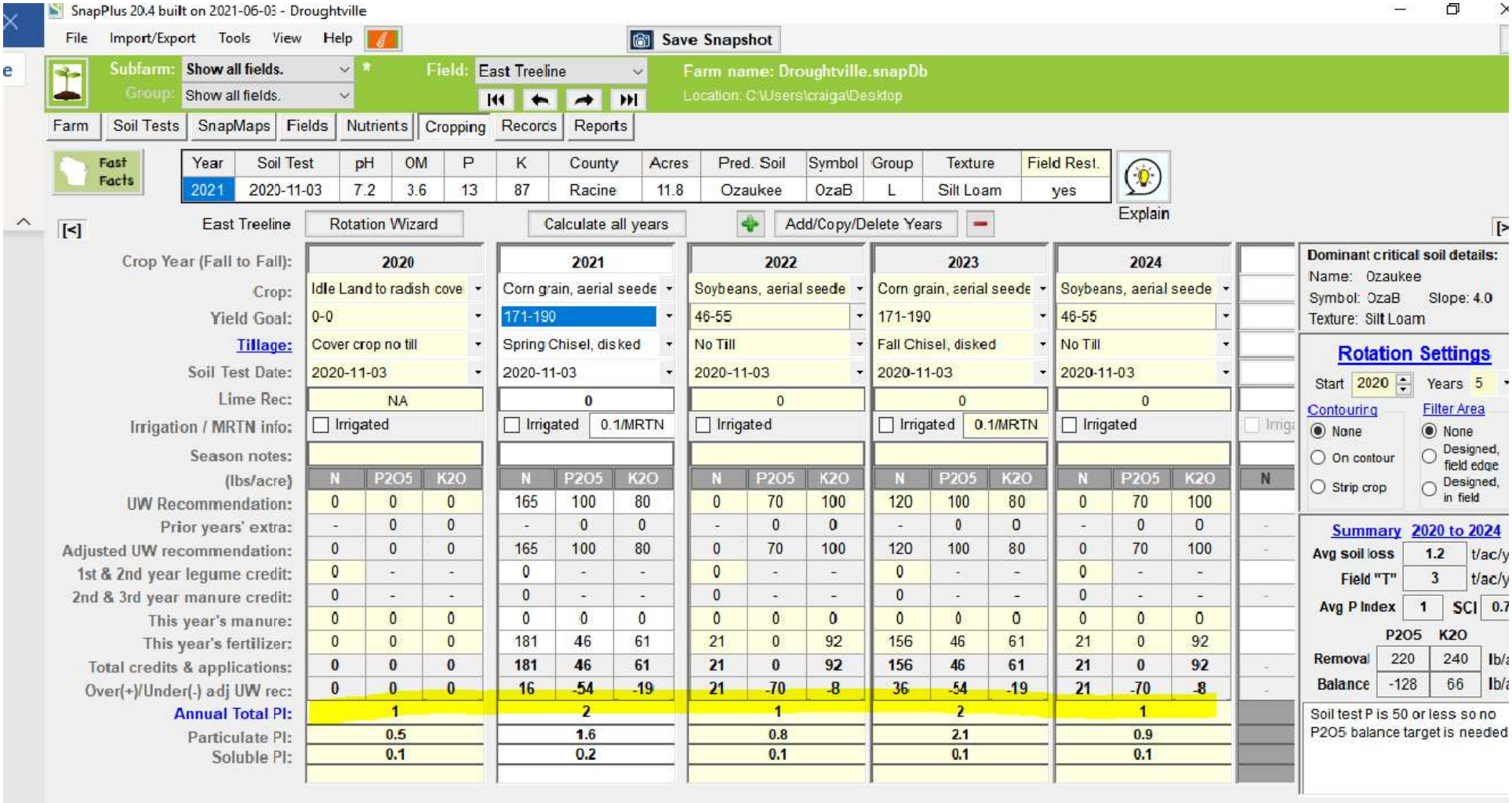
Droughtville SNAP - Baseline to Future Comparison - Yield Goals and P Loss Results; Edge of Field Grass Filter Strip Practice
Completed by Andrew Craig – DNR - 03-22-2023

Yield Goals

Baseline SNAP database has following yield goals for all WQT fields: 171-190 Corn Grain, 46-55 Soybean
Future SNAP database has different yield goals (71-90 Corn Grain, 15-25 Soybean) for East Treeline, Junior and NW corner field
Yield goals should match in both SNAP databases, for all years.
When DNR reset yield goals on East Treeline, Junior and NW corner field, there is more P reduction. See East Treeline example below.
DNR found same/similar results for Junior and NW corner fields.
Recommend revising Future SNAP data base on these 3 fields so they match up with Baseline SNAP database yield goals.



Future database and yield goals - did not match with Baseline database



DNR reset (increased) yield goals to match Baseline SNAP database = more P reduction on field. Same/similar result found on other fields.

Edge of Field Grass Filter Strip Practice

The following fields in Baseline and Future databases have an Edge of Field Grass Filter Strip: Back Field, Flowers, Front Road, Junior, North, Oak Tree. After review of 2022 aerial photos, DNR can only verify the North field has an established grass filter strip. Please verify, using a map, the location and dimensions of a edge of field grass filter strip on each field and also provide photos of each field edge grass filter strip. Verifying which fields have an established edge of field grass filter strip is critical for WQ Trading. If a field does not have an established edge of field strip, it raises the amount of P loss from the field. This may raise the amount of P reduction and credits available for the WQ Trade. Moreover, If the farmer is willing to install edge of field grass filter strip on fields that do not have one, *this additional practice could help further reduce field P loss and result in additional credits.*

From:	Leo Kucek
To:	Wedesky, Jacob A - DNR
Cc:	Ivan Zaremba (tnsd1@tds.net); Lent, Nicholas M - DNR; Craig, Andrew D - DNR; Claucherty, Matthew L - DNR; Louis B. Chapin
Subject:	RE: Follow-Up: DNR/Norway Phosphorus Discussion
Date:	Tuesday, January 2, 2024 12:24:00 PM

Good morning Jacob,

I just spoke with Nick Lent, and it sounds like you're on vacation through January 17 – hoping you have a fantastic start to the year!

Next, as I discussed with Nick, the updated WQT Agreement was signed and notarized on December 27. The updated WQT Agreement is based on the new SnapMaps and updated SnapPlus files from the WQT Credit Generator.

Some unexpected results from the SnapPlus files appear to be leading to significantly reduced number of WQT credits, apparently due to lower PTP in the baseline conditions, even for fields of the same size with relatively unchanged boundaries.

Due to the need to determine the source of these discrepancies, **I am requesting an extension to January 19, 2024** for the submittal date for the Revised WQT Plan and responses to Department comments/questions.

We are grateful for the Department's input so far, and we have made considerable progress in addressing the major concerns identified in the April 2023 letter. We look forward to providing a Revised WQT Plan upon your return from vacation.

Happy New Year,

Leo A. Kucek
Applied Technologies, Inc.
13400 Bishops Lane, Suite 270
Brookfield, WI 53005
Office (262) 784-7690
Direct (262) 785-7391
www.ati-ae.com

From: Wedesky, Jacob A - DNR <jacob.wedesky@wisconsin.gov>
Sent: Tuesday, November 28, 2023 11:49 AM
To: Leo Kucek <lakucek@ati-ae.com>
Cc: Ivan Zaremba (tnsd1@tds.net) <tnsd1@tds.net>; Lent, Nicholas M - DNR <Nicholas.Lent@wisconsin.gov>; Craig, Andrew D - DNR <Andrew.Craig@wisconsin.gov>; Claucherty, Matthew L - DNR <Matthew.Claucherty@wisconsin.gov>; Louis B. Chapin <lbchapin@ati-ae.com>
Subject: RE: Follow-Up: DNR/Norway Phosphorus Discussion

Hi Leo,

Thank you for reaching out to WDNR on behalf of the Town of Norway Sanitary 1 WWTF regarding Water Quality Trading.

DNR has reviewed your request below and is approving an extension to December 31, 2023 for the submittal date for the Revised WQT Plan and responses to Department comments/questions.

If you have any questions, please feel free to reach out.

Happy Tuesday,

We are committed to service excellence.
Visit our survey at https://link.edgepilot.com/s/feca8a78/_jaSVSjWpUK6875CPOZlMw?u=http://dnr.wi.gov/customersurvey to evaluate how I did.

Jacob Wedesky (he/him/his)
Phone: (414) 239-1480
Jacob.Wedesky@wisconsin.gov

From: Leo Kucek <lakucek@ati-ae.com>
Sent: Monday, November 27, 2023 11:19 AM
To: Wedesky, Jacob A - DNR <jacob.wedesky@wisconsin.gov>
Cc: Ivan Zaremba (tnsd1@tds.net) <tnsd1@tds.net>; Lent, Nicholas M - DNR <Nicholas.Lent@wisconsin.gov>; Craig, Andrew D - DNR <Andrew.Craig@wisconsin.gov>; Claucherty, Matthew L - DNR <Matthew.Claucherty@wisconsin.gov>; Louis B. Chapin <lbchapin@ati-ae.com>
Subject: RE: Follow-Up: DNR/Norway Phosphorus Discussion

CAUTION: This email originated from outside the organization.
Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning Jacob,

First of all, I hope you are well. It sounds like the past few weeks may have been difficult, and I wish you the best during what may be some challenging times.

Next, I spoke with Nick this morning regarding the Revised WQT Plan. As we discussed with Andrew and Nick on November 10, we are proceeding with the updated SnapMaps. Lindsey Drought, the WQT credit generator, reviewed the maps and is willing to use these more “refined” SnapMaps going forward. However, Lindsey has not yet sent me the updated SnapPlus files based on these new SnapMaps, and I think we are running out of time to meet the November 30, 2023 due date.

Due to the need to provide an updated, notarized WQT Agreement, **I am requesting an extension to December 31, 2023** for the submittal date for the Revised WQT Plan and responses to

Department comments/questions.

We are grateful for the Department's input so far, and we have made considerable progress in addressing the major concerns identified in the April 2023 letter. With another month, we are confident that the Revised WQT Plan will be a document that all parties can accept and use to proceed forward.

Thank you,

Leo A. Kucek
Applied Technologies, Inc.
13400 Bishops Lane, Suite 270
Brookfield, WI 53005
Office (262) 784-7690
Direct (262) 785-7391
https://link.edgepilot.com/s/df2eb689/mZ-VN_i1I0it61G6eHLibg?u=http://www.ati-ae.com/

From: Wedesky, Jacob A - DNR <jacob.wedesky@wisconsin.gov>
Sent: Tuesday, October 10, 2023 9:12 AM
To: Leo Kucek <lakucek@ati-ae.com>
Cc: Ivan Zaremba (tnsd1@tds.net) <tnsd1@tds.net>; Lent, Nicholas M - DNR <Nicholas.Lent@wisconsin.gov>
Subject: RE: Follow-Up: DNR/Norway Phosphorus Discussion

Good morning Leo,

Thank you for providing an update regarding the Town of Norway Sanitary District & the scope of work proposed for their Water Quality Trading projects.

The morning of Tuesday, October 24th will work for our DNR staff anytime between 8:30AM – 12PM. I know WWOA has some social events planned for this Tuesday, but let us know if yourself & Ivan would be able to meet during this time. If we need to look at other dates, October 23rd, 30th & 31st could work as well.

If you have any questions, please don't hesitate to reach out.

Best,

We are committed to service excellence.
Visit our survey at https://link.edgepilot.com/s/14f1b120/TCc6sUPOQEWHl3zrTjcHMg?u=http://dnr.wi.gov/customersurvey to evaluate how I did.

Jacob Wedesky (he/him/his)
Phone: (414) 239-1480
Jacob.Wedesky@wisconsin.gov

From: Leo Kucek <lakucek@ati-ae.com>
Sent: Friday, September 29, 2023 1:57 PM
To: Wedesky, Jacob A - DNR <jacob.wedesky@wisconsin.gov>
Cc: Ivan Zaremba (tnsd1@tds.net) <tnsd1@tds.net>; Hartsook, Bryan D - DNR <Bryan.Hartsook@wisconsin.gov>; Claucherty, Matthew L - DNR <Matthew.Claucherty@wisconsin.gov>; Lent, Nicholas M - DNR <Nicholas.Lent@wisconsin.gov>
Subject: RE: Follow-Up: DNR/Norway Phosphorus Discussion

CAUTION: This email originated from outside the organization.
Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon Jacob,

On behalf of the District, I am responding to provide an update by the DNR's requested date of September 30, 2023. The District authorized me to address the items listed in the attached Scope of Work.

I would be happy to schedule a meeting with the DNR in October. How about the morning of Tuesday, October 24? If this works for you, I will check with Ivan to see if he would be available to meet as well. Perhaps we could follow-up at WWOA the following day or two if you will also be attending at the Kalahari.

Have a great weekend,

Leo A. Kucek
Applied Technologies, Inc.
13400 Bishops Lane, Suite 270
Brookfield, WI 53005
Office (262) 784-7690
Direct (262) 785-7391
https://link.edgepilot.com/s/c4d5cece/NYijdw1BgkSztFHhYQCv4w?u=http://www.ati-ae.com/

From: Wedesky, Jacob A - DNR <jacob.wedesky@wisconsin.gov>
Sent: Tuesday, August 22, 2023 10:30 AM
To: Leo Kucek <lakucek@ati-ae.com>; Ivan Zaremba (tnsd1@tds.net) <tnsd1@tds.net>
Cc: Hartsook, Bryan D - DNR <Bryan.Hartsook@wisconsin.gov>; Claucherty, Matthew L - DNR <Matthew.Claucherty@wisconsin.gov>; Lent, Nicholas M - DNR <Nicholas.Lent@wisconsin.gov>
Subject: RE: Follow-Up: DNR/Norway Phosphorus Discussion

Good morning,

I'm reaching out today to provide correspondence & guidance in regards to the next steps for the Town of Norway Sanitary District and their department-approved water quality trading plan.

The Department is approving the request to extend the permittee's response to our 04/21/2023 letter until November, 30 2023. This submittal should include a revised WQT plan. It is anticipated that this plan may also include additional practices/BMPs to correct the H1 2023 noncompliance.

Items 1,2,3,4,6 and 8 from the 04/21/2023 response letter will need to be addressed by the submittal. DNR would also like to reiterate the need to subtract field area not under agricultural production/do not reflect modeled practices in SNAP to correct the inaccurate/overestimated credit amounts available.

The department is approving a 3:1 trade ratio (Grandmas/West Barn) until the end of calendar year 2024 for the gully fields under the condition that perennial vegetation/grassed waterway is established on all field gully erosion areas by Fall 2024. Ideally, planting/establishment of grassed waterway in gully areas should happen by fall of this year or spring 2024. Failure to meet & maintain this condition in future years will result in the field(s) not being eligible for WQT/credit generation. Individual years, not a rotational average, should be used when calculating credits meeting this criteria.

Furthermore, it is the department's intent to update appendix H of the current WQT guidance document to directly address fields with gully erosion and reflect page 82 of our current WQT guidance. In general, our position is that modeling (how the permittee calculates TP loss), is based on a field not having gullies. If fields do have gullies, snap plus models are not accurate whatsoever. SnapPlus assumes no gullies and water that exits fields have grassed waterways installed and a certain amount of TP is reduced via the grassed waterway.

From p. 82 of the current WQT guidance, "A critical assumption of SnapPlus phosphorus loss calculations is that farm fields do not have ongoing gullies or concentrated flow channel erosion. If fields have gullies or concentrated flow erosional features, the P Trade report phosphorus loss calculation is underestimated and, accordingly, DNR may not accept P Trade reports that contain these fields.".

Finally, DNR is requesting an update from the permittee by September 30, 2023 via email or draft WQT plan submittal, if available. In addition, DNR would like to propose another discussion to ensure DNR & the district are on the same page, particularly regarding the redrawing/resizing of the fields based on actual cropped areas. Please let us know if you would like me to coordinate a follow-up meeting sometime this September or October.

Best,

We are committed to service excellence.
Visit our survey at https://link.edgepilot.com/s/6eed2c67/oImkYq-a6k_ZvYHYhrck0Q?u=http://dnr.wi.gov/customersurvey to evaluate how I did.

Jacob Wedesky
Phone: (414) 239-1480
Jacob.Wedesky@wisconsin.gov

From: Leo Kucek <lakucek@ati-ae.com>
Sent: Friday, April 28, 2023 3:18 PM
To: Wedesky, Jacob A - DNR <jacob.wedesky@wisconsin.gov>; Lent, Nicholas M - DNR (Nick) <Nicholas.Lent@wisconsin.gov>
Cc: Ivan Zaremba (tnsd1@tds.net) <tnsd1@tds.net>
Subject: Follow-Up: DNR/Norway Phosphorus Discussion

CAUTION: This email originated from outside the organization.
Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon Jacob and Nick,

Thank you for meeting with us yesterday afternoon. As we discussed, the high flows from late February through early April corresponded with elevated effluent phosphorus levels. Based on the levels in March 2023 alone, we expect that approximately 50 pounds of WQT credits will be required to demonstrate compliance with the six-month average computed compliance effluent phosphorus limit of 0.075 mg/L.

As you know, the revised WQT Plan that was submitted in February 2023 updated the SnapPlus files and recalculated the number of WQT credits from 41.9 to 78 lbs per year. If the Department would have been approved the February 2023 WQT Plan submittal and incorporated it into the WPDES permit, per the request and expectation of the District (see email that went with the submittal), then it could have been possible for the District to demonstrate compliance with the first (January 2023 through June 2023) six-month average computed compliance effluent phosphorus limit of 0.075 mg/L.

The Department's response letter from April 21, 2023 listed several requirements for a WQT Plan resubmittal. Even if the District would immediately provide the Department with a satisfactory resubmittal, per our conversation yesterday, Nick stated that **it will not be possible to revise the WPDES permit ahead of July 1, 2023**. Therefore, the District will only have 41.9 lbs of annual WQT credits as of July 1, 2023, and we expect that the District will not meet the six-month average computed compliance effluent phosphorus limit for January-June 2023.

As we discussed, the District plans to evaluate its operating conditions and expects to consider options to increase the number of WQT credits for 2024. To our knowledge, there is not a way to apply (or "pro-rate") WQT credits to demonstrate compliance in 2023 based on nonpoint-source generated WQT credits (that will be generated based on BMPs implemented by late 2023 and available starting January 1, 2024). Please let us know if there is a Department-approved process to "pro-rate" credits in this approach.

As we also discussed, items 1, 2, 3, 4, 6, and 8 will require participation and effort from the WQT

Credit Generator or her designees to revise the SnapPlus files, in addition to effort from the District. We do not anticipate that the District will be able to provide these revisions or additional documents by May 31, 2023. Moreover, our understanding is that the District will not be able to avoid exceeding the six-month average computed compliance effluent phosphorus limit for January-June 2023. **Therefore, the District proposes revising the response date to November 30, 2023**, which we anticipate will correspond with an updated WQT Plan that may include additional BMPs.

Yesterday, we also discussed gullies (Item 5). As I presented, we agree that neither Grandmas nor West Barn are eligible for the more favorable trade ratio of 1.4 that is warranted for fields meeting the criteria for "Whole Field Management". We disagree on the statement from the April 21 response letter that *"These fields cannot be used for Water Quality Trading or credit generation until…gullies are fully stabilized in perennial vegetation/grassed waterway"*. The discrepancy in whether a field with gullies (and without grassed waterways/perennial vegetation) can be used to generate credits is based on the following, with my comments in blue.

1. From the Department's view, *"Table 1 confirms Racine County also found Grandmas & West Barn had gully erosion and need to establish perennial vegetation/grassed waterways on Grandmas & West Barn fields to meet whole field management. They also noted need for WASCOB* [to meet the requirements for Whole Field Management]. *SNAP P Trade report P loss results assume no gully erosion within that field area."* Correct – to meet the criteria for "Whole Field Management", these fields require additional Best Management Practices (BMPs). However, the District's submittal does not list these fields as meeting "Whole Field Management", and instead, assumes a less favorable WQT Trade Ratio of 3.4 as compared to the WQT Trade Ratio of 1.4 that could be achieved if additional BMPs were implemented to meet the requirements for Whole Field Management.

   We also acknowledge that the SnapPlus model assumes no gully erosion within that field area. However, the Department has already established guidance for how a WQT Credit Generator can nonetheless generate WQT Credits from fields with gully erosion (*"Moderate-certainty practice" per p. 88 of the WDNR's "Guidance for Implementing Water Quality Trading in WPDES Permits, June 1, 2020"*). The key is that the uncertainty factor must be increased to result in a less favorable trade ratio for the WQT Credit User, thereby ensuring that the annual computed phosphorus loading from WQT Credit User is less than the annual computed phosphorus loading limit. In the guidance, gullies are listed as a field characteristic requiring an uncertainty factor of 3.

2. From the second footnote from Table 1 within the District's submittal, see the highlighted below, *"Per the Racine County Conservationist (see correspondence from July 2020), to meet "Whole Field Management" criteria, two fields would require grassed waterways, along with a water and sediment control basin for "Grandmas" and field access for "West Barn", in addition to the requirements for cover crops, conservation tillage/no till, and an approved NMP. Until grassed waterways are implemented, an increased uncertainty factor of 3 is appropriate, based on the documentation of gully formation and the corresponding classification as a "Moderate-certainty practice" per p. 88 of the WDNR's "Guidance for Implementing Water Quality Trading in WPDES Permits, June 1, 2020"."*

Critically, **we seek written assurance from the Department regarding Item 5a** that in this and in any future evaluation of a WQT Plan, the Department will follow its own guidance regarding uncertainty factors and trade ratios, especially as they relate to fields with gullies or other characteristics that do not meet the Whole Field Management requirements (e.g. no WASCOB; a STIR value greater than 35; etc.). Whole Field Management is certainly an aspiration for all fields, and will result in the most favorable trade ratios for WQT Credit Users, but Whole Field Management is not a requirement to generate WQT Credits.

In addition, **we seek clarification on item 5c** from the response letter. The field boundaries that we used are the same that the WQT Credit Generator has used. If the Department is proposing that the WQT Credit Generator could redraw the field boundaries to excise some or all gully erosion from the acreage generating WQT Credits, then the District seeks clarification and examples of how many field boundary modifications the Department will accept. We discussed this during our meeting yesterday, and we were surprised that this was presented as an option.

Thank you, and have a great weekend,

Leo A. Kucek
Applied Technologies, Inc.
13400 Bishops Lane, Suite 270
Brookfield, WI 53005
Office (262) 784-7690
Direct (262) 785-7391
https://link.edgepilot.com/s/02a2da08/dOsHfavCp0mG2m3R7CDZrA?u=http://www.ati-ae.com/

Appendix B: NMP Checklists

Wisconsin Department of Agriculture, Trade and Consumer Protection
Division of Agricultural Resource Management
Bureau of Land and Water Resources
PO Box 8911, Madison WI 53708-8911, Phone: 608-224-4605

Use this form to check nutrient management (NM) plans for compliance with the WI NRCS 2015-590 Standard.

Nutrient Management Checklist

Wis. Stat. §92.05(3) (k), Wis. Admin. Code §ATCP50.04(3) and Ch. 51

COUNTY **Racine**	DATE PLAN SUBMITTED **12/4/2023**	GROWING SEASON YEAR PLAN IS WRITTEN FOR **2024** (from harvest to harvest)	
TOWNSHIP: (T. N.) RANGE: (R. E., W).		CHECK ONE: Initial Plan or Updated Plan	
NAME OF FARM OPERATOR RECEIVING NM PLAN **Droughtville**	FARM NAME (OPTIONAL) **Droughtville**		BUSINESS PHONE **4146400432**
STREET ADDRESS **22428 w 7 mile rd**	CITY **Franksville**	STATE **WI**	ZIP **53126**
REASON THE PLAN WAS DEVELOPED:		CROPLAND ACRES (OWNED & RENTED) **198**	
RENTED FARM(S) LANDOWNER NAME(S) AND ACREAGE: add sheet(s) if needed			
WAS THE PLAN WRITTEN IN SNAPPLUS? **YES**	If yes, which software version, if known? **20.4**		
CHECK PLANNER'S QUALIFICATION: (1. NAICC-CPCC, 2. ASA-CCA, 3. SSSA-Soil Scientist, 4. DATCP approved training course, 5. Other approved by DATCP)			
NAME OF QUALIFIED NUTRIENT MANAGEMENT PLANNER **Droughtville**			BUSINESS PHONE **4146400432**
STREET ADDRESS **22428 w 7 mile rd**	CITY **Franksville**	STATE **WI**	ZIP **53126**

Use header sections to add comments. Mark NA in the shaded sections if no manure is applied.

1. Does the plan include the following nutrient application requirements to protect surface and groundwater?

This section applies to fields and pastures. If no manure is applied, check NA for 1.c., 1.h., 1.i., 1.n., 1.o., 1.q., 1.s.	Yes	No	NA
a. Determine field nutrient levels from soil samples analyzed by a DATCP **certified laboratory**.	X		
b. For fields or pastures with mechanical nutrient applications, determine field nutrient levels from **soil samples** collected within the last **4 years** according to 590 Standard (590) and UWEX Pub. A2809, *Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin* (A2809) typically collecting **1 sample per 5 acres** of 10 cores. Soil tests are not required on **pastures** that do not receive mechanical applications of nutrients if either of the following applies: 1. The pasture average stocking rate is one animal unit per acre or less at all times during the grazing season. 2. The pasture is winter grazed or stocked at an average stocking rate of more than one animal unit per acre during the grazing season, and a nutrient management plan for the pasture complies with 590 using an assumed soil test phosphorus level of 150 PPM and organic matter content of 6%.	X		
c. For **livestock siting permit approval**, collect and analyze soil samples meeting the requirements above in 1. b., excluding pastures, within 12 months of approval and revise the nutrient management plan accordingly. Until then, either option below maybe used: 1. Assume soil test phosphorus levels are greater than 100 ppm soil test P, OR 2. Use preliminary estimates analyzed by a certified DATCP laboratory with soil samples representing > 5 ac/sample.			X
d. **Identify all fields'** name, boundary, acres, and location.			
e. Use the field's previous year's legume credit and/or applications, predominant soil series, and realistic yield goals to determine the crop's nutrient **application rates consistent with A2809 for ALL forms of N, P, and K.**	X		
f. Make no **winter applications of N and P** fertilizer, except on grass pastures and winter grains.	X		
g. Document method used to determine **application rates.** Nutrients shall not runoff during or immediately after application.	X		
h. Identify in the plan that **adequate acreage** is available for manure produced and/or applied.			X
i. Apply a single phosphorus (P) assessment using either the **P Index** or **soil test P** management strategy to all fields within a tract when fields receive manure or organic by-products during the crop rotation.			X
j. Use **complete crop rotations** and the field's **critical soil** series to determine that sheet and rill erosion estimates will not exceed **tolerable soil loss** (T) rates on fields that receive nutrients.		X	
k. Use contours; reduce tillage; adjust the crop rotation; or implement other practices to **prevent ephemeral erosion**; and maintain perennial vegetative cover to **prevent reoccurring gullies** in areas of concentrated flow.			
l. Make no nutrient applications within 8' of **irrigation** wells or where **vegetation is not removed**.			
m. Make no nutrient applications within **50' of all direct conduits to groundwater**, unless directly deposited by gleaning/pasturing animals or applied as starter fertilizer to corn.			

	Yes	No	NA
n. Make no **untreated manure applications** to areas within 1000' of a **community potable water well** or within 100' of a **non-community potable water well** (ex. church, school, restaurant) unless manure is treated to substantially eliminate pathogens.			X
o. Make no manure applications to areas **locally delineated** by the Land Conservation Committee or in a conservation plan as areas contributing runoff to direct conduits to groundwater unless manure is substantially buried within 24 hours of application.			X
p. Make no applications of **late summer or fall commercial N fertilizer** to the following areas UNLESS needed for establishment of fall seeded crops OR to meet A2809 with a blended commercial fertilizer. Commercial fertilizer N applications shall not exceed 36 lbs. N/acre on: • Sites vulnerable to N leaching **PRW Soils** (P=high permeability, R= bedrock < 20 inches, or W= wet < 12 inches to apparent water table); • Soils with depths of 5 feet or less to bedrock; • Area within 1,000 feet of a community potable water well. On **P soils, when commercial N is applied** for full season crops in **spring and summer**, follow A2809 and apply one of the following: 1. A split or delayed N application to apply a majority of crop N requirement after crop establishment. 2. Use a nitrification inhibitor with ammonium forms of N. 3. Use slow and controlled release fertilizers for a majority of the crop N requirement applied near the time of planting.	X		
q. Limit manure applications in late summer or fall using the lesser of A2809 or the following 590 rates on **PRW Soils.** Use ≤ 120 lbs. available N/acre on: **P and R soils** on *all crops, except annual crops*. Additionally, manure with ≤ 4% dry matter (DM) wait until after soil temp. < 50°F or Oct. 1, and use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combo. W soils** on *all crops.* Additionally, manure with ≤ 4% DM on *all crops* use at least one of the following: **1.** Use a nitrification inhibitor; **2.** Apply on an established cover crop, an overwintering annual, or perennial crop; **3.** Establish a cover crop within 14 days of application; **4.** Surface apply & don't incorporate for at least 3 days; **5.** Wait until after soil temp. < 50°F or Oct. 1. Use ≤ 90 lbs. available N/acre on: **P and R soils** on *annual crops* wait until after soil temp. < 50°F or Oct. 1. Additionally, manure with ≤ 4% DM use either a nitrification inhibitor OR surface apply and do not incorporate for at least 3 days. **W soils or combination W soils** receiving manure with ≤ 4% DM on *all crops*.			X
r. Use at least one of the following practices on **non-frozen soils for all nutrient applications** within **Surface Water Quality Management Area (SWQMA)** = 1000' of lakes/ponds or 300' of rivers: **1.** Maintain > 30% cover after nutrient application; **2.** Effective incorporation within 72 hours of application; **3.** Establish crops prior to, at, or promptly following application; **4.** Install/maintain vegetative buffers or filter strips; **5.** Have at least 3 consecutive years no-till for applications to fields with < 30% residue (silage) and apply nutrients within 7 days of planting.	X		
s. Limit mechanical applications to **12,000 gals/acre of unincorporated liquid manure or organic by-products with 11% or less dry matter where subsurface drainage is present** OR **within SWQMA**. Wait a minimum of 7 days between sequential applications AND use one or more of the practice options on non-frozen soils listed in 1.r.1. through **1.r.5.**			X

2. When frozen or snow-covered soils prevent effective incorporation, does the plan follow these requirements for winter applications of all mechanically applied manure or organic by-products? *This section doesn't apply to winter gleaning/pasturing meeting 590 N and P requirements.*

If no manure is applied, check NA for 2.a. through 2.g..	Yes	No	NA
a. Identify **manure quantities planned to be spread during the winter**, or the amount of manure generated in 14 days, whichever is greater. *For daily haul systems, assume 1/3 of the manure produced annually will need to be winter applied.*			X
b. Identify **manure storage capacity** for each type applied and stacking capacity for manure ≥ 16% DM if permanent storage does not exist.			X
c. Show on map and make no applications within the **SWQMA.**			X
d. Show on map and make no surface applications of liquid manure during **February and March** where **Silurian dolomite** is within 60 inches of the soils surface OR where **DNR Well Compensation** funds provided replacement water supplies for wells contaminated with livestock manure.			X
e. Show on map and make no applications of manure within **300 feet** of **direct conduits to groundwater**.			X
f. Do not exceed the P removal of the following growing season's crop when applying manure. Liquid manure applications are limited to **7,000 g/acre**. All winter manure applications are not to exceed **60 lbs. of P2O5/acre.**			X
g. Make no applications of manure to fields with **concentrated flow channels** unless using two of the following: **1.** Contour buffer strips or contour strip cropping; **2.** Leave all crop residue and no fall tillage; **3.** Apply manure in intermittent strips on no more than 50% of field; **4.** Apply manure on no more than 25% of the field waiting a minimum of 14 days between applications; **5.** Reduce manure app. rate to 3,500 gal. or 30 lbs. P2O5, whichever is less; **6.** No manure application within 200 feet of all concentrated flow channels; **7.** Fall tillage is on the contour and slopes are lower than 6%. Make no applications to **slopes greater than 6%** (soil map units with C, D, E, and F slopes) unless the plan documents that no other accessible fields are available for winter spreading AND two of the options 2.g.**1.** through 2.g.**5.** are used.			X

I certify that the plan represented by the answers on this checklist complies with Wisconsin's NRCS 2015-590 NM Standard or is otherwise noted.

Qualified NM planner signature — NAICC-*Certified Professional Crop Consultant*, ASA-*Certified Crop Adviser*, or SSSA-*Soil Scientist* — Date

Qualified NM farmer-planner or Authorized farm operator signature receiving and understanding the plan — Date

Signature if reviewed for quality assurance — Date 12.28.23

Turf Paradise

Farm: J Popp Farms, V20 Generated:5/6/2025, Crop year: 2025, Township Range Section:4N 20E s12

- Counties
- Township/Range
- Nutrient prohibited buffers
- Nutrient prohibited drawn areas
- Nutrient prohibited winter only
- Fields

Wisconsin Department of Agriculture, Trade and Consumer Protection
Division of Agricultural Resource Management
Bureau of Land and Water Resources
PO Box 8911, Madison WI 53708-8911, Phone: 608-224-4605

Use this form to check nutrient management (NM) plans for compliance with the WI NRCS 2015-590 Standard.

Nutrient Management Checklist

Wis. Stat. §92.05(3) (k), Wis. Admin. Code §ATCP50.04(3) and Ch. 51

COUNTY **Racine** DATE PLAN SUBMITTED **5/2/2025** GROWING SEASON YEAR PLAN IS WRITTEN FOR **2025** (from harvest to harvest)

TOWNSHIP: (T. N.) RANGE: (R. E., W). CHECK ONE: Initial Plan or Updated Plan

NAME OF FARM OPERATOR RECEIVING NM PLAN	FARM NAME (OPTIONAL)	BUSINESS PHONE
Julian Popp	**J Popp Farms**	**(262) 210-9615**

STREET ADDRESS	CITY	STATE	ZIP
5535 E Wind Lake RD	**Union Grove**	**WI**	**53182**

REASON THE PLAN WAS DEVELOPED:	CROPLAND ACRES (OWNED & RENTED)
	596

RENTED FARM(S) LANDOWNER NAME(S) AND ACREAGE: add sheet(s) if needed

WAS THE PLAN WRITTEN IN SNAPPLUS? **YES** If yes, which software version, if known? **20.4**

CHECK PLANNER'S QUALIFICATION:
(1. NAICC-CPCC, 2. ASA-CCA, 3. SSSA Soil Scientist, 4. DATCP approved training course, 5. Other approved by DATCP)

NAME OF QUALIFIED NUTRIENT MANAGEMENT PLANNER	BUSINESS PHONE
Kyle Stull	**262-875-1217**

STREET ADDRESS	CITY	STATE	ZIP
1832 Ruben Drive	**Waukesha**	**WI**	**53186**

Use header sections to add comments. Mark NA in the shaded sections if no manure is applied.

1. Does the plan include the following nutrient application requirements to protect surface and groundwater?

This section applies to fields and pastures. If no manure is applied, check NA for 1.c., 1.h., 1.i., 1.n., 1.o., 1.q., 1.s.	Yes	No	NA
a. Determine field nutrient levels from soil samples analyzed by a DATCP **certified laboratory**.	X		
b. For fields or pastures with mechanical nutrient applications, determine field nutrient levels from **soil samples** collected within the last **4 years** according to 590 Standard (590) and UWEX Pub. A2809, *Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin* (A2809) typically collecting **1 sample per 5 acres** of 10 cores. Soil tests are not required on **pastures** that do not receive mechanical applications of nutrients if either of the following applies: 1. The pasture average stocking rate is one animal unit per acre or less at all times during the grazing season. 2. The pasture is winter grazed or stocked at an average stocking rate of more than one animal unit per acre during the grazing season, and a nutrient management plan for the pasture complies with 590 using an assumed soil test phosphorus level of 150 PPM and organic matter content of 6%.	X		
c. For **livestock siting permit approval**, collect and analyze soil samples meeting the requirements above in 1. b., excluding pastures, within 12 months of approval and revise the nutrient management plan accordingly. Until then, either option below maybe used: 1. Assume soil test phosphorus levels are greater than 100 ppm soil test P, OR 2. Use preliminary estimates analyzed by a certified DATCP laboratory with soil samples representing > 5 ac/sample.			X
d. **Identify all fields'** name, boundary, acres, and location.	X		
e. Use the field's previous year's legume credit and/or applications, predominant soil series, and realistic yield goals to determine the crop's nutrient **application rates consistent with A2809 for ALL forms of N, P, and K.**	X		
f. Make no **winter applications of N and P** fertilizer, except on grass pastures and winter grains.	X		
g. Document method used to determine **application rates**. Nutrients shall not runoff during or immediately after application.	X		
h. Identify in the plan that **adequate acreage** is available for manure produced and/or applied.			
i. Apply a single phosphorus (P) assessment using either the **P Index** or **soil test P** management strategy to all fields within a tract when fields receive manure or organic by-products during the crop rotation.	X		
j. Use **complete crop rotations** and the field's **critical soil** series to determine that sheet and rill erosion estimates will not exceed **tolerable soil loss** (T) rates on fields that receive nutrients.	X		
k. Use contours; reduce tillage; adjust the crop rotation; or implement other practices to **prevent ephemeral erosion**; and maintain perennial vegetative cover to **prevent reoccurring gullies** in areas of concentrated flow.			
l. Make no nutrient applications within 8' of **irrigation** wells or where **vegetation is not removed**.			
m. Make no nutrient applications within **50' of all direct conduits to groundwater**, unless directly deposited by gleaning/pasturing animals or applied as starter fertilizer to corn.			

NM1: Narrative and Crops Report

Starting Year	**2025**
Reported For	**J Popp Farms**
Printed	**2025-05-02**
Plan Completion/Update Date:	**2025-04-30**
SnapPlus Version 20.4 built on 2021-06-03	
C:\Users\Kyle Stull\OneDrive\Desktop\J Popp Farms_LAK_2024-12-31_j_Baseline-DESKTOP-5OHLPRB.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

Prepared by: Stull Agronomy LLC
1832 Ruben Drive
Waukesha,Waukesha,53186
262-875-1217,

Farm has 14 fields totalling 596.1 cropped acres.
Farm Narrative: J Popp Farms is a farm in Union Grove utilizing notill and cover crops to reduce erosion and maintain yields on 596 acres in Racine County.

Annual Farm Notes:

No Annual Farm Notes

Spreader Calibration Methods: Amount applied / Acres

Narrative and Crops:

Field Name	Field Acres	2025
Ament Barn	20.4	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till 191-210 bu/acre
B1	63.4	Soybeans to small grain cover crop No Till, cover crop no till 66-75 bu/acre

Field Name	Field Acres	2025
C1	8.1	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till 211-230 bu/acre
CAR1	38.8	Winter wheat (grain +straw) to annual cover crop No Till, cover crop no till 81-100 bu/acre
GS1	21.1	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till 211-230 bu/acre
GUN1	16.5	Corn grain No Till 211-230 bu/acre
HC1	31.3	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till 211-230 bu/acre
HK1	54.8	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till 211-230 bu/acre

Field Name	Field Acres	2025
HOM1	72.1	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till 211-230 bu/acre
M1	7.7	Winter wheat (grain +straw) to annual cover crop No Till, cover crop no till 81-100 bu/acre
MUT1	96.7	Corn silage to small grain cover crop Spring vertical tillage, cover crop no till 20.1-25 ton/acre
Steve's Sister	8.1	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till 211-230 bu/acre
TP1	95.7	Soybeans to small grain cover crop No Till, cover crop no till 56-65 bu/acre
TP2	61.4	Corn grain to small grain cover crop No Till, cover crop no till 211-230 bu/acre

Summary by Crop:

NOTE: Yields calculated using the midpoint of the SnapPlus yield goal range for each crop.

Crops Grouped By Category		2025
Corn grain to small grain cover crop	Acres bu	277 55,539
Soybeans to small grain cover crop	Acres bu	159 11,210
Winter wheat (grain +straw) to annual cover crop	Acres bu	47 4,254
Corn grain	Acres bu	17 3,749
Corn silage to small grain cover crop	Acres ton	97 2,187

FM3: Producer's Plan Report

Crop Year	**2025**
Reported For	**J Popp Farms**
Printed	**2025-05-02**
Plan Completion/Update Date	**2025-04-30**
SnapPlus Version 20.4 built on 2021-06-03	
C:\Users\Kyle Stull\OneDrive\Desktop\J Popp Farms_LAK_2024-12-31_j_Baseline-DESKTOP-6OHLPRB.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

Prepared by: Stull Agronomy LLC
1832 Ruben Drive
Waukesha,Waukesha,53186
262-875-1217,

Field Data: 596.1 Total Acres Reported.

Field Name	Ac.	2024 Crop and Tillage	2025 Crop and Tillage	Adjusted Crop Need lb/ac	2025 Legume Credit N lb/ac	2nd Year N Manure Credit lb/ac	Manure Fert Apps lb/ac	Total Credits and Apps	Over-Application based on UW Recs	Under-Application based on UW Recs	Product Name and Analysis	Rate per Acre	Season and Method	Field Amount
Ament Barn	20.4	Soybeans to small grain cover crop No Till, cover crop no till	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	140-0-0	0	0	159-0-61	159-0-61	19-0-61	0-0-0	Ammonium sulfate (AMS) 21-0-0	50 lb	Spring Unincorp	1,020 lb
											Ammonium sulfate (AMS) 21-0-0	50 lb	Summer Unincorp	1,020 lb
											Potassium chloride 0-0-61	100 lb	Spring Unincorp	2,040 lb
											Urea 46-0-0	150 lb	Spring Unincorp	3,060 lb
											Urea 46-0-0	150 lb	Summer Unincorp	3,060 lb
B1	63.4	Corn grain Spring Chisel, disked	Soybeans to small grain cover crop No Till, cover crop no till	0-85-123	0	0	18-46-92	18-46-92	18-0-0	0-39-31	Diammonium phosphate (DAP) 18-46-0	100 lb	Spring Unincorp	6,340 lb
											Potassium chloride 0-0-61	150 lb	Spring Unincorp	9,510 lb
C1	8.1	Soybeans 15-20 inch row No Till	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	140-85-50	0	0	168-81-61	168-81-61	28-0-11	0-4-0	Ammonium sulfate (AMS) 21-0-0	50 lb	Spring Unincorp	405 lb
											Ammonium sulfate (AMS) 21-0-0	50 lb	Summer Unincorp	405 lb
											Diammonium phosphate (DAP) 18-46-0	175 lb	Spring Unincorp	1,418 lb

Field Name	Ac.	2024 Crop and Tillage	2025 Crop and Tillage	Adjusted Crop Need lb/ac	2025 Legume Credit N lb/ac	2nd Year N Manure Credit lb/ac	Manure Fert Apps lb/ac	Total Credits and Apps	Over-Application based on UW Recs	Under-Application based on UW Recs	Product Name and Analysis	Rate per Acre	Season and Method	Field Amount
C1	8.1	Soybeans 15-20 inch row No Till	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	140-85-50	0	0	168-81-61	168-81-61	28-0-11	0-4-0	Potassium chloride 0-0-61	100 lb	Spring Unincorp	810 lb
											Urea 46-0-0	100 lb	Spring Unincorp	810 lb
											Urea 46-0-0	150 lb	Summer Unincorp	1,215 lb
CAR1	38.8	Soybeans 15-20 inch row No Till	Winter wheat (grain+straw) to annual cover crop No Till, cover crop no till	55-95-145	0	0	71-69-61	71-69-61	16-0-0	0-26-84	Ammonium sulfate (AMS) 21-0-0	100 lb	Spring Unincorp	3,880 lb
											Diammonium phosphate (DAP) 18-46-0	150 lb	Spring Unincorp	5,820 lb
											Potassium chloride 0-0-61	100 lb	Spring Unincorp	3,880 lb
											Urea 46-0-0	50 lb	Spring Unincorp	1,940 lb
GS1	21.1	Soybeans to small grain cover crop No Till, cover crop no till	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	130-0-50	0	0	159-0-61	159-0-61	29-0-11	0-0-0	Ammonium sulfate (AMS) 21-0-0	50 lb	Spring Unincorp	1,055 lb
											Ammonium sulfate (AMS) 21-0-0	50 lb	Summer Unincorp	1,055 lb
											Potassium chloride 0-0-61	100 lb	Spring Unincorp	2,110 lb
											Urea 46-0-0	100 lb	Spring Unincorp	2,110 lb
											Urea 46-0-0	200 lb	Summer Unincorp	4,220 lb
GUN1	16.5	Soybeans 15-20 inch row No Till	Corn grain No Till	140-125-95	0	0	168-81-61	168-81-61	28-0-0	0-44-34	Ammonium sulfate (AMS) 21-0-0	50 lb	Spring Unincorp	825 lb
											Ammonium sulfate (AMS) 21-0-0	50 lb	Summer Unincorp	825 lb
											Diammonium phosphate (DAP) 18-46-0	175 lb	Spring Unincorp	2,888 lb

Field Name	Ac.	2024 Crop and Tillage	2025 Crop and Tillage	Adjusted Crop Need lb/ac	2025 Legume Credit N lb/ac	2nd Year N Manure Credit lb/ac	Manure Fert Apps lb/ac	Total Credits and Apps	Over-Application based on UW Recs	Under-Application based on UW Recs	Product Name and Analysis	Rate per Acre	Season and Method	Field Amount
GUN1	16.5	Soybeans 15-20 inch row No Till	Corn grain No Till	140-125-95	0	0	168-81-61	168-81-61	28-0-0	0-44-34	Potassium chloride 0-0-61	100 lb	Spring Unincorp	1,650 lb
											Urea 46-0-0	100 lb	Spring Unincorp	1,650 lb
											Urea 46-0-0	150 lb	Summer Unincorp	2,475 lb
HC1	31.3	Soybeans 15-20 inch row No Till	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	140-0-95	0	0	159-0-61	159-0-61	19-0-0	0-0-34	Ammonium sulfate (AMS) 21-0-0	50 lb	Spring Unincorp	1,565 lb
											Ammonium sulfate (AMS) 21-0-0	50 lb	Summer Unincorp	1,565 lb
											Potassium chloride 0-0-61	100 lb	Spring Unincorp	3,130 lb
											Urea 46-0-0	100 lb	Spring Unincorp	3,130 lb
											Urea 46-0-0	200 lb	Summer Unincorp	6,260 lb
HK1	54.8	Corn grain Spring vertical tillage	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	190-125-110	0	0	122-46-92	122-46-92	0-0-0	68-79-18	Ammonium sulfate (AMS) 21-0-0	100 lb	Spring Unincorp	5,480 lb
											Diammonium phosphate (DAP) 18-46-0	100 lb	Spring Unincorp	5,480 lb
											Potassium chloride 0-0-61	150 lb	Spring Unincorp	8,220 lb
											Urea 46-0-0	180 lb	Spring Unincorp	9,864 lb
HOM1	72.1	Corn grain Spring vertical tillage	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	190-85-110	0	0	214-81-61	214-81-61	24-0-0	0-4-49	Ammonium sulfate (AMS) 21-0-0	50 lb	Spring Unincorp	3,605 lb
											Ammonium sulfate (AMS) 21-0-0	50 lb	Summer Unincorp	3,605 lb
											Diammonium phosphate (DAP) 18-46-0	175 lb	Spring Unincorp	12,618 lb

Field Name	Ac.	2024 Crop and Tillage	2025 Crop and Tillage	Adjusted Crop Need lb/ac	2025 Legume Credit N lb/ac	2nd Year N Manure Credit lb/ac	Manure Fert Apps lb/ac	Total Credits and Apps	Over-Application based on UW Recs	Under-Application based on UW Recs	Product Name and Analysis	Rate per Acre	Season and Method	Field Amount
HOM1	72.1	Corn grain Spring vertical tillage	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	190-85-110	0	0	214-81-61	214-81-61	24-0-0	0-4-49	Potassium chloride 0-0-61	100 lb	Spring Unincorp	7,210 lb
											Urea 46-0-0	150 lb	Spring Unincorp	10,815 lb
											Urea 46-0-0	200 lb	Summer Unincorp	14,420 lb
M1	7.7	Soybeans 15-20 inch row No Till	Winter wheat (grain+straw) to annual cover crop No Till, cover crop no till	55-85-145	0	0	73-58-92	73-58-92	18-0-0	0-27-53	Ammonium sulfate (AMS) 21-0-0	75 lb	Spring Unincorp	578 lb
											Diammonium phosphate (DAP) 18-46-0	125 lb	Spring Unincorp	962 lb
											Potassium chloride 0-0-61	150 lb	Spring Unincorp	1,155 lb
											Urea 46-0-0	75 lb	Spring Unincorp	578 lb
MUT1	96.7	Corn silage to small grain cover crop No Till, cover crop no till	Corn silage to small grain cover crop Spring vertical tillage, cover crop no till	190-0-185	0	0	196-36-132	196-36-132	6-36-0	0-0-53	Ammonium sulfate (AMS) 21-0-0	100 lb	Summer Unincorp	9,670 lb
											Urea 46-0-0	275 lb	Summer Unincorp	26,592 lb
											Dairy Liquid 4-3-11	12000 gal	Fall Unincorp	1,160,400 gal
Steve's Sister	8.1	Soybeans to small grain cover crop No Till, cover crop no till	Corn grain to small grain cover crop Spring vertical tillage, cover crop no till	140-125-95	0	0	168-81-61	168-81-61	28-0-0	0-44-34	Ammonium sulfate (AMS) 21-0-0	50 lb	Spring Unincorp	405 lb
											Ammonium sulfate (AMS) 21-0-0	50 lb	Summer Unincorp	405 lb
											Diammonium phosphate (DAP) 18-46-0	175 lb	Spring Unincorp	1,418 lb
											Potassium chloride 0-0-61	100 lb	Spring Unincorp	810 lb
											Urea 46-0-0	100 lb	Spring Unincorp	810 lb
											Urea 46-0-0	150 lb	Summer Unincorp	1,215 lb

Field Name	Ac.	2024 Crop and Tillage	2025 Crop and Tillage	Adjusted Crop Need lb/ac	2025 Legume Credit N lb/ac	2nd Year N Manure Credit lb/ac	Manure Fert Apps lb/ac	Total Credits and Apps	Over-Application based on UW Recs	Under-Application based on UW Recs	Product Name and Analysis	Rate per Acre	Season and Method	Field Amount
TP1	95.7	Winter wheat (grain +straw) to annual cover crop No Till, cover crop no till	Soybeans to small grain cover crop No Till, cover crop no till	0-20-115	0	0	0-0-122	0-0-122	0-0-7	0-20-0	Potassium chloride 0-0-61	200 lb	Spring Unincorp	19,140 lb
TP2	61.4	Corn grain Spring vertical tillage	Corn grain to small grain cover crop No Till, cover crop no till	165-125-110	0	0	135-81-61	135-81-61	0-0-0	30-44-49	Ammonium sulfate (AMS) 21-0-0	100 lb	Spring Unincorp	6,140 lb
											Diammonium phosphate (DAP) 18-46-0	175 lb	Spring Unincorp	10,745 lb
											Potassium chloride 0-0-61	100 lb	Spring Unincorp	6,140 lb
											Urea 46-0-0	180 lb	Spring Unincorp	11,052 lb

Appendix C: WQT Registration Forms

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Water Quality Trading Management Practice Registration

Form 3400-207 (R 1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number	Facility Site Number
Town of Norway Sanitary District No. 1	WI- 0031470-08-1	

Facility Address	City	State	ZIP Code
6801 Milwaukee Ave	Wind Lake	WI	53185

Project Contact Name (if applicable)	Address	City	State	ZIP Code

Project Name
Annual Cover Crops

Broker/Exchange Information (if applicable)

Was a broker/exchange be used to facilitate trade? ○ Yes ◉ No

Broker/Exchange Organization Name	Contact Name

Address	Phone Number	Email

Trade Registration Information (Use a separate form for each trade agreement)

Type	Trade Agreement Number	Practices Used to Generate Credits	Anticipated Load Reduction	Trade Ratio	Method of Quantification
○ Urban NPS ◉ Agricultural NPS ○ Other	WQT-2020-0002	Annual Cover Crops		1.4, 2.4, 3.4	Snap Plus

County	Closest Receiving Water Name	Land Parcel ID(s)	Parameter(s) being traded
Racine	Wind Lake Canal	See Attached	Phosphorus, TSS

The preparer certifies all of the following:

- I have completed this document to the best of my knowledge and have not excluded pertinent information.
- I certify that the information in this document is true to the best of my knowledge.

Signature of Preparer	Date Signed

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed
	12-27-23

Leave Blank – For Department Use Only

Date Received		Trade Docket Number
Entered in Tracking System ☐ Yes	Date Entered	Name of Department Reviewer

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wi.gov

Water Quality Trading Management Practice Registration

Form 3400-207 (R 1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name	Permit Number	Facility Site Number
Town of Norway Sanitary District No. 1	WI- 0031470-08-1	

Facility Address	City	State	ZIP Code
6801 Milwaukee Ave	Wind Lake	WI	53185

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Ivan Zaremba	6801 Milwaukee Ave	Wind Lake	WI	53185

Project Name
Annual Cover Crops

Broker/Exchange Information (if applicable)

Was a broker/exchange be used to facilitate trade? ○ Yes ◉ No

Broker/Exchange Organization Name	Contact Name	
Address	Phone Number	Email

Trade Registration Information (Use a separate form for each trade agreement)

Type	Trade Agreement Number	Practices Used to Generate Credits	Anticipated Load Reduction	Trade Ratio	Method of Quantification
○ Urban NPS ◉ Agricultural NPS ○ Other	WQT-2020-0002	Annual Cover Crops	378 lb/yr TP, 28 tpy TS	Varies	SnapPlus

County	Closest Receiving Water Name	Land Parcel ID(s)	Parameter(s) being traded
Racine	Wind Lake Canal	See Attached	Phosphorus, Total Solids

The preparer certifies all of the following:

- I have completed this document to the best of my knowledge and have not excluded pertinent information.
- I certify that the information in this document is true to the best of my knowledge.

Signature of Preparer	Date Signed
Leo A. Kucek	2024-12-31

Authorized Representative Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Authorized Representative	Date Signed
Ivan Zaremba	12/31/2024

Leave Blank – For Department Use Only

Date Received		Trade Docket Number
Entered in Tracking System ☐ Yes	Date Entered	Name of Department Reviewer

Appendix D: WQT Agreements

Water Quality Trade Agreement

Permittee Information

Credit User Name (Permittee)	Permit Number
Norway TN Sanitary District 1	WI-0031470-08-1

Credit User Address
6801 Milwaukee Ave Wind Lake, WI 53185

Permittee/Broker/Exchange Name (if applicable)	Trade Agreement Number
N/A	WQT-2020-0002

Permittee/Broker/Exchange Address (if applicable)

Street Address	City	State	ZIP Code
N/A			

Project Name
Annual Cover Crops

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Popp, Julian

Street Address	City	State	ZIP Code
5535 E Wind Lake Rd	Union Grove	WI	53182

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Popp, Julian

Street Address	City	State	ZIP Code
in a	nion o	WI	531 2

Legal Description of Property - Contiguous sites under the same ownership: (add additional sheets if necessary)
See attached.

Parcel ID(s):
010-04-20-011-000, 010-04-20-012-000

Site Locator for Construction Projects

County	Township	Range E / W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Racine	T4 N	R20E	11 & 12	N 1/2 NW 1/4
Racine	T4 N	R20E	11	N 1/2 NE 1/4
Racine	T4 N	R20E	11	N 1/2 NW 1/4
	N			

Agreement

The property described above is enrolled in a Water Quality Trade Agreement. Funds are provided to the landowner/ operator in return for the installation, operation and maintenance of best management practices (BMPs) designed to enhance water quality. This agreement commits the landowner/operator, their heirs, successors and assigns to fulfill the trade agreement until a satisfaction or release is filed by the grantee.

Addenda which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement and are on file with the grantee and may be given to Wisconsin DNR upon request by the Department.

Addendum 1

Section A – General Requirements

A 1. This agreement may be amended by mutual agreement of either party, so long as the agreement has not yet expired, or if it becomes clear that the DNR will not grant Norway Sanitary District with at least 50 lbs of water quality trading credits.
A 2. If a significant archeological or historical site is found, construction is to cease immediately and the BMP will be relocated, redesigned, or deleted to prevent damage to the archeological or historical site. The BMP may be deleted only if approved in writing by the Department of Natural Resources.

Section B – Landowner/Operator Shall:

B 1. Design, install, operate and maintain BMPs listed in Addendum 2 of this agreement.
B 2. Allow access to the installed BMP by the grantee, or an authorized representative of the grantee for site inspection of the BMP for installation, operation and maintenance, following written or verbal authorization from landowner/operator.

Section C – Grantee Shall:

C 1. Provide cost sharing to the landowner/operator consistent with Addendum 2.
C 2. Make cost-share payments to the landowner/operator after payment is requested and evidence of contractor payment by the landowner/operator has been received, and the grantee verifies proper BMP installation.

TA Number	Name of Landowner/Operator	Initials of Landowner/Op	Date
	Julian Popp	J.P.	12/17/2024

Landowner/Operator

Signed this _____ day of _____, 20 .

Signature of Landowner/Operator

Signature of Landowner/Operator

Typed Name of Landowner/Operator

Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
_____ County) ss.
)
)

Personally came before me this _____ day of _____, 20.

The above named Lindsey Drought to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Amy S. Schwabe
Signature of Notary Public

Amy Schwabe
Typed Name of Notary Public

Notary Public Racine County, Wisconsin

My commission (is permanent) (expires Oct 8, 2025).

AMY S. SCHWABE NOTARY PUBLIC STATE OF WISCONSIN

Landowners (if not operator)

If the landowner section is not completed, check (X) one or both of the following that apply

[X] Landowner is also operator

[ ] Trade agreement contains only high residue management, nutrient management, pesticide management, cropland protection cover (green manure)

Signed this _____ day of _____, 20 ____.

Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
)
_____ County) ss.
)
)

Personally came before me this _____ day of _____, 20 _____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit user: Town of Norway Sanitary District No. 1

Title: District Manager

Signed this _____ day of _____, 20.

Signature of credit user/broker/exchange

Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
)
_____ County) ss.
)

Personally came before me this 27th day of December, 2023.

The above named Ivan Zarenba to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Amy S. Schwabe
Signature of Notary Public

Notary Public Racine County, Wisconsin

My commission (is permanent) (expires Oct 8, 2025).

AMY S. SCHWABE NOTARY PUBLIC STATE OF WISCONSIN

Addendum 2

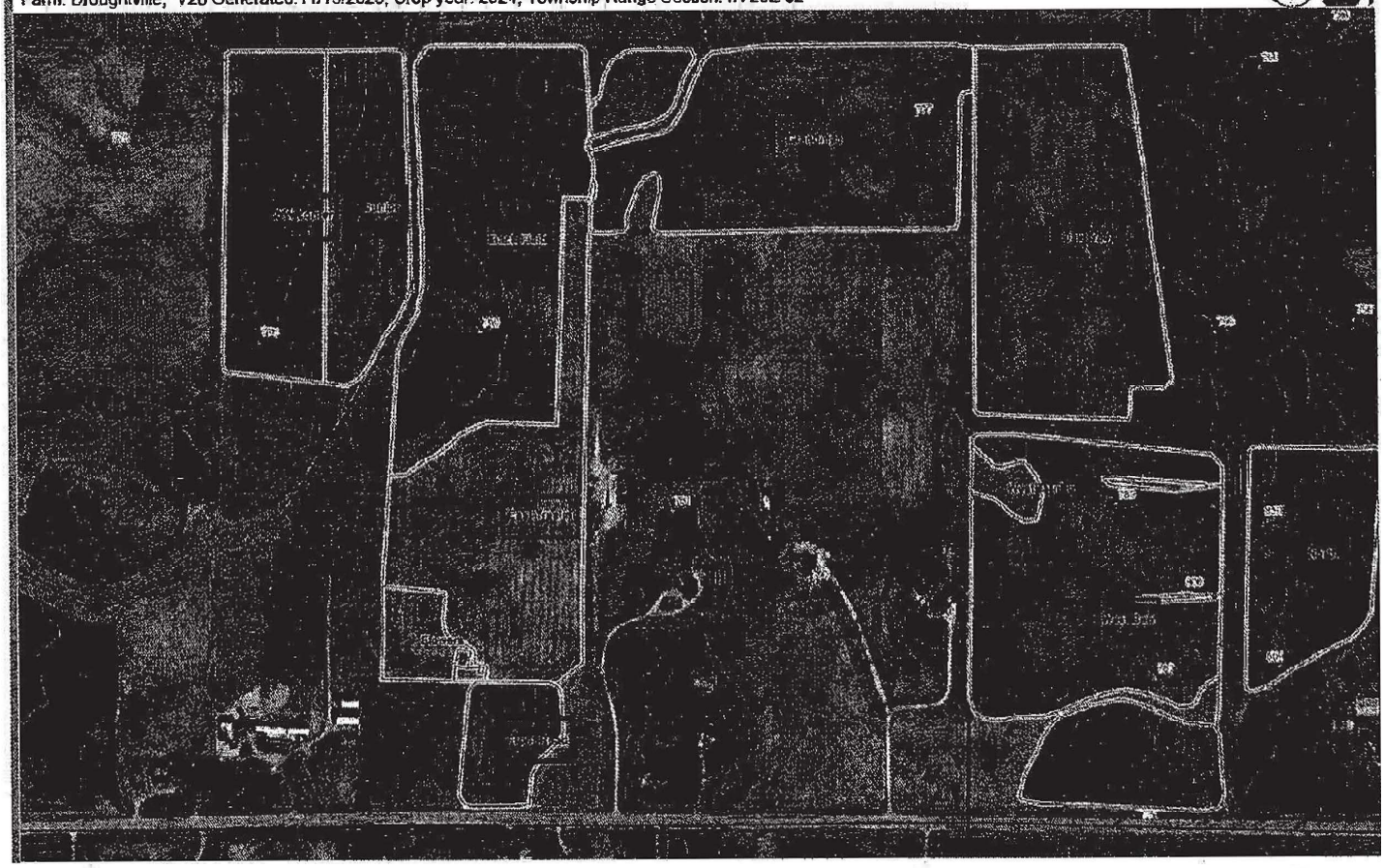
The cost-share recipient shall implement and maintain all best management practices listed in this Addendum, unless otherwise amended in accordance with this agreement.

Installation Period	
From (MM/YY) 10/24	To (MM/YY) 04/30

Field #	Practice Name	Quantity	Unit	Unit Cost ($)	Estimated Total Cost ($)	Reimbursement Rate ($/ac)	Estimated Cost-Share Amt. ($)	Cost-Share Amt. From Other Programs* ($)	Estimated Year to be Installed
Back Field	Annual Small Grain Cover Crops	17.1	Acres	53	$906	$20	$342		2019
East Treeline	"	13.1	"	53	$694	"	$262		"
Front Road	"	2.9	"	53	$154	"	$ 58		"
Grandmas	"	17.6	"	53	$933	"	$352		"
Junior	"	6.9	"	53	$366	"	$138		"
North	"	7.6	"	53	$403	"	$152		"
NW Corner	"	9.0	"	53	$477	"	$180		"
Oak Tree	"	17.6	"	53	$933	"	$352		"
West Barn	"	21.9	"	53	$1,161	"	$438		"
* Identify Program Names:				TOTALS			$ 2,274 LAK	~~$2,274~~ 0 LAK	

CSA Number	Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Lindsey Drought	LAK	12-27-23

Droughtville_2023-11-15
Farm: Droughtville, V20 Generated:11/15/2023, Crop year: 2024, Township Range Section:4N 20E s2



Water Quality Trade Agreement

Permittee Information

Credit User Name (Permittee)	Permit Number
Norway TN Sanitary District 1	WI-0031470-08-0

Credit User Address
6801 Milwaukee Ave. Wind Lake, WI 53185

Permittee/Broker/Exchange Name (if applicable)	Trade Agreement Number
N/A	WQT-2020-0002

Permittee/Broker/Exchange Address (if applicable)

Street Address	City	State	ZIP Code
N/A			

Project Name
Annual Cover Crops

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Popp, Julian

Street Address	City	State	ZIP Code
5535 E Wind Lake Rd	Union Grove	WI	53182

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Popp, Julian

Street Address	City	State	ZIP Code
5535 E Wind Lake Rd	Union Grove	WI	53182

Legal Description of Property - Contiguous sites under the same ownership: (add additional sheets if necessary)
See attached.

Parcel ID(s):
010-04-20-011-000, 010-04-20-012-000

Site Locator for Construction Projects

County	Township	Range E / W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Racine	T4 N	R20E	11 & 12	N ½ NW 1/4
Racine	T4 N	R20E	11	N ½ NE 1/4
Racine	T4 N	R20E	11	N ½ NW 1/4
	N			

Agreement

The property described above is enrolled in a Water Quality Trade Agreement. Funds are provided to the landowner/ operator in return for the installation, operation and maintenance of best management practices (BMPs) designed to enhance water quality. This agreement commits the landowner/operator, their heirs, successors and assigns to fulfill the trade agreement until a satisfaction or release is filed by the grantee.

Addenda which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement and are on file with the grantee and may be given to Wisconsin DNR upon request by the Department.

JP 12/17/24

Landowner/Operator

Signed this 17th day of December, 2024.

Signature of Landowner/Operator

Signature of Landowner/Operator

Julian Popp

Typed Name of Landowner/Operator

Typed Name of Landowner/Operator

STATE OF WISCONSIN)
Racine County) ss.
)

Personally came before me this 17th day of December, 2024.

The above named Julian Popp to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

AMY S SCHWABE NOTARY PUBLIC STATE OF WISCONSIN

Amy S. Schwabe

Signature of Notary Public

Amy Schwabe

Typed Name of Notary Public

Notary Public Racine County, Wisconsin

My commission (is permanent) (expires Oct 8, 2025).

Landowners (if not operator)

If the landowner section is not completed, check (X) one or both of the following that apply

☐ Landowner is also operator

☒ Trade agreement contains only high residue management, nutrient management, pesticide management, cropland protection cover (green manure)

Signed this _____ day of _____, 20 ____.

Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20 ____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit user/broker/exchange

Signed this _____ day of _____, 20 ____.

Signature of credit user/broker/exchange

Ivan Zaremba

Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20 ____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Town of Norway Sanitary District No. 1

Other Signer- Specify title or relationship: District Manager

Signed this 17th day of December, 2024.

Signature

Signature

IVAN ZAREMBA

Typed Name

Typed Name

STATE OF WISCONSIN)
Racine County) ss.
)

Personally came before me this 17th day of December, 20 24.

The above named Ivan Zaremba to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

AMY S SCHWABE NOTARY PUBLIC STATE OF WISCONSIN

Amy S Schwabe

Signature of Notary Public

Amy Schwabe

Typed Name of Notary Public

Notary Public Racine County, Wisconsin

My commission (is permanent) (expires Oct 8, 2025).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20 ____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)
)

Personally came before me this _____ day of _____, 20 ____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20 ____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)
)

Personally came before me this _____ day of _____, 20 ____.

The above named _____ to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

☐ Check this box if this page is purposely left blank.

Addendum 1

Section A – General Requirements
Example:

A 1. This agreement may be amended by mutual agreement of either party, so long as the agreement has not yet expired.
A 2. If a significant archeological or historical site is found, construction is to cease immediately and the BMP will be relocated, redesigned, or deleted to prevent damage to the archeological or historical site. The BMP may be deleted only if approved in writing by the Department of Natural Resources.
A 3. A 3. If the Wisconsin Department of Natural Resources does not provide approval of a Water Quality Trading Plan that includes at least 100 lb P/yr in Water Quality Trading credits derived from this BMP, the Grantee may choose to terminate this agreement.

Section B – Landowner/Operator Shall:
Example:

B 1. Design, install, operate and maintain BMPs listed in Addendum 2 of this agreement.
B 2. Allow access to the installed BMP by the Grantee, or an authorized representative of the Grantee for site inspection of the BMP for installation, operation and maintenance, following written or verbal authorization from landowner/operator.

Section C – Grantee Shall:
Example:

C 1. Provide cost sharing to the landowner/operator consistent with Addendum 2.
C 2. Make cost-share payments to the landowner/operator after payment is requested and evidence of contractor payment by the landowner/operator has been received, and the grantee verifies proper BMP installation.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Julian Popp	JP	12-17/24

Addendum 2

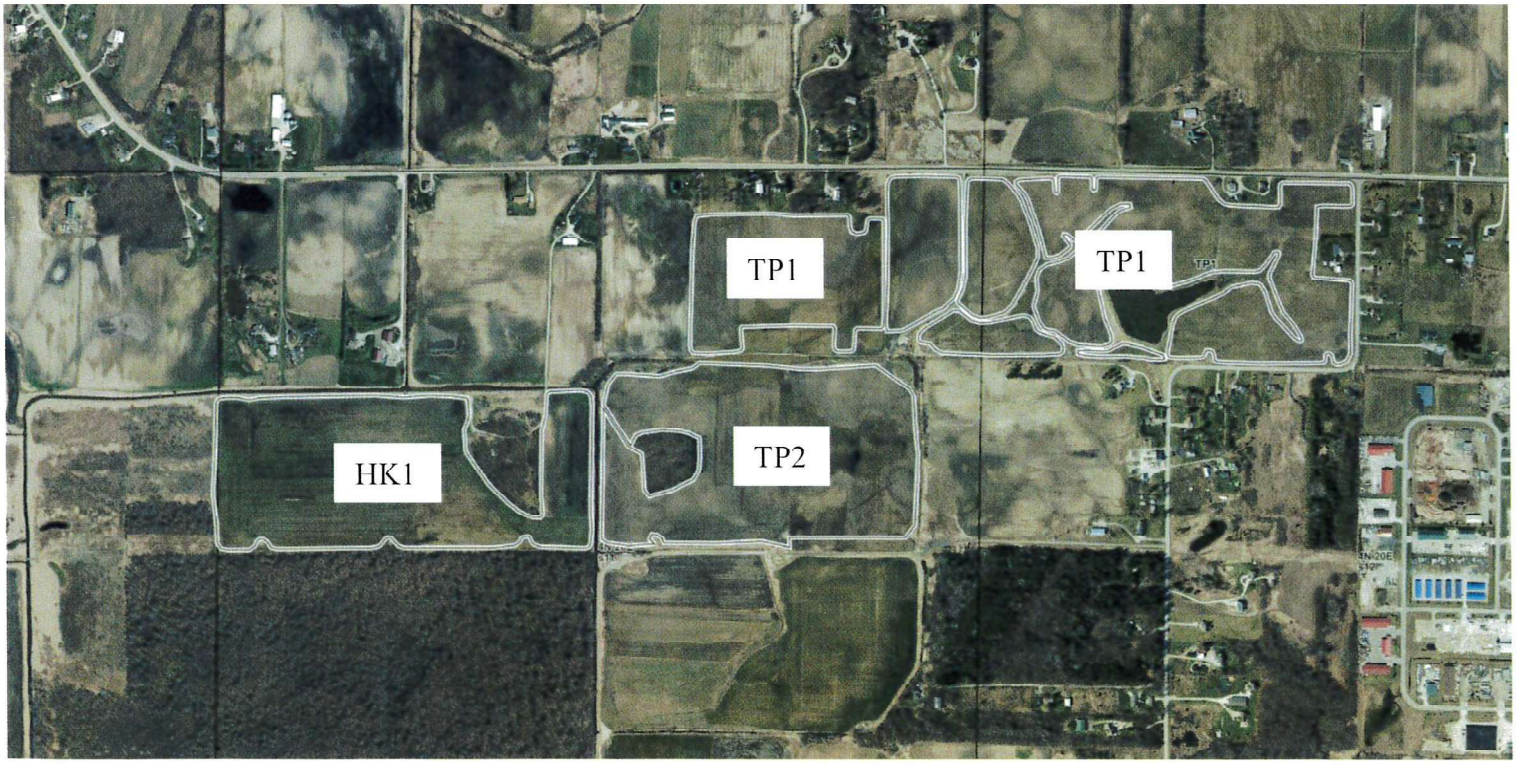
The cost-share recipient shall implement and maintain all best management practices listed in this Addendum, unless otherwise amended in accordance with this agreement.

Installation Period	
From (MM/YY)	To (MM/YY)
10/24	04/30

Field #	DNR BMP Code	Practice Name	Quantity	Unit	Unit Cost	Estimated Total Cost	Reimburs-ement Rate (%)	Estimated Cost-Share Amt.	Cost-Share Amt. From Other Programs*	Estimated Year to be Installed
HK1		Annual Small Grain Cover Crops	54.8	Acres	53	$2904	$20	$1096		2024
TP1		Annual Small Grain Cover Crops	95.7	Acres	53	$5072	$20	$1914		2024
TP2		Annual Small Grain Cover Crops	55	Acres	53	$2915	$20	$1100		2024
					TOTALS			$4,110		

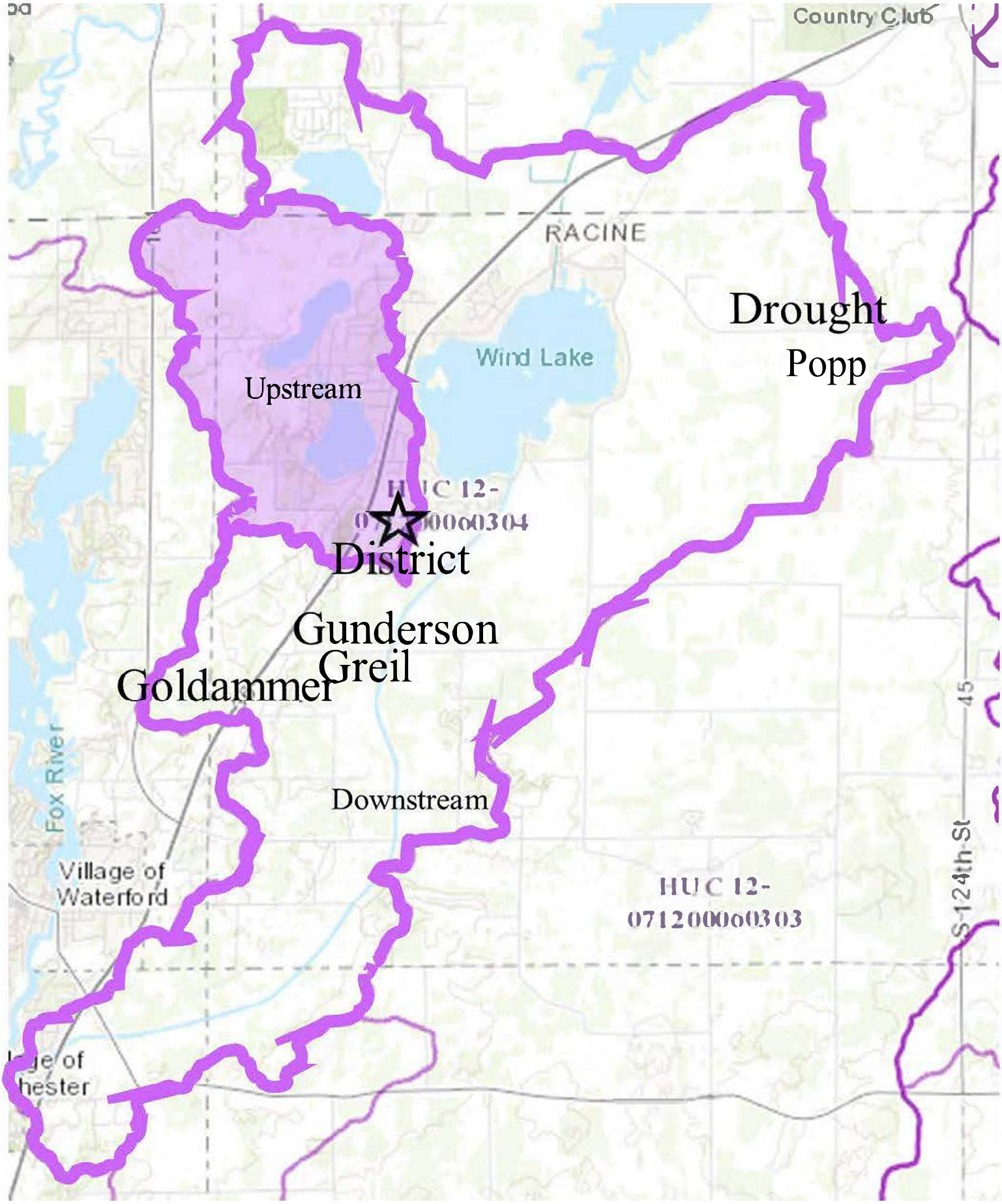
* Identify Program Names: _____

CSA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Julian Popp	JP	12/17/24



Appendix E: Norway HUC-12 Watershed

Norway Sanitary District's
HUC 12 Watershed: 071200060304



Droughtville_Baseline_2024-01-19

Farm: Droughtville, V20 Generated:1/19/2024, Crop year: 2024, Township Range Section:4N 20E s2

Popp_Norway_Field_Map

Farm: J Popp Farms, V20 Generated:9/2/2025, Crop year: 2024, Township Range Section:4N 20E s12

- Counties
- Township/Range
- Nutrient prohibited buffers
- Nutrient prohibited drawn areas
- Nutrient prohibited winter only
- Fields

Appendix F: Droughtville SnapPlus Baseline Model – No Cover Crop

WQ1: P Trade Report

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov**/ and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP		
Field Name	Soil Series	Soil Symbol	Acres	2022	2023	2024
Back Field	VARNA	VaB	17	44	27	41
East Treeline	OZAUKEE	OzaB	13	22	93	21
Front Road	OZAUKEE	OzaB	3	10	4	10
Grandmas	VARNA	VaB	18	47	22	45
Junior	OZAUKEE	OzaB	7	10	45	10
North	OZAUKEE	OzaB	8	35	10	31
NW corner	OZAUKEE	OzaB	9	12	50	11
Oak Tree	OZAUKEE	OzaB	18	75	41	71
West Barn	VARNA	VaB	22	81	26	72
Total			**114**	**335**	**318**	**312**

WQ2: Sediment Trade Report

The Sediment Trade Report estimates the annual tons of sediment in surface runoff from cropland entering surface waters. These sediment delivery calculations are based on RUSLE2 estimates of sheet and rill erosion for the predominant soil. Sediment losses from concentrated flow channel or gully erosion within a field are not included in these calculations. Field sediment yields are calculated for each year as US tons/field/year. Fields are only included if there at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, sediment losses must be converted into 'credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

Sediment Trading

Field Name	Soil Series	Soil Symbol	Acres	Sediment (US Tons)		
				2022	2023	2024
Back Field	VARNA	VaB	17.1	2.5	1.3	2.5
East Treeline	OZAUKEE	OzaB	13.1	2.6	10.9	2.6
Front Road	OZAUKEE	OzaB	2.9	1.1	0.6	1.1
Grandmas	VARNA	VaB	17.6	2.6	1.3	2.5
Junior	OZAUKEE	OzaB	6.9	1.2	5.5	1.3
North	OZAUKEE	OzaB	7.6	5.6	1.4	4.2
NW corner	OZAUKEE	OzaB	9	1.8	7.5	1.8
Oak Tree	OZAUKEE	OzaB	17.6	6.9	3.4	6.7
West Barn	VARNA	VaB	21.9	9.9	3.1	9.0
Total				34.3	35.1	31.7

Appendix G: Droughtville SnapPlus Model with Cover Crops – Proposed Conditions

WQ1: P Trade Report

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov**/ and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP		
Field Name	Soil Series	Soil Symbol	Acres	2022	2023	2024
Back Field	VARNA	VaB	17	14	17	13
East Treeline	OZAUKEE	OzaB	13	18	33	13
Front Road	OZAUKEE	OzaB	3	3	3	2
Grandmas	VARNA	VaB	18	9	11	12
Junior	OZAUKEE	OzaB	7	6	15	6
North	OZAUKEE	OzaB	8	7	6	8
NW corner	OZAUKEE	OzaB	9	7	16	7
Oak Tree	OZAUKEE	OzaB	18	21	24	19
West Barn	VARNA	VaB	22	19	16	20
Total			**114**	**105**	**141**	**100**

WQ2: Sediment Trade Report

The Sediment Trade Report estimates the annual tons of sediment in surface runoff from cropland entering surface waters. These sediment delivery calculations are based on RUSLE2 estimates of sheet and rill erosion for the predominant soil. Sediment losses from concentrated flow channel or gully erosion within a field are not included in these calculations. Field sediment yields are calculated for each year as US tons/field/year. Fields are only included if there at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, sediment losses must be converted into 'credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

Sediment Trading

Field Name	Soil Series	Soil Symbol	Acres	Sediment (US Tons)		
				2022	2023	2024
Back Field	VARNA	VaB	17.1	0.7	0.7	0.6
East Treeline	OZAUKEE	OzaB	13.1	2.0	3.1	1.5
Front Road	OZAUKEE	OzaB	2.9	0.3	0.3	0.3
Grandmas	VARNA	VaB	17.6	0.5	0.6	0.6
Junior	OZAUKEE	OzaB	6.9	0.8	1.5	0.8
North	OZAUKEE	OzaB	7.6	0.9	0.8	1.0
NW corner	OZAUKEE	OzaB	9	1.1	1.9	1.0
Oak Tree	OZAUKEE	OzaB	17.6	1.7	1.9	1.6
West Barn	VARNA	VaB	21.9	1.9	1.8	2.1

Total				9.7	12.7	9.6

Appendix H: Popp Farm SnapPlus Baseline Model – No Cover Crops, December 2024

WQ1: P Trade Report

Reported For	J Popp Farms
Printed	2025-04-15
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\3.0 Calculations \Submitted_to_DNR_Popp_2024-12-31\J Popp Farms_LAK_2024-12-31_j_Baseline.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov**/ and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP					
Field Name	Soil Series	Soil Symbol	Acres	2024	2025	2026	2027	2028	2029
B1	BLOUNT	BIA	63	217	119	78	122	266	
GUN1	HOUGHTON	Ht	17	18	12	9	13	18	
HK1	HOUGHTON	Ht	55	23	21	20	20	19	
HOM1	HOUGHTON	Ht	72	32	31	30	29	29	
TP1	OZAUKEE	OzaB2	96	821	717	1,568	464	1,101	995
TP2	HOUGHTON	Ht	61	21	20	19	18	18	
Total			**364**	**1,132**	**920**	**1,726**	**667**	**1,451**	**995**

WQ2: Sediment Trade Report

Reported For	J Popp Farms
Printed	2025-04-15
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\3.0 Calculations \Submitted_to_DNR_Popp_2024-12-31\J Popp Farms_LAK_2024-12-31_j_Baseline.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The Sediment Trade Report estimates the annual tons of sediment in surface runoff from cropland entering surface waters. These sediment delivery calculations are based on RUSLE2 estimates of sheet and rill erosion for the predominant soil. Sediment losses from concentrated flow channel or gully erosion within a field are not included in these calculations. Field sediment yields are calculated for each year as US tons/field/year. Fields are only included if there at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, sediment losses must be converted into 'credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

Sediment Trading

Field Name	Soil Series	Soil Symbol	Acres	Sediment (US Tons)					
				2024	2025	2026	2027	2028	2029
B1	BLOUNT	BlA	63.4	25.0	9.1	4.6	11.1	32.5	
GUN1	HOUGHTON	Ht	16.5	0.1	0.2	0.1	0.1	0.1	
HK1	HOUGHTON	Ht	54.8	0.1	0.1	0.1	0.1	0.1	
HOM1	HOUGHTON	Ht	72.1	0.1	0.1	0.1	0.1	0.1	
TP1	OZAUKEE	OzaB2	95.7	79.7	75.3	155.7	42.3	105.0	92.0

TP2	HOUGHTON	Ht	61.4	0.2	0.2	0.2	0.2	0.2	
Total				105.3	85.0	160.9	54.0	138.1	92.0

Appendix I: Popp Farm SnapPlus Model with Cover Crops – Proposed Conditions, December 2024

WQ1: P Trade Report

Reported For	J Popp Farms
Printed	2025-04-15
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\3.0 Calculations \Submitted_to_DNR_Popp_2024-12-31\J Popp Farms_LAK_2024-12-31_w_BMP.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov**/ and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP					
Field Name	Soil Series	Soil Symbol	Acres	2024	2025	2026	2027	2028	2029
B1	BLOUNT	BIA	63	196	111	74	133	143	
GUN1	HOUGHTON	Ht	17	18	17	8	12	12	
HK1	HOUGHTON	Ht	55	23	19	18	18	17	
HOM1	HOUGHTON	Ht	72	32	28	27	27	26	
TP1	OZAUKEE	OzaB2	96	979	565	471	356	935	618
TP2	HOUGHTON	Ht	61	21	19	17	17	16	
Total			**364**	**1,268**	**759**	**616**	**562**	**1,149**	**618**

WQ2: Sediment Trade Report

Reported For	J Popp Farms
Printed	2025-04-15
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\3.0 Calculations \Submitted_to_DNR_Popp_2024-12-31\J Popp Farms_LAK_2024-12-31_w_BMP.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The Sediment Trade Report estimates the annual tons of sediment in surface runoff from cropland entering surface waters. These sediment delivery calculations are based on RUSLE2 estimates of sheet and rill erosion for the predominant soil. Sediment losses from concentrated flow channel or gully erosion within a field are not included in these calculations. Field sediment yields are calculated for each year as US tons/field/year. Fields are only included if there at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, sediment losses must be converted into 'credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

Sediment Trading

Field Name	Soil Series	Soil Symbol	Acres	Sediment (US Tons)					
				2024	2025	2026	2027	2028	2029
B1	BLOUNT	BlA	63.4	22.4	8.3	4.3	12.5	15.8	
GUN1	HOUGHTON	Ht	16.5	0.1	0.1	0.1	0.1	0.1	
HK1	HOUGHTON	Ht	54.8	0.1	0.1	0.1	0.1	0.1	
HOM1	HOUGHTON	Ht	72.1	0.1	0.1	0.1	0.1	0.1	
TP1	OZAUKEE	OzaB2	95.7	96.8	59.1	40.0	31.9	88.4	56.5

TP2	HOUGHTON	Ht	61.4	0.2	0.2	0.2	0.2	0.2	
Total				119.7	67.9	44.8	44.9	104.7	56.5

Appendix J: Popp Farm SnapPlus Baseline Model – No Cover Crops August 2025

WQ1: P Trade Report

Reported For	J Popp Farms
Printed	2025-07-14
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\RLM Work \SnapPlus\Baseline_Split_TP1_New.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov**/ and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP					
Field Name	Soil Series	Soil Symbol	Acres	2024	2025	2026	2027	2028	2029
HK1	HOUGHTON	Ht	55	23	21	20	20	19	
TP1 A	OGDEN	Oc	16	11	6	9	9	13	18
TP1 B	OZAUKEE	OzaB	9	75	67	148	43	101	93
TP1 C	ELLIOTT	EtB	20	99	84	163	60	129	122
TP1 D	OZAUKEE	OzaB2	36	308	269	588	174	413	373
TP1 E	OZAUKEE	OzaB	14	114	102	225	65	153	141
TP2	HOUGHTON	Ht	61	21	20	19	18	18	
Total			**212**	**651**	**569**	**1,174**	**390**	**846**	**747**

WQ2: Sediment Trade Report

Reported For	J Popp Farms
Printed	2025-07-14
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\RLM Work \SnapPlus\Baseline_Split_TP1_New.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The Sediment Trade Report estimates the annual tons of sediment in surface runoff from cropland entering surface waters. These sediment delivery calculations are based on RUSLE2 estimates of sheet and rill erosion for the predominant soil. Sediment losses from concentrated flow channel or gully erosion within a field are not included in these calculations. Field sediment yields are calculated for each year as US tons/field/year. Fields are only included if there at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, sediment losses must be converted into 'credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

Sediment Trading

Field Name	Soil Series	Soil Symbol	Acres	Sediment (US Tons)					
				2024	2025	2026	2027	2028	2029
HK1	HOUGHTON	Ht	54.8	0.1	0.1	0.1	0.1	0.1	
TP1 A	OGDEN	Oc	15.9	0.1	0.1	0.2	0.1	0.1	0.1
TP1 B	OZAUKEE	OzaB	9.4	7.1	6.8	14.7	3.8	9.3	8.2
TP1 C	ELLIOTT	EtB	20.4	4.7	3.9	7.5	2.2	6.3	4.6
TP1 D	OZAUKEE	OzaB2	35.9	29.9	28.2	58.4	15.9	39.4	34.5
TP1 E	OZAUKEE	OzaB	14.1	10.7	10.1	22.0	5.7	14.0	12.4

TP2	HOUGHTON	Ht	61.4	0.2	0.2	0.2	0.2	0.2	
Total				52.8	49.4	103.0	27.9	69.5	59.9

Appendix K: Popp Farm SnapPlus Model with Cover Crops – Proposed Conditions, August 2025

WQ1: P Trade Report

Reported For	J Popp Farms
Printed	2025-07-14
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\RLM Work \SnapPlus\J Popp Farms_LAK_2024-12-31_w_BMP Split TP1 New.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The P Trade Report estimates the annual pounds of phosphorus (P) in surface runoff from cropland entering surface waters. These P loss calculations are based on a field's soil test P concentration, crops, tillage, nutrient management practices and estimates of average runoff and sheet and rill erosion for the predominant soil type. Losses from concentrated flow channel or gully erosion with a field are not included in these calculations. Field runoff losses are calculated for each year as **PTP** (lb P/field/yr). Fields are only included if there are at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, phosphorus losses (PTP) must be converted into 'P credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov**/ and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

P Trade Report				PTP					
Field Name	Soil Series	Soil Symbol	Acres	2024	2025	2026	2027	2028	2029
HK1	HOUGHTON	Ht	55	23	19	18	18	17	
TP1 A	OGDEN	Oc	16	11	6	11	8	12	12
TP1 B	OZAUKEE	OzaB	9	90	53	44	33	86	58
TP1 C	ELLIOTT	EtB	20	115	67	63	48	111	78
TP1 D	OZAUKEE	OzaB2	36	367	212	177	134	351	232
TP1 E	OZAUKEE	OzaB	14	136	80	67	50	130	87

P Trade Report				PTP					
Field Name	Soil Series	Soil Symbol	Acres	2024	2025	2026	2027	2028	2029
TP2	HOUGHTON	Ht	61	21	19	17	17	16	
Total			**212**	**763**	**455**	**398**	**307**	**722**	**467**

WQ2: Sediment Trade Report

Reported For	J Popp Farms
Printed	2025-07-14
Plan Completion/Update Date	2024-02-05
SnapPlus Version 20.4 built on 2021-06-03	
R:\Shared Folders\Projects\6236 - Norway Comp Alts\RLM Work \SnapPlus\J Popp Farms_LAK_2024-12-31_w_BMP Split TP1 New.snapDb	

Prepared for:
J Popp Farms
attn:Julian Popp
5535 E Wind Lake RD
Union Grove, 53182

The Sediment Trade Report estimates the annual tons of sediment in surface runoff from cropland entering surface waters. These sediment delivery calculations are based on RUSLE2 estimates of sheet and rill erosion for the predominant soil. Sediment losses from concentrated flow channel or gully erosion within a field are not included in these calculations. Field sediment yields are calculated for each year as US tons/field/year. Fields are only included if there at least 2 years of crops before the selected start year. Before using this report as part of a Water Quality Trade activity, sediment losses must be converted into 'credits' according to DNR guidance.

For more information go to **http://dnr.wi.gov** and type keyword: **Water Quality Trading**

Questions? Please contact DNRphosphorus@wisconsin.gov

This report was developed for Wisconsin DNR Water Quality Trading and Adaptive Management purposes and cannot be used to demonstrate compliance with NR 151 or NRCS 590 NM plan requirements.

Sediment Trading

Field Name	Soil Series	Soil Symbol	Acres	Sediment (US Tons)					
				2024	2025	2026	2027	2028	2029
HK1	HOUGHTON	Ht	54.8	0.1	0.1	0.1	0.1	0.1	
TP1 A	OGDEN	Oc	15.9	0.1	0.1	0.1	0.1	0.1	0.1
TP1 B	OZAUKEE	OzaB	9.4	8.6	5.3	3.7	2.8	7.9	5.0
TP1 C	ELLIOTT	EtB	20.4	5.8	3.0	2.2	1.7	5.2	2.9
TP1 D	OZAUKEE	OzaB2	35.9	36.3	22.2	15.0	11.9	33.2	21.2

TP1 E	OZAUKEE	OzaB	14.1	12.9	7.9	5.6	4.3	11.8	7.6
TP2	HOUGHTON	Ht	61.4	0.2	0.2	0.2	0.2	0.2	
Total				64.1	38.8	26.9	21.1	58.5	36.8

Appendix L: BMP Technical Standard Natural Resources Conservation Service (NRCS)

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

COVER CROP

(Ac.)

CODE 340

DEFINITION

Grasses, legumes, and forbs planted for seasonal vegetative cover.

PURPOSE

This practice is applied to support one or more of the following purposes:

- Reduce erosion from wind and water.
- Maintain or increase soil health and organic matter content.
- Reduce water quality degradation by utilizing excessive soil nutrients.
- Suppress excessive weed pressures and break pest cycles.
- Improve soil moisture use efficiency.
- Minimize soil compaction.

CONDITIONS WHERE PRACTICE APPLIES

All lands requiring seasonal vegetative cover for natural resource protection or improvement.

CRITERIA

General Criteria Applicable to All Purposes

Plant species, seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, and planting methods will be consistent with applicable local criteria and soil/site conditions.

Select species that are compatible with other components of the cropping system.

Ensure herbicides used with crops are compatible with cover crop selections and purpose(s).

Cover crops may be established between successive production crops, or companion-planted or relay-planted into production crops. Select species and planting dates that will not compete with the production crop yield or harvest.

Do not burn cover crop residue.

Determine the method and timing of termination to meet the grower's objective and the current NRCS Cover Crop Termination Guidelines.

When a cover crop will be grazed or hayed ensure the planned management will not compromise the selected conservation purpose(s).

Do not harvest cover crops for seed.

If the specific rhizobium bacteria for the selected legume are not present in the soil, treat the seed with the appropriate inoculum at the time of planting.

Additional Criteria to Reduce Erosion from Wind and Water

Time the cover crop establishment in conjunction with other practices to adequately protect the soil during the critical erosion period(s).

Select cover crops that will have the physical characteristics necessary to provide adequate erosion protection.

Use the current erosion prediction technology to determine the amount of surface and/or canopy cover needed from the cover crop to achieve the erosion objective.

Additional Criteria to Maintain or Increase Soil Health and Organic Matter Content

Cover crop species will be selected on the basis of producing higher volumes of organic material and root mass to maintain or increase soil

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office or visit the Field Office Technical Guide.

organic matter.

The planned crop rotation including the cover crop and associated management activities will score a Soil Conditioning Index (SCI) value > 0, as determined using the current approved NRCS Soil Conditioning Index (SCI) procedure, with appropriate adjustments for additions to and or subtractions from plant biomass.

The cover crop shall be planted as early as possible and be terminated as late as practical for the producer's cropping system to maximize plant biomass production, considering crop insurance criteria, the time needed to prepare the field for planting the next crop, and soil moisture depletion.

Additional Criteria Reduce Water Quality Degradation by Utilizing Excessive Soil Nutrients

Establish cover crops as soon as practical prior to or after harvest of the production crop. (i.e. before or after harvest)

Select cover crop species for their ability to effectively utilize nutrients.

Terminate the cover crop as late as practical to maximize plant biomass production and nutrient uptake. Practical considerations for termination date may include crop insurance criteria, the amount of time needed to prepare the field for planting the next crop, weather conditions, and cover crop effects on soil moisture and nutrient availability to the following crop.

If the cover crop will be harvested for feed (hay/balage/etc.), choose species that are suitable for the planned livestock, and capable of removing the excess nutrients present.

Additional Criteria to Suppress Excessive Weed Pressures and Break Pest Cycles

Select cover crop species for their life cycles, growth habits, and other biological, chemical and or physical characteristics to provide one or more of the following:

- To suppress weeds, or compete with weeds.
- Break pest life cycles or suppress of plant pests or pathogens.
- Provide food or habitat for natural enemies of pests.
- Release compounds such as glucosinolates that suppress soil borne pathogens or pests.

Select cover crop species that do not harbor pests or diseases of subsequent crops in the rotation.

Additional Criteria to Improve Soil Moisture Use Efficiency

In areas of limited soil moisture, terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop. Cover crops established for moisture conservation shall be left on the soil surface.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to maximize soil moisture removal.

Additional Criteria to Minimize Soil Compaction

Select cover crop species that have the ability to root deeply and the capacity to penetrate or prevent compacted layers.

CONSIDERATIONS

Plant cover crops in a timely matter and when there is adequate moisture to establish a good stand.

When applicable, ensure cover crops are managed and are compatible with the client's crop insurance criteria.

Maintain an actively growing cover crop as late as feasible to maximize plant growth, allowing time to prepare the field for the next crop and to optimize soil moisture.

Select cover crops that are compatible with the production system, well adapted to the region's

climate and soils, and resistant to prevalent pests, weeds, and diseases. Avoid cover crop species that harbor or carry over potentially damaging diseases or insects.

Cover crops may be used to improve site conditions for establishment of perennial species.

When cover crops are used for grazing, select species that will have desired forage traits, be palatable to livestock, and not interfere with the production of the subsequent crop.

Use plant species that enhance forage opportunities for pollinators by using diverse legumes and other forbs.

Cover crops may be selected to provide food or habitat for natural enemies of production crop pests.

Cover crops residues should be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

Seed a higher density cover crop stand to promote rapid canopy closure and greater weed suppression. Increased seeding rates (1.5 to 2 times normal) can improve weed-competitiveness.

Cover crops may be selected that release biofumigation compounds that inhibit soil-borne plant pests and pathogens.

Species can be selected to serve as trap crops to divert pests from production crops.

Select a mixture of two or more cover crop species from different plant families to achieve one or more of the following: (1) species mix with different maturity dates, (2) attract beneficial insects, (3) attract pollinators, (4) increase soil biological diversity, (5) serve as a trap crop for insect pests, or (6) provide food and cover for wildlife habitat management.

Plant legumes or mixtures of legumes with grasses, crucifers, and/or other forbs to achieve biological nitrogen fixation. Select cover crop species or mixture, and timing and method of termination that will maximize efficiency of nitrogen utilization by the following crop, considering soil type and conditions, season and weather conditions, cropping system, C:N ratio of the cover crop at termination, and anticipated nitrogen needs of the subsequent crop. Use LGU- recommended nitrogen credits from the legume and reduce nitrogen applications to the subsequent crop accordingly. "If the specific rhizobium bacteria for the selected legume are not present in the soil, treat the seed with the appropriate inoculum at the time of planting.

Time the termination of cover crops to meet nutrient release goals. Termination at early vegetative stages may cause a more rapid release compared to termination at a more mature stage.

Both residue decomposition rates and soil fertility can affect nutrient availability following termination of cover crops

Allelopathic effects to the subsequent crop should be evaluated when selecting the appropriate cover crop.

Legumes add the most plant-available N if terminated when about 30% of the crop is in bloom.

Additional Considerations to Reduce Erosion by Wind or Water

To reduce erosion, best results are achieved when the combined canopy and surface residue cover attains 90 percent or greater during the period of potentially erosive wind or rainfall.

Additional Considerations to Reduce Water Quality Degradation by Utilizing Excessive Soil Nutrients

Use deep-rooted species to maximize nutrient recovery.

When appropriate for the crop production system, mowing certain grass cover crops (e.g., sorghum-sudangrass, pearl millet) prior to heading and allowing the cover crop to regrow can enhance rooting depth and density, thereby increasing their subsoiling and nutrient-recycling efficacy.

Additional Considerations to Increase Soil Health and Organic Matter Content

Increase the diversity of cover crops (e.g., mixtures of several plant species) to promote a wider diversity of soil organisms, and thereby promote increased soil organic matter.

Plant legumes or mixtures of legumes with grasses, crucifers, and/or other forbs to provide nitrogen through biological nitrogen fixation.

Legumes add the most plant-available N if terminated when about 30% of the crop is in bloom.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field or treatment unit according to the planning criteria and operation and maintenance requirements of this standard. Specifications shall describe the requirements to apply the practice to achieve the intended purpose for the practice site. Plans for the establishment of cover crops shall, as a minimum, include the following specification components in an approved Cover Crop, 340, Implementation Requirements document:

- Field number and acres
- Species of plant(s) to be established.
- Seeding rates.
- Seeding dates.
- Establishment procedure.
- Rates, timing, and forms of nutrient application (if needed).
- Dates and method to terminate the cover crop.
- Other information pertinent to establishing and managing the cover crop e.g., if haying or grazing is planned specify the planned management for haying or grazing.

OPERATION AND MAINTENANCE

Evaluate the cover crop to determine if the cover crop is meeting the planned purpose(s). If the cover crop is not meeting the purpose(s) adjust the management, change the species of cover crop, or choose a different technology.

REFERENCES

A. Clark (ed.). 2007. Managing cover crops profitably. 3rd ed. Sustainable Agriculture Network Handbook Series; bk 9.

Hargrove, W.L., ed. Cover crops for clean water. SWCS, 1991.

Magdoff, F. and H. van Es. Cover Crops. 2000. p. 87-96 *In* Building soils for better crops. 2nd ed. Sustainable Agriculture Network Handbook Series; bk 4. National Agriculture Library. Beltsville, MD.

Reeves, D.W. 1994. Cover crops and erosion. p. 125-172 *In* J.L. Hatfield and B.A. Stewart (eds.) Crops Residue Management. CRC Press, Boca Raton, FL.

NRCS Cover Crop Termination Guidelines: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/climatechange/?cid=stelprdb1077238

Revised Universal Soil Loss Equation Version 2 (RUSLE2) website: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/rusle2/

Wind Erosion Prediction System (WEPS) website: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/weps/

USDA, Natural Resources Conservation Service, National Agronomy Manual, 4th Edition, Feb. 2011. Website: http://directives.sc.egov.usda.gov/ Under Manuals and Title 190.

How do I know what tillage system to choose when mine is not in the drop-down list?

You can select the most similar SnapPlus system by using the comparing the STIR values. STIR stands for Soil Tillage Intensity Rating and differences between STIR ratings can be used to show differences in the degree of soil disturbance between tillage types. The ratings take into account tillage type, tillage depth, equipment operating speed, and percent of surface area exposed. A STIR value can be calculated for each soil disturbing operation in RUSLE2. STIR values for all the operations are added to get a value for the system. The table below shows the sums of the STIR for each SnapPlus tillage choice in the fall and spring. Note that drilled and row crops have different STIR values for the same tillage because of differences in the soil disturbance in the planting operation.

Soil Tillage Intensity Ratings for SnapPlus Tillage Choices

Tillage Name	Description	Fall STIR	Spring STIR, Row crops[1]	Spring STIR, Drilled crops	Total annual STIR, Row crops[1]	Total annual STIR, Drilled crops
Fall chisel, disked	Fall chisel plowing (twisted shovel) with spring disking (tandem, light) and field cultivation before planting.	46	48	52	93	97
Fall chisel, no disk	Fall chisel plowing (twisted shovel) and field cultivation before planting.	46	28	32	74	78
Fall cultivation	One field cultivation before planting, use for systems with one pass in fall and no spring tillage	26	2	6	28	32
Fall moldboard plow	Fall moldboard plowing with spring disking (tandem) and field cultivation before planting.	65	48	52	113	117
Fall vertical tillage	Fall pass plus a spring pass with same seedbed conditioner: double gang coulter caddy, rotary harrow, and rolling basket incorporator.	20	22	26	42	46
No-till	No soil disturbance except for planting	0	2	2 to 6 [2]	2	2 to 6[2]
Spring chisel, disked	Spring chisel plowing (twisted shovel) followed by disking (tandem) and field cultivation before planting.	0	93	97	93	97

Spring chisel, no disk	Spring chisel plowing (twisted shovel) and field cultivation before planting.	0	74	78	74	78
Spring cultivation	One field cultivation before planting, use for most one-pass systems.	0	28	32	28	32
Spring moldboard plow	Spring moldboard plowing followed by disking (tandem) and field cultivation before planting.	0	113	117	113	117
Strip-till	No soil disturbance except for 30% of the surface at planting with a strip-till planter.	0	5	NA	5	NA
Spring vertical tillage	Spring pass using a seedbed conditioner with a double gang coulter caddy, rotary harrow, and rolling basket incorporator	0	22	26	22	26

[1]Narrow-row crops have slightly higher (+ 2 to 3) STIR due to narrow-row planters disturbing a greater percentage of the soil surface.

[2]STIR vales for no-till small grains are 2 and no-till legume forages are 6 due to differences in planting equipment.

Use the **Soil Tillage Intensity Ratings for Soil Disturbing Operations** list to find STIR values for the operations that most closely resemble yours and add them up to compare both fall and spring STIR values.

Example 30-inch row corn tillage system: Fall subsoiler (Vee ripper) with two spring field cultivations.

Operation	Fall STIR	Spring STIR	Total annual STIR
Subsoiler	35		
Cultivator, field 6-12 in sweeps		26	
Cultivator, field 6-12 in sweeps		26	
Planter, double disk opener		2	
Tillage system total	35	54	89

This system STIR most closely resembles that of the SnapPlus Fall chisel, disk system. The overall annual STIR is lower, with the Fall STIR being 11 smaller (46-35 = 11) and the Spring STIR being 6 larger (54-48). Tillage systems STIR values are not perfect indicators of relative soil loss on a field. It is, however, reasonable to assume that a field is meeting Tolerable soil loss (T) if soil loss is less than T when calculated using one of the SnapPlus systems with a higher STIR value than actual field management. Therefore, a field with this example system can be assumed to meet the standard if soil loss in SnapPlus is under T with the Fall chisel, disk option for corn.

Appendix M: WPDES Permit – Town of Norway Sanitary District

WISCONSIN
DEPT. OF NATURAL RESOURCES

WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

Town of Norway Sanitary District #1

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility located at
6801 Milwaukee Avenue, Wind Lake, WI
STH 36
to
Waubeesee Lake Drainage Canal (Wind Lake Canal, Fox (IL) River Watershed, Fox (IL) River Basin) in Racine County

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By

Bryan Hartsook
Wastewater Field Supervisor

12/22/2022
Date Permit Signed/Issued for Modification

PERMIT TERM: EFFECTIVE DATE - October 01, 2020 **EXPIRATION DATE - September 30, 2025**
EFFECTIVE DATE OF MODIFICATION: January 01, 2023

TABLE OF CONTENTS

1 INFLUENT REQUIREMENTS **1**

1.1 SAMPLING POINT(S) 1
1.2 MONITORING REQUIREMENTS 1
1.2.1 Sampling Point 701 - INFLUENT TO PLANT *1*

2 IN-PLANT REQUIREMENTS **2**

2.1 SAMPLING POINT(S) 2
2.2 MONITORING REQUIREMENTS AND LIMITATIONS 2
2.2.1 Sampling Point 101 - Mercury Field Blank *2*

3 SURFACE WATER REQUIREMENTS **3**

3.1 SAMPLING POINT(S) 3
3.2 MONITORING REQUIREMENTS AND EFFLUENT LIMITATIONS 3
3.2.1 Sampling Point (Outfall) 001 - Effluent *3*

4 LAND APPLICATION REQUIREMENTS **13**

4.1 SAMPLING POINT(S) 13
4.2 MONITORING REQUIREMENTS AND LIMITATIONS 13
4.2.1 Sampling Point (Outfall) 002 - Hauled Sludge *13*
4.2.2 Sampling Point (Outfall) 003 - Land Application *16*

5 SCHEDULES **21**

5.1 CHLORIDE TARGET VALUE 21
5.2 WATER QUALITY TRADING (WQT) MANAGEMENT PLAN 21
5.3 ANNUAL WATER QUALITY TRADING (WQT) REPORT 22
5.4 EFFLUENT LIMITATIONS FOR E. COLI 22

6 STANDARD REQUIREMENTS **24**

6.1 REPORTING AND MONITORING REQUIREMENTS 24
6.1.1 Monitoring Results *24*
6.1.2 Sampling and Testing Procedures *24*
6.1.3 Recording of Results *24*
6.1.4 Reporting of Monitoring Results *24*
6.1.5 Compliance Maintenance Annual Reports *25*
6.1.6 Records Retention *25*
6.1.7 Other Information *25*
6.1.8 Reporting Requirements – Alterations or Additions *25*
6.2 SYSTEM OPERATING REQUIREMENTS 26
6.2.1 Noncompliance Reporting *26*
6.2.2 Flow Meters *26*
6.2.3 Raw Grit and Screenings *26*
6.2.4 Sludge Management *26*
6.2.5 Prohibited Wastes *27*
6.2.6 Bypass *27*
6.2.7 Scheduled Bypass *27*
6.2.8 Controlled Diversions *27*
6.2.9 Proper Operation and Maintenance *28*
6.2.10 Operator Certification *28*
6.3 SEWAGE COLLECTION SYSTEMS 28
6.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows *28*
6.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program *30*
6.3.3 Sewer Cleaning Debris and Materials *30*
6.4 SURFACE WATER REQUIREMENTS 30

6.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit *30*
6.4.2 Effluent Temperature Requirements *31*
6.4.3 Visible Foam or Floating Solids *31*
6.4.4 Surface Water Uses and Criteria *31*
6.4.5 Percent Removal *31*
6.4.6 E. coli *31*
6.4.7 Seasonal Disinfection *31*
6.4.8 Whole Effluent Toxicity (WET) Monitoring Requirements *32*
6.4.9 Whole Effluent Toxicity (WET) Identification and Reduction *32*
6.4.10 Reopener Clause *32*
6.5 LAND APPLICATION REQUIREMENTS 32
6.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations *32*
6.5.2 General Sludge Management Information *33*
6.5.3 Sludge Samples *33*
6.5.4 Land Application Characteristic Report *33*
6.5.5 Calculation of Water Extractable Phosphorus *33*
6.5.6 Annual Land Application Report *33*
6.5.7 Other Methods of Disposal or Distribution Report *33*
6.5.8 Approval to Land Apply *34*
6.5.9 Soil Analysis Requirements *34*
6.5.10 Land Application Site Evaluation *34*
6.5.11 Class B Sludge: Fecal Coliform Limitation *34*
6.5.12 Class B Sludge - Vector Control: Incorporation *35*
6.5.13 Sludge Hauling *35*

7 SUMMARY OF REPORTS DUE **36**

1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
701	INFLUENT: 24-hour flow proportional samples shall be collected in the screening building from the channel after the fine screen, but before addition of Return Activated Sludge.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD_5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	1/ 6 Months	24-Hr Flow Prop Comp	Monitor during calendar year 2023 and 2024. See 'Mercury Monitoring' section below.

1.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

2 In-Plant Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
101	FIELD BLANK: Collect the mercury field blank using standard sample handling procedures.

2.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point 101 - Mercury Field Blank

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	1/ 6 Months	Blank	Monitor during calendar years 2023 and 2024. See 'Mercury Monitoring' section below.

2.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3 Surface Water Requirements

3.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
001	EFFLUENT: 24-hour flow proportional composite samples shall be collected from the channel prior to UV disinfection. Grab samples shall be collected after the Parshall flume.

3.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 001 - Effluent

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD_5, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD_5, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	10 mg/L	3/Week	24-Hr Flow Prop Comp	
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
Dissolved Oxygen	Daily Min	7.0 mg/L	5/Week	Grab	
E. coli	Geometric Mean – Monthly	126 #/100 ml	2/Week	Grab	Limit effective May – September annually.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit effective May – September annually. See the "E. coli Percent Limit" section below. Enter the result in the DMR on the last day of the month.
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	11.4 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective November through March.
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	5.3 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective in April.
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	3.6 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective May through September.

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonia (NH_3-N) Total	Weekly Avg	7.4 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective in October.
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	4.5 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective November through March.
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	2.1 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective in April.
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	1.4 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective May through September.
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	3.0 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective in October.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Total		mg/L	Quarterly	Calculated	Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Total Nitrate Nitrogen.
Phosphorus, Total	Monthly Avg	0.66 mg/L	3/Week	24-Hr Flow Prop Comp	Effective upon reissuance, this limit will be retained beyond the effective date of the final limits as it represents a minimum control level. Final limits become effective January 1, 2022. See 'Water Quality Trading (WQT)' sections for more information.
Phosphorus, Total		lbs/day	3/Week	Calculated	Report daily mass discharged using Equation 1a in the 'Water Quality Trading (WQT)' section.
WQT Credits Used (TP - monthly)		lbs/month	Monthly	Calculated	Report WQT TP Credits used per month using Equation 2b. in the 'Water Quality Trading (WQT)' section. Available TP Credits are specified in Table 1 and in the approved Water Quality Trading Plan.

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
WQT Credits Used (TP – six-month)		lbs	1/6 Months	Calculated	Report WQT TP Credits used per six-month period using Equation 3c. in the 'Water Quality Trading (WQT)' section. Available TP Credits are specified in Table 1 and in the approved Water Quality Trading Plan.
WQT Computed Compliance (TP)	Monthly Avg	0.225 mg/L	Monthly	Calculated	Limit is effective January 1, 2022. Report the WQT TP Computed Compliance value using Equation 4a in the 'Water Quality Trading (WQT)' section. Value entered on the last day of the month.
WQT Computed Compliance (TP)	6-Month Avg	0.075 mg/L	Monthly	Calculated	Limit is effective January 1, 2022. Report the WQT TP Computed Compliance value using Equation 4b in the 'Water Quality Trading (WQT)' section. Value entered on the last day of the averaging period.
WQT Computed Compliance (TP)	6-Month Avg	1.0 lbs/day	Monthly	Calculated	Limit is effective January 1, 2022. Report the WQT TP Computed Compliance value using Equation 4c in the 'Water Quality Trading (WQT)' section. Value entered on the last day of the averaging period.
WQT Credits Used (TP - monthly)	Annual Total	41.9 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed Table 1 values listed below. Use Equation 2b.
WQT Credits Used (TP – six month)	Annual Total	41.9 lbs/yr	Annual	Calculated	The sum of total six-month credits used may not exceed Table 1 values below. Use Equation 3c.
Chloride	Daily Max	760 mg/L	4/Month	24-Hr Flow Prop Comp	

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Chloride	Weekly Avg	680 mg/L	4/Month	24-Hr Flow Prop Comp	This is an interim limit effective immediately upon permit reissuance. See 'Chloride Variance' section below and 'Schedules' section for the applicable chloride target value.
Chloride		lbs/day	4/Month	Calculated	Chloride mass = daily concentration (mg/L) x daily flow (MGD) x 8.34
Mercury, Total Recoverable		ng/L	1/ 6 Months	Grab	Monitor during calendar years 2023 and 2024. See 'Mercury Monitoring' section below.
Temperature Maximum		deg F	Daily	Continuous	Monitor during calendar year 2024 (January 1 - December 31)
Acute WET		TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annually in rotating quarters. See 'WET Testing' section below.
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annually in rotating quarters. See 'WET Testing' section below.

3.2.1.1 Annual Average Design Flow

The annual average design flow of the permittee's wastewater treatment facility is 1.6 MGD.

3.2.1.2 E. coli Percent

No more than 10 percent of E. coli bacteria samples collected in any calendar month may exceed 410 #/100 ml. Bacteria samples may be collected more frequently than required. All samples shall be reported on the monthly discharge monitoring reports (DMRs). The following calculation should be used to calculate percent exceedances.

$$\frac{\#\ of\ Samples\ greater\ than\ 410\ \#/100}{Total\ \#\ of\ samples} \times 100 = \%\ Exceedance$$

3.2.1.3 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3.2.1.4 Effluent Temperature Monitoring

For monitoring temperature continuously, collect measurements in accordance with s. NR 218.04(13). This means that discrete measurements shall be recorded at intervals of not more than 15 minutes during the 24-hour period. Report the maximum temperature measured during the day on the DMR.

3.2.1.5 Whole Effluent Toxicity (WET) Testing

Primary Control Water: The Waubeesee Lake Drainage Canal, upstream and out of the influence of the mixing zone of Outfall 001 and any other known discharges.

Instream Waste Concentration (IWC): 100%

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.
- **Chronic:** 100, 75, 50, 25, 12.5% and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- October-December 2020, April-June 2021, July-September 2022, January-March 2023, October-December 2024

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in October-December 2025.

Chronic tests shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- October-December 2020, April-June 2021, July-September 2022, January-March 2023, October-December 2024

Chronic WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in October-December 2025.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: $TU_a = 100 \div LC_{50}$. A chronic toxicity test shall be considered positive if the Toxic Unit - Chronic (TU_c) is greater than 1.0 for either species. The TU_c shall be calculated as follows: $TU_c = 100 \div IC_{25}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90-day reporting period shall begin the day after the test which showed a positive result. The

retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

3.2.1.6 Chloride Variance – Implement Source Reduction Measures

This permit contains a variance to the water quality-based effluent limit (WQBEL) for chloride granted in accordance with s. NR 106.83(2), Wis. Adm. Code. As conditions of this variance the permittee shall (a) maintain effluent quality at or below the interim effluent limitation specified in the table above, (b) implement the chloride source reduction measures specified below, (c) follow the approved Source Reduction Plan and (d) perform the actions listed in the schedule. (See the Schedules section herein.):

Chloride Source Reduction Measures:

1. Continue to provide education to residents and businesses on the effects of excessive chloride use and the role of water softeners by providing information regarding water softeners, non-softened hosebibs, and DIR ordinance requirement when issuing building permits and including informational articles in the Town of Norway's quarterly newsletter.
2. Work with the Town of Norway to create a webpage for the Sanitary District on the Town's website. Include information on the new webpage regarding the effects of excessive chloride use, the importance of chloride reductions, and actions that users can take to help achieve reductions.
3. Engage in discussions with water equipment vendors in Wind Lake and Waterford to explain the effect of excessive chloride use, discuss the importance of chloride reduction, and encourage actions installers can take to help achieve reductions.
4. Provide education to residents and businesses by attending community events such as homeowners' association meetings or lake association meetings. Develop educational materials explaining the effects of excessive chloride use and actions that can be taken to help achieve reductions. Attend at least one event annually.
5. Research and evaluate feasibility of a program to incentivize water softener upgrades or tune-ups in residential areas. If approved by partnering municipalities, implement the program and evaluate effectiveness.
6. Continue to review monthly chloride effluent data to identify trends and potential sources to the sanitary system. Collect additional data by obtaining chloride samples within the sanitary district throughout the permit term.
7. Visit elementary school and middle school annually to inspect equipment and discuss actions that can be taken to help achieve chloride reductions.
8. Visit City of Muskego utilities to provide information regarding excessive chloride use, the need for reductions, and reduce chloride contributions to the system from satellite users.
9. Optimize use of current phosphorus treatment additives to achieve the lowest level of effluent residual chlorides practicable.
10. Continue to take actions that prevent chloride from reaching the sewer system via inflow and infiltration by televising the sanitary system and making repairs as issues are identified.
11. Engage in discussions with the Town of Norway and City of Muskego to inform salt truck drivers of the consequences of overapplication and the benefits of efficient application.

3.2.1.7 Phosphorus Water Quality Trading (WQT)

The permittee may use water quality trading to demonstrate compliance with WQBELs for total phosphorus (TP) of 0.225 mg/L monthly average, 0.075 mg/L 6-month average, and 1.0 lbs/day 6-month average. Pollutant

reduction credits for total phosphorus are available as specified in Water Quality Trading Plan WQT-2020-0002 (February 2020) or approved amendments thereof.

Table 1. Available Phosphorus Credits per WQT-2020-0002

Year	Available TP Credits (lbs/yr)
2020	0
2021	0
2022	41.9
2023	41.9
2024	41.9
2025*	41.9

*In the event that this permit is not reissued prior to the expiration date, 41.9 lbs/yr of credits will be available in subsequent year(s).

Only those pollutant reduction credits established by a water quality trading plan approved by the Department may be used by the permittee to demonstrate compliance with the WQBELs identified in this subsection. If the permittee wishes to use pollutant reduction credits not identified in an approved water quality trading plan, the permittee must amend the plan or develop a new plan and obtain Department approval of the amended or new plan prior to use of the new pollutant reduction credits. Prior to Department approval, the amended or new water quality trading plan will be subject to notice and opportunity for public comment. Any change in the number of available credits requires a permit modification.

In the event pollutant reduction credits as defined in the approved water quality trading plan are no longer generated, the permittee shall comply with the WQBELs for TP contained in this subsection. The sum of available interim and long-term credits shown in Table 1 may be used to demonstrate compliance for a given year. Interim credits are subject to duration limits and may not be used past the duration defined in Water Quality Trading Plan WQT-2020-0002 (February 2020).

3.2.1.8 Demonstrating Compliance with TP WQBELs Using Water Quality Trading

Use the following methods to demonstrate compliance with the TP WQBELs contained in the Water Quality Trading subsection above.

TOTAL POLLUTANT DISCHARGED (TP)

Use the following equations to calculate the amount of pollutant discharged for Monthly Avg TP [lbs/day].

TP Discharged [lbs/day] = TP Discharged [mg/L] × Daily Flow [MGD] × 8.34 *(Eq. 1a.)*

Monthly or Six-Month Avg = Σ daily results ÷ # of results *(Eq. 1b.)*

WQT CREDITS USED (TOTAL PHOSPHORUS - MONTHLY)

Use the following method to calculate the credits to be used for monthly total phosphorus (TP) limits expressed as a mass in lbs/month:

WQT Credits Needed (TP monthly) [lbs/day] = (Monthly Avg TP [mg/L] – 0.225 [mg/L]) × Monthly Avg Flow [MGD] × 8.34 *(Eq. 2a.)*

WQT Credits Used (TP – monthly) [lbs/month] = WQT TP Credits Needed [lbs/day] × # of days of discharge/month

(Eq. 2b.)

Note: When the TP discharge is less than 0.225 mg/L, report 0 (zero) as the "WQT Credits Used (TP monthly)".

WQT CREDITS USED (TOTAL PHOSPHORUS – SIX MONTH)

Use the following method to calculate the credits to be used for six-month average total phosphorus (TP) limits expressed as a mass:

WQT Credits Needed (TP six-month) [lbs/day] = (six-month Avg TP [mg/L] – 0.075 [mg/L]) × six-month average Flow [MGD] × 8.34 *(Eq. 3a.)*

WQT Credits Needed (TP six-month) [lbs/day] = six-month Avg TP [lbs/day] – 1.0 lbs/day *(Eq. 3b.)*

When the "six-month Avg TP" discharged is greater than either 0.075 mg/L or 1.0 lbs/day, select the greater of the two values to be used in Equations 3c and 4 below.

Note: When the "six-month Avg TP" discharged is less than 0.075 mg/L AND 1.0 lbs/day, report 0 (zero) as the "WQT TP Credits Used".

WQT TP Credits Used (TP – six month) [lbs] = WQT TP Credits Needed [lbs/day] x # of days of discharge in averaging period.

(Eq. 3c.)

WQT COMPUTED COMPLIANCE (TOTAL PHOSPHORUS)

Use the following method to demonstrate compliance with TP WQBELs expressed as a monthly average concentration in mg/L:

WQT TP Computed Compliance [mg/L] = Monthly Avg TP [mg/L] – [WQT TP Credits Needed [lbs/day]* ÷ (Monthly Avg Flow [MGD] × 8.34)] *(Eq. 4a.)*

Use the following method to demonstrate compliance with TP WQBELs expressed as a six-month average concentration in mg/L:

WQT TP Computed Compliance [mg/L] = Six-Month Avg TP [mg/L] – [WQT TP Credits Needed [lbs/day]* ÷ (Six-Month Avg Flow [MGD] × 8.34)] *(Eq. 4b.)*

*Result from equation 3a or 3b, the value used for Equation 3c.

Use the following method to demonstrate compliance with TP WQBELs expressed as a mass in lbs/day:

WQT TP Computed Compliance [lbs/day] = Six-Month Avg TP [lbs/day] – WQT TP Credits Needed [lbs/day] ***(Eq. 4c.)*

**Greater of either Equation 3a or 3b, the value used for Equation 3c.

Note: Negative computed compliance values may be reported as zero (0.00) on the discharge monitoring report.

3.2.1.9 Additional Water Quality Trading Requirements

When using water quality trading to demonstrate compliance with WQBELs for TP, the permittee shall comply with the following:

- Failure to implement any of the terms or conditions of the approved water quality trading plan is a violation of this permit.
- Each month the permittee shall certify that the nonpoint source management practices installed to generate pollutant reduction credits are operated and maintained in a manner consistent with that specified in the approved water quality trading plan. Such a certification may be made by including the following statement as a comment on the monthly discharge monitoring report.

  > I certify that management practices identified in the approved water quality trading plan as the source of pollutant reduction credits are installed, established, and properly maintained.

- At least once a year the permittee or the permittee's agent shall inspect each nonpoint source management practice that generates pollutant reduction credits to confirm the implementation of the management practice and their appropriate operation and adequate maintenance.
- The permittee shall notify WDNR by telephone within 24 hours or next business day of becoming aware that pollutant reduction credits used or intended for use by the permittee are not being implemented or generated as defined in the approved trading plan. A written notification shall be submitted to the Department within 5 days regarding the status of the permittee's pollutant reduction credits.
- The permittee shall provide WDNR written notice within 7 days of the trade agreement upon which the approved water quality trading plan is based being amended, modified, or revoked. This notification shall include the details of any amendment or modification in addition to the justification for the changes.
- The permittee shall not use pollutant reduction credits for the demonstration of compliance when pollutant reduction credits are not being generated.

3.2.1.10 Water Quality Trading Reopener Clause

Under any of the following conditions as provided by s. 283.53(2), Wis. Stats. and ss. NR 203.135 and 203.136, Wis. Code, the Department may modify or revoke and reissue this permit to modify or eliminate permit terms and conditions related to water quality trading:

- The permittee fails to implement the water quality trading plan as approved
- The permittee fails to comply with permit terms and conditions related to water quality trading;
- New information becomes available that would change the number of credits available for the water quality trade or would change the Department's determinations that water quality trading is an acceptable option.

3.2.1.11 Submittal of Permit Application for Next Reissuance and Pollutant Trading Plan

The permittee shall submit the permit application for the next reissuance at least 6 months prior to expiration of this permit.

The permittee has submitted a Water Quality Trading Plan that was approved by WDNR on February 28, 2020. If the permittee intends to pursue pollutant trading to achieve compliance in a manner that differs from that allowed in this permit, the permittee shall submit a new application for water quality trading with the application for the next reissuance. If system upgrades will be used in combination with pollutant trading the permittee shall submit plans for any system upgrade.

4 Land Application Requirements

4.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
002	HAULED SLUDGE: Class B, aerobically digested, liquid sludge. Representative samples shall be collected from the sample taps on the sludge loading pumps prior to hauling to another facility.
003	LAND APPLIED SLUDGE: Class B, aerobically digested, liquid sludge. Representative samples shall be collected prior to land application. (PLACEHOLDER) **In order to activate Outfall 003, the permittee shall notify the Department prior to use.**

4.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

4.2.1 Sampling Point (Outfall) 002 - Hauled Sludge

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Grab Comp	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Grab Comp	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Grab Comp	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Grab Comp	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Grab Comp	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Grab Comp	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Grab Comp	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Grab Comp	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Grab Comp	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Grab Comp	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Grab Comp	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Grab Comp	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Grab Comp	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Grab Comp	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Grab Comp	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Grab Comp	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Grab Comp	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Grab Comp	
Nitrogen, Total Kjeldahl		Percent	Annual	Grab Comp	
Nitrogen, Ammonium (NH_4-N) Total		Percent	Annual	Grab Comp	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		Percent	Annual	Grab Comp	
Phosphorus, Water Extractable		% of Tot P	Annual	Grab Comp	
Potassium, Total Recoverable		Percent	Annual	Grab Comp	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Grab Comp	Sample once in 2021.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Grab Comp	Sample once in 2021.

Other Sludge Requirements	
Sludge Requirements	**Sample Frequency**
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	**Annual**
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	**Annual**

4.2.1.1 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

4.2.1.2 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

4.2.1.3 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

4.2.1.4 Sludge Which Exceeds the High-Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high-quality limit for any parameter. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. The formula to be used for calculating cumulative loading is as follows:

[(Pollutant concentration (mg/kg) x dry tons applied/ac) ÷ 500] + previous loading (lbs/acre) = cumulative lbs pollutant per acre

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

4.2.1.5 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2021**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

4.2.1.6 Lists 1, 2, 3, and 4

List 1 **TOTAL SOLIDS AND METALS** See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)

List 2 **NUTRIENTS** See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH4-N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3
PATHOGEN CONTROL FOR CLASS B SLUDGE

The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.

The following requirements shall be met prior to land application of sludge.

Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent Process	

* The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.

List 4
VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O_2/hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

4.2.2 Sampling Point (Outfall) 003 - Land Application

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH_4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	
Potassium, Total Recoverable		Percent	Annual	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Sample only once during the permit term when land application occurs.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Sample only once during the permit term when land application occurs.

Other Sludge Requirements	
Sludge Requirements	**Sample Frequency**
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	**Annual**
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	**Annual**

4.2.2.1 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

4.2.2.2 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

4.2.2.3 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

4.2.2.4 Sludge Which Exceeds the High-Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high-quality limit for any parameter. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. The formula to be used for calculating cumulative loading is as follows:

[(Pollutant concentration (mg/kg) x dry tons applied/ac) ÷ 500] + previous loading (lbs/acre) = cumulative lbs pollutant per acre

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

4.2.2.5 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during the permit term when land application occurs. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

4.2.2.6 Lists 1, 2, 3, and 4

List 1 **TOTAL SOLIDS AND METALS** See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)

List 1 **TOTAL SOLIDS AND METALS** See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters
Zinc, mg/kg (dry weight)

List 2 **NUTRIENTS** See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH4-N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3
PATHOGEN CONTROL FOR CLASS B SLUDGE

The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.

The following requirements shall be met prior to land application of sludge.

Parameter	**Unit**	**Limit**
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent Process	
* The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.		

List 4
VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	**Limit**	**Where/When it Shall be Met**
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O_2/hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge

List 4 VECTOR ATTRACTION REDUCTION The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option. One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.		
Option	**Limit**	**Where/When it Shall be Met**
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

4.2.2.7 Daily Land Application Log

Daily Land Application Log Discharge Monitoring Requirements and Limitations The permittee shall maintain a daily land application log for biosolids land applied each day when land application occurs. The following minimum records must be kept, in addition to all analytical results for the biosolids land applied. The log book records shall form the basis for the annual land application report requirements.		
Parameters	**Units**	**Sample Frequency**
DNR Site Number(s)	Number	Daily as used
Outfall number applied	Number	Daily as used
Acres applied	Acres	Daily as used
Amount applied	As appropriate * /day	Daily as used
Application rate per acre	unit */acre	Daily as used
Nitrogen applied per acre	lb/acre	Daily as used
Method of Application	Injection, Incorporation, or surface applied	Daily as used

*gallons, cubic yards, dry US Tons or dry Metric Tons

5 Schedules

5.1 Chloride Target Value

Required Action	Due Date
Annual Chloride Progress Report: Submit an annual chloride progress report. The annual chloride progress report shall: Indicate which chloride source reduction measures or activities in the approved Source Reduction Plan have been implemented; Include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data; and Include an analysis of how influent and effluent chloride varies with time and with significant loadings of chloride such as loads from industries or road salt intrusion into the collection system. Note that the interim limitation of 680 mg/L remains enforceable until new enforceable limits are established in the next permit issuance. The first annual chloride progress report is to be submitted by the Date Due.	03/31/2021
Annual Chloride Progress Report #2: Submit the chloride progress report as defined above.	03/31/2022
Annual Chloride Progress Report #3: Submit the chloride progress report as defined above.	03/31/2023
Annual Chloride Progress Report #4: Submit the chloride progress report as defined above.	03/31/2024
Final Chloride Report: Submit the final chloride report documenting the success in meeting the chloride target value of 610 mg/L, as well as the anticipated future reduction in chloride sources and chloride effluent concentrations. The report shall summarize chloride source reduction measures that have been implemented during the current permit term and state which, if any, source reduction measures from the approved Source Reduction Plan were not pursued and why. The report shall include an analysis of trends in weekly, monthly and annual average chloride concentrations and total mass discharge of chloride based on chloride sampling and flow data covering the current permit term. The report shall also include an analysis of how influent and effluent chloride varies with time and with significant loadings of chloride such as loads from industries or road salt intrusion into the collection system. Additionally the report shall include proposed target values and source reduction measures for negotiations with the department if the permittee intends to seek a renewed chloride variance per s. NR 106.83, Wis. Adm. Code, for the reissued permit. Note that the target value is the benchmark for evaluating the effectiveness of the chloride source reduction measures, but is not an enforceable limitation under the terms of this permit.	01/31/2025
Annual Chloride Reports After Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual chloride reports each year covering source reduction measures implemented and chloride concentration and mass discharge trends.	

5.2 Water Quality Trading (WQT) Management Plan

Required Action	Due Date

Submit Progress Report on Management Practices Installation: Submit a progress report on the installation of management practices as identified in the Water Quality Management Plan WQT-2020-0002 as approved by the Department.	11/30/2020
Complete Installation of Management Practices : Complete the installation of management practices as identified in the Water Quality Management Plan WQT-2020-0002 as approved by the Department.	11/30/2021
Management Practices: The Management Practices as identified in the Water Quality Trading Plan shall become effective and the permittee shall submit a completed Management Practice Registration Form 3400-207 for each site.	12/31/2021
Comply with Total Phosphorus Limit : Comply with the TP limits as specified in Table 3.2.1	01/01/2022

5.3 Annual Water Quality Trading (WQT) Report

Required Action	Due Date
Annual WQT Report : Submit an annual WQT report that shall cover the first year of compliance with WQT. The WQT Report shall include: - The number of pollutant reduction credits (lbs/month) used each month of the previous year to demonstrate compliance; - The source of each month's pollutant reduction credits by identifying the approved water quality trading plan that details the source; - A summary of the annual inspection of each nonpoint source management practice that generated any of the pollutant reduction credits used during the previous year; and - Identification of noncompliance or failure to implement any terms or conditions of this permit with respect to water quality trading that have not been reported in discharge monitoring reports.	01/31/2023
Annual WQT Report #2: Submit an annual WQT report that shall cover the previous year.	01/31/2024
Annual WQT Report #3: Sumbit the 4th annual WQT report. If the permittee wishes to continue to comply with phosphorus limits through WQT in subsequent permit terms, the permittee shall submit a revised WQT plan including a demonstration of need, compliance record of the existing WQT, and any additional practices needed to maintain compliance over time.	01/31/2025
Annual WQT Report Required After Permit Expiration: In the event that this permit is not reissued by the expiration date, the permittee shall continue to submit annual WQT reports by January 31 each year covering the total number of pollutant credits used, the source of the pollution reduction credits, a summary of annual inspection reports performed, and identification of noncompliance or failure to implement any terms or conditions of the approved water quality trading plan for the previous calendar year.	

5.4 Effluent Limitations for E. coli

The permittee shall comply with surface water limitations for E. coli 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

Required Action	Due Date

Status Update: The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	11/21/2020
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 disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than April 30, 2022. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than April 30, 2022. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by April 30, 2022 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'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than April 30, 2025.	10/31/2021
Submit Facility Plan: If the Operational Evaluation Report concluded that the permittee cannot achieve final E. coli limitations with operational improvements alone, the 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.	04/30/2022

6 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

6.1 Reporting and Monitoring Requirements

6.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

6.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

6.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

6.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.
- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.
- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD5 and Total Suspended Solids shall be considered to be limits of quantitation
- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a "0" (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.
- If no discharge occurs through an outfall, flow related parameters (e.g. flow rate, hydraulic application rate, volume, etc.) should be reported as "0" (zero) at the required sample frequency specified for the outfall. For example: if the sample frequency is daily, "0" would be reported for any day during the month that no discharge occurred.

6.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted and certified by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

The CMAR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The certification verifies that the electronic report is true, accurate and complete.

6.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings or electronic data records for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

6.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

6.1.8 Reporting Requirements – Alterations or Additions

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

- The alteration or addition to the permitted facility may meet one of the criteria for determining whether a facility is a new source.
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification requirement applies to pollutants which are not subject to effluent limitations in the existing permit.
- The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use of disposal sites not reported during the permit application process nor reported pursuant to an approved land application plan. Additional sites may not be used for the land application of sludge until department approval is received.

6.2 System Operating Requirements

6.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.
The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.
A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.
NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources immediately of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

6.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

6.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-555, Wis. Adm. Code.

6.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

6.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

6.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

6.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions' section of this permit, the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled 'Bypass' are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

6.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and
- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

6.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

6.2.10 Operator Certification

The wastewater treatment facility shall be under the direct supervision of a state certified operator. In accordance with s. NR 114.53, Wis. Adm. Code, every WPDES permitted treatment plant shall have a designated operator-in-charge holding a current and valid certificate. The designated operator-in-charge shall be certified at the level and in all subclasses of the treatment plant, except laboratory. Treatment plant owners shall notify the department of any changes in the operator-in-charge within 30 days. Note that s. NR 114.52(22), Wis. Adm. Code, lists types of facilities that are excluded from operator certification requirements (i.e. private sewage systems, pretreatment facilities discharging to public sewers, industrial wastewater treatment that consists solely of land disposal, agricultural digesters and concentrated aquatic production facilities with no biological treatment).

6.3 Sewage Collection Systems

6.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

6.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil

conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and

- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

6.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

6.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:
    - The date and location of the overflow;
    - The surface water to which the discharge occurred, if any;
    - The duration of the overflow and an estimate of the volume of the overflow;
    - A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
    - The estimated date and time when the overflow began and stopped or will be stopped;
    - The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
    - Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
    - A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
    - Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
    - To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
    - The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

  NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at http://dnr.wi.gov/topic/wastewater/SSOreport.html. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

6.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

6.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall have written documentation of the Capacity, Management, Operation and Maintenance (CMOM) program components in accordance with s. NR 210.23(4), Wis. Adm. Code. Such documentation shall be available for Department review upon request. The Department may request that the permittee provide this documentation or prepare a summary of the permittee's CMOM program at the time of application for reissuance of the WPDES permit.
- The permittee shall implement a CMOM program in accordance with s. NR 210.23, Wis. Adm. Code.
- The permittee shall at least annually conduct a self-audit of activities conducted under the permittee's CMOM program to ensure CMOM components are being implemented as necessary to meet the general standards of s. NR 210.23(3), Wis. Adm. Code.

6.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

6.4 Surface Water Requirements

6.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

6.4.2 Effluent Temperature Requirements

Weekly Average Temperature – If temperature limits are included in this permit, Weekly Average Temperature shall be calculated as the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock pursuant to Wis. Adm. Code, s. NR 102.28. 'Cold Shock' means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state pursuant to Wis. Adm. Code, s. NR 102.29.

6.4.3 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

6.4.4 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.

b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.

c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.

d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

6.4.5 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD_5 and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

6.4.6 *E. coli*

The monthly limit for *E. coli* shall be expressed as a geometric mean. In calculating the geometric mean, a value of 1 is used for any result of 0.

6.4.7 Seasonal Disinfection

Disinfection shall be provided from May 1 through September 30 of each year. Monitoring requirements and the limitations for *E. coli* apply only during the period in which disinfection is required. Whenever chlorine is used for disinfection or other uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

6.4.8 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition" (PUB-WT-797*, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

6.4.9 Whole Effluent Toxicity (WET) Identification and Reduction

Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;
- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including the following actions:
    a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
    b) Identify the compound(s) causing toxicity. Conduct toxicity screening tests on the effluent at a minimum of once per month for six months to determine if toxicity recurs. Screening tests are WET tests using fewer effluent concentrations conducted on the most sensitive species. If any of the screening tests contain toxicity, conduct a toxicity identification evaluation (TIE) to determine the cause. TIE methods are available from USEPA "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures (EPA/600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA/600/6-91/005F).
    c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)
    d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)
- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
- If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

6.4.10 Reopener Clause

Pursuant to s. 283.15(11), Wis. Stat. and 40 CFR 131.20, the Department may modify or revoke and reissue this permit if, through the triennial standard review process, the Department determines that the terms and conditions of this permit need to be updated to reflect the highest attainable condition of the receiving water.

6.5 Land Application Requirements

6.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

6.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

6.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

6.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

6.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:
Water Extractable Phosphorus (% of Total P) =
[Water Extractable Phosphorus (mg/kg, dry wt) ÷ Total Phosphorus (mg/kg, dry wt)] x 100

6.5.6 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.7 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner

or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.8 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

6.5.9 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

6.5.10 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

6.5.11 Class B Sludge: Fecal Coliform Limitation

Compliance with the fecal coliform limitation for Class B sludge shall be demonstrated by calculating the geometric mean of at least 7 separate samples. (Note that a Total Solids analysis must be done on each sample). The geometric mean shall be less than 2,000,000 MPN or CFU/g TS. Calculation of the geometric mean can be done using one of the following 2 methods.

Method 1:

Geometric Mean = $(X_1 \text{ x } X_2 \text{ x } X_3 \ldots \text{x } X_n)^{1/n}$

Where X = Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Method 2:

Geometric Mean = $\text{antilog}[(X_1 + X_2 + X_3 \ldots + X_n) \div n]$

Where X = $\log_{10}$ of Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Example for Method 2

Sample Number	Coliform Density of Sludge Sample	$\log_{10}$
1	$6.0 \text{ x } 10^5$	5.78
2	$4.2 \text{ x } 10^6$	6.62
3	$1.6 \text{ x } 10^6$	6.20
4	$9.0 \text{ x } 10^5$	5.95
5	$4.0 \text{ x } 10^5$	5.60
6	$1.0 \text{ x } 10^6$	6.00
7	$5.1 \text{ x } 10^5$	5.71

The geometric mean for the seven samples is determined by averaging the $\log_{10}$ values of the coliform density and taking the antilog of that value.

$(5.78 + 6.62 + 6.20 + 5.95 + 5.60 + 6.00 + 5.71) \div 7 = 5.98$

The antilog of $5.98 = 9.5 \text{ x } 10^5$

6.5.12 Class B Sludge - Vector Control: Incorporation

Class B sludge shall be incorporated within 6 hours of surface application, or as approved by the Department.

6.5.13 Sludge Hauling

The permittee is required to submit Form 3400-52 to the Department. If sludge is hauled to another facility, information shall include the quantity of sludge hauled, the name, address, phone number, contact person, and permit number of the receiving facility. Form 3400-52 shall be submitted annually by January 31 each year whether or not sludge is hauled.

7 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Chloride Target Value -Annual Chloride Progress Report	March 31, 2021	21
Chloride Target Value -Annual Chloride Progress Report #2	March 31, 2022	21
Chloride Target Value -Annual Chloride Progress Report #3	March 31, 2023	21
Chloride Target Value -Annual Chloride Progress Report #4	March 31, 2024	21
Chloride Target Value -Final Chloride Report	January 31, 2025	21
Chloride Target Value -Annual Chloride Reports After Permit Expiration	See Permit	21
Water Quality Trading (WQT) Management Plan -Submit Progress Report on Management Practices Installation	November 30, 2020	22
Water Quality Trading (WQT) Management Plan -Complete Installation of Management Practices	November 30, 2021	22
Water Quality Trading (WQT) Management Plan -Management Practices	December 31, 2021	22
Water Quality Trading (WQT) Management Plan -Comply with Total Phosphorus Limit	January 1, 2022	22
Annual Water Quality Trading (WQT) Report -Annual WQT Report	January 31, 2023	22
Annual Water Quality Trading (WQT) Report -Annual WQT Report #2	January 31, 2024	22
Annual Water Quality Trading (WQT) Report -Annual WQT Report #3	January 31, 2025	22
Annual Water Quality Trading (WQT) Report -Annual WQT Report Required After Permit Expiration	See Permit	22
Effluent Limitations for E. coli -Status Update	November 21, 2020	23
Effluent Limitations for E. coli -Operational Evaluation Report	October 31, 2021	23
Effluent Limitations for E. coli -Submit Facility Plan	April 30, 2022	23
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	25
General Sludge Management Form 3400-48	prior to any significant sludge management changes	33
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	33
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	33
Other Methods of Disposal or Distribution Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled,	33

	incinerated, or exceptional quality sludge is distributed or land applied	
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	24

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non-industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:
Southeast Region, 1027 W. Saint Paul Avenue, Milwaukee, WI 53233