Permit Fact Sheet

General Information

Permit Number	WI-0024139-11-0
Permittee Name and Address	VILLAGE OF GRATIOT P O Box 189 5630 Main Street, Gratiot, WI 53541-0189
Permitted Facility Name and Address	Gratiot Wastewater Treatment Facility 10950 Simons Street, Gratiot, WI
Permit Term	August 01, 2025 to June 30, 2030
Discharge Location	East of the WWTF, NW ¼ of NE ¼, Section 9, T1N, R4E. Lat: 42.5803º N / Lon: 90.0242º W
Receiving Water	Wolf Creek in Lower Pecatonica River Watershed in the Sugar-Pecatonica River Basin in Lafayette County
Stream Flow ($Q_{7,10}$)	3.5 cubic feet per second
Stream Classification	Warm Water Sport Fish, non-public water supply
Discharge Type	Existing, continuous
Annual Average Design Flow (MGD)	0.035
Industrial or Commercial Contributors	None
Plant Classification	A3 - Recirculating Media Filters; D - Disinfection; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

The Village of Gratiot operates a recirculating sand filter wastewater treatment facility that serves a population of approximately 224 with no industrial contributors. The treatment system includes two single-train septic tanks, a wet well, recirculation tank, four sand filter beds with underdrains, and a UV system for seasonal disinfection.

Solids are removed from the two septic tanks as needed and are land applied on department approved sites under ch. NR 204, Wis. Adm Code, for Domestic Sewage Sludge Management. For this permit term, Gratiot has been approved for water quality trading for phosphorus and plans to perform stream bank stabilization within the Wolf Creek watershed.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Noncompliance was issued during the current permit term to address the permittee's failure to fully implement its phosphorus source reduction measures required by the individual variance. To-date, as corrective measures and full implementation has not occurred, the permittee remains in noncompliance with these requirements. The permittee is expected to return to compliance with the WPDES permit at permit reissuance with the

implementation of water quality trading (WQT), which will be used to comply with the phosphorus WQBELs in lieu of the individual phosphorus variance.

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site visit on November, 6, 2024, the permittee has been found to be in substantial compliance with its current permit.

Compliance determination made by Caitlin O'Connell, Wastewater Engineer on November 18, 2024

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	0.0175 MGD, July 2019-August 2024	INFLUENT: 24-hr flow proportional composite samples shall be collected from the inlet side of the first septic tank. Flow is monitored via ultrasonic meter at the flume in the influent manhole prior to the first septic tank.
001	0.017 MGD, July 2019-August 2024	EFFLUENT: 24-hr flow proportional composite sampler intake located in the effluent channel after the weir but before UV disinfection, prior to discharge to Wolf Creek. Grab samples collected after UV disinfection in the U.V. pit. Flow is monitored via ultrasonic meter at the weir in the recycling tank.
002	22 dry U.S. tons annual average determined from amounts applied in 2020 and 2023	SLUDGE: Liquid, Class B. Representative sludge samples shall be collected from the septic tanks.

Permit Requirements

1 Influent – Monitoring Requirements

1.1 Sample Point Number: 701- INFLUENT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	2/Week	24-Hr Flow Prop Comp	

1.1.1 Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term. Sample frequency for flow rate has been changed from continuous to daily for eDMR reporting purposes. Sample frequency for BOD5 and Total Suspended Solids (TSS) were increased from weekly to twice per week to align with frequency changes made at Outfall 001.

1.1.2 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 Surface Water - Monitoring and Limitations

2.1 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	Monthly Avg	30 mg/L	2/Week	24-Hr Flow Prop Comp	
BOD5, Total	Weekly Avg	45 mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	2/Week	24-Hr Flow Prop Comp	
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	Limit Effective May through September annually.
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit Effective May through September annually. See the E. coli Percent Limit permit section. Enter the result in the DMR on the last day of the month.
Phosphorus, Total	Monthly Avg	7.7 mg/L	2/Week	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		lbs/day	2/Week	Calculated	Report daily mass discharged using Equation 1a. in the Water Quality Trading (WQT) section.
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	Starting January 1, 2026, 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	Limit effective January 1, 2026. 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	Limit effective January 1, 2026. 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	0.022 lbs/day	Monthly	Calculated	Limit effective January 1, 2026. 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 six-month period on June 30 and Dec 31.
WQT Credits Used (TP)	Annual Total	289 lbs/yr	Annual	Calculated	Limit effective January 1, 2026. The sum of total monthly credits used may

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					not exceed Table 2 values listed below.
Zinc, Total Recoverable		ug/L	Quarterly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only 2029.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring only 2029.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	See Nitrogen Series Monitoring section in permit.
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	See Nitrogen Series Monitoring section in permit.
Nitrogen, Total		mg/L	Quarterly	Calculated	See Nitrogen Series Monitoring section in permit. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.

2.1.1 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. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- **Flow-** The sample frequency for flow has been changed from "continuous" to "daily" for eDMR reporting purposes.
- **BOD5 and TSS-** The sample frequency for BOD5 and TSS has been increased from weekly to two times per week.
- **pH Field**- The sample frequency for pH has been increased from weekly to five times per week.
- **E. coli-** Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits.
- **Phosphorus-** The sample frequency for phosphorous has been increased from weekly to two times per week. Additional parameters have been added to compute compliance with final WQBELs achieved through water quality trading.
- **Total Nitrogen Monitoring (TKN, N02+N03 and Total N)-** Quarterly monitoring is required.

2.1.2 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 dated October 3, 2024.

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. The department has determined at this time that an increase in monitoring frequency is warranted for BOD5, TSS, phosphorus and pH because the previous frequencies were lower than the minimum frequency outlined in guidance for minor municipal facilities. These monitoring frequency increases are necessary in order to effectively characterize the effluent quality and variability, to best determine compliance with effluent limitations, and to align the monitoring requirements with those required for similar facilities across the state.

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 and monthly average limits whenever practicable.

BOD5, TSS and pH- Categorical limits and WQBELs are included in the permit as outlined in ch. NR 210, Wis. Adm. Code. The effluent limitations for BOD5, TSS, and pH are carried over from the previous permit and are not subject to change at this time because the receiving water characteristics have not changed.

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 Wolf River is 0.075 mg/L. In this case, *the WQBEL is 0.225 mg/L monthly average, 0.075 mg/L 6-month average, and 0.022 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 previous limit of 7.7 mg/L will be retained in the permit for this purpose.

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-2025-0011) or approved amendments thereof. The total 'WQT TP Credits' available are designated in the approved WQT Plan. As part of this plan, the municipality is implementing streambank stabilization and proposes the generation of 289 lbs/yr of phosphorus credits for the next five years.

Additional WQT subsections in the permit provide information on compliance determinations, annual reporting and re-opening of the permit

3 Land Application - Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Liquid	Fecal coliform	Injection	Land Application	22
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No.						
Is a priority pollutant scan required? No Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

3.1 Sample Point Number: 002- SLUDGE

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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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	Once in 2026.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2026.
PFOA + PFOS		ug/kg	Annual	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Annual	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

3.1.1 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. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

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

3.1.2 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).

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" will 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.

4 Schedules

4.1 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 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; 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.	01/31/2027
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 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 credit need, compliance record of the existing WQT, and any additional practices needed to maintain compliance over time.	01/31/2030
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.	

4.1.1 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.

4.2 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.	07/31/2026

4.2.1 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 Limitations for the Gratiot Wastewater Treatment Facility WPDES Permit No. WI-0024139-11-0, October 3, 2024

Gratiot Wastewater Treatment Facility - WPDES Permit WI-0024139 Water Quality Trading Plan – CONDITIONAL APPROVAL, April 10, 2025

Water Quality Trading Plan, March 28, 2025

Justification of Any Waivers from Permit Application Requirements

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

Prepared By: Amanda Perdzock, Wastewater Specialist **Date:** May 7, 2025

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: October 3, 2024

TO: Jennifer Jerich – SCR/Horicon

FROM: Sarah Luck – SCR/Fitchburg

SUBJECT: Water Quality-Based Effluent Limitations for the Gratiot Wastewater Treatment Facility WPDES Permit No. WI-0024139-11-0

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the Gratiot Wastewater Treatment Facility in Lafayette County. This municipal wastewater treatment facility (WWTF) discharges to Wolf Creek, located in the Lower Pecatonica River Watershed in the Sugar-Pecatonica River Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

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

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD_5			45 mg/L	30 mg/L		2
TSS			45 mg/L	30 mg/L		2
pH	9.0 s.u.	6.0 s.u.				2
Ammonia Nitrogen						1,2
Bacteria *E. coli*				126 #/100 mL geometric mean		3
Phosphorus WQT MCL Final WQBELs				7.7 mg/L 0.225 mg/L	0.075 mg/L 0.022 lbs/day	4
Chloride						1
Zinc, Total Recoverable						1,2
TKN, Nitrate+Nitrite, and Total Nitrogen						5

Footnotes:

1. Monitoring only.
2. No changes from the current permit.
3. 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.
4. A minimum control level (MCL) is required for water quality trading (WQT). This value is 7.7 mg/L as a monthly average and should not be exceeded during the permit term. It is recommended that the MCL be set equal to the existing interim limit of 7.7 mg/L if enough trading credits can be secured. Final determination of the MCL will be decided once the WQT plan has been reviewed and approved, which is outside the scope of this memo.

5. As recommended in the Department's October 1, 2019 *Guidance for Total Nitrogen Monitoring in Wastewater Permits*, quarterly total nitrogen monitoring is recommended for municipal permittees with total nitrogen greater than 40 mg/L. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total kjeldahl nitrogen (TKN) (all expressed as N). Total nitrogen was reported as 42.50 mg/L on the permit application.

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

The recommended limits meet the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Code, and additional limits are not required.

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

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

PREPARED BY: Sarah Luck _____ Date: October 3, 2024

Sarah Luck
Water Resources Engineer

E-cc: Caitlin O'Connell, Wastewater Engineer – SCR/Dodgeville
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Gratiot Wastewater Treatment Facility

WPDES Permit No. WI-0024139-11-0

PART 1 – BACKGROUND INFORMATION

Facility Description
The Gratiot Wastewater Treatment Facility serves a population of approximately 236 with no industrial contributors. Wastewater is conveyed by a gravity sewer system to a lift station located near the intersection of STH 11 and Sheldon Street. The lift station pumps the sewage through 3520 feet of 4" force main to the first chamber of the solids settling tank. In the first chamber of the solids settling tank, solids settle to the bottom of the tank while liquid passes through the transfer pipe between the two chambers of the tank. Further settling occurs in the second chamber. Decomposition of organic solids occurs in both chambers of the tank. After liquid passes through the solids tank, it passes into the wet well. One of the two self-priming, non-clog sewage pumps moves the liquid through the 4" diameter filter feed pipe to the sand filter. At the sand filter, the liquid is distributed through 3" diameter headers to 1 1/2" diameter perforated distribution pipes. Once the liquid passes through the sand filter, it is collected at the bottom of the filter by slotted collection pipes then goes to recirculation channel were some goes back to the wet well and some goes through a UV disinfection chamber and to the outfall. Solids are removed from the settling tanks as needed.

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

Existing Permit Limitations
The current permit, which expired on June 30, 2024, 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			45 mg/L	30 mg/L		2
TSS			45 mg/L	30 mg/L		2
pH	9.0 s.u.	6.0 s.u.				2
Ammonia Nitrogen						1
Fecal Coliform May – September			656#/100 mL geometric mean	400#/100 mL geometric mean		
Zinc, Total Recoverable						3
Chloride						1
Phosphorus Interim Final				7.7 mg/L 0.225 mg/L	0.075 mg/L 0.022 lbs/day	

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. Reasonable potential for zinc limits was present at the last permit reissuance; however, following additional monitoring, the permit was modified to remove zinc limits, as well as WET testing, and monitoring only was required for the remainder of the permit term.
4. Gratiot Wastewater Treatment Facility is currently covered under an individual phosphorus variance.

Receiving Water Information

- Name: Wolf Creek
- Waterbody Identification Code (WBIC): 918000
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS for Station P19, located at State Highway 11 in Gratiot where Outfall 001 is located.
  7-Q_{10} = 3.5 cfs (cubic feet per second)
  7-Q_2 = 7.0 cfs
  90-Q_{10} = 6.0 cfs
  Harmonic Mean Flow = 9.9 cfs
  The Harmonic Mean has been estimated based on average flow and the 7-Q_{10} using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).
- Hardness = 341 mg/L as $CaCO_3$. This value represents the geometric mean of data collected from a station on the Pecatonica River at the Wisconsin/Illinois state line (SWIMS station 233002, Station Name: Pecatonica River at Martintown, WI)
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%
- Source of background concentration data: Metals data from Wolf Creek are not available. Given the amount of dilution in Wolf Creek, as compared to the discharge from Gratiot Wastewater Treatment Facility, the background concentrations are assumed to be negligible and a value of zero is used in the computations.
- Multiple dischargers: None.
- Impaired water status: The Pecatonica River, located approximately one mile downstream of Outfall 001, is listed (4/1/2012) as impaired for total phosphorus.

Effluent Information

- Flow rate:
  Design annual average = 0.035 MGD (Million Gallons per Day)
  For reference, the actual average flow from July 2019 through August 2024 was 0.017 MGD.
- Hardness = 377 mg/L as $CaCO_3$. This value represents the geometric mean of data (n=4) from September 2023 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).

- Water source: Domestic wastewater with water supply from wells.
- Additives: None.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness, and phosphorus.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, 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)
9/21/2023	22	10/3/2023	20	10/15/2023	21
9/24/2023	22	10/6/2023	18	10/18/2023	18
9/27/2023	23	10/9/2023	19	11/14/2023	18
9/30/2023	23	10/12/2023	18		
1-day P_{99} = 26 µg/L					
4-day P_{99} = 23 µg/L					

Chloride Effluent Data

2/21/23 – 12/18/23	Chloride (mg/L)
1-day P_{99}	529
4-day P_{99}	382
30-day P_{99}	305
Mean	266
Std	86
Sample size	26
Range	177 - 568

The following table presents the average concentrations and loadings at Outfall 001 from July 2019 through August 2024 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits

	Average Measurement
BOD_5	2 mg/L*
TSS	2 mg/L*
pH field	6.6 s.u.
Phosphorus	4.05 mg/L
Fecal coliform	3#/100 mL

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

Attachment #1

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

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

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 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. 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 not the case for the Gratiot Wastewater Treatment Facility, and the limits are set based on two times the acute toxicity criteria.

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

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 2.8 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	679.6	135.9	1.6		
Cadmium	377	47.3	94.6	18.9	0.29		
Chromium	301	4446	8891.7	1778	<1.1		
Copper	377	54.3	108.7			26	23
Lead	356	365	729.3	145.9	<4.3		
Nickel	268	1080	2160.6	432	1.7		
Zinc	333	345	689.4			118	104
Chloride (mg/L)		757	1514.0			529	568

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

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

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 0.88 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		152.2	2611	522.3	1.6	
Cadmium	175	3.82	65.54	13.1	0.29	
Chromium	301	325.75	5589	1117.8	<1.1	
Copper	341	29.57	507.3			23
Lead	341	91.62	1572.0	314.4	<4.3	
Nickel	268	120.18	2062	412.4	1.7	
Zinc	333	344.68	5914			84
Chloride (mg/L)		395	6777			382

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

Monthly Average Limits based on Wildlife Criteria (WC)

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

Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 2.5 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.
Cadmium	370	17216	3443.2	0.29

Attachment #1

SUBSTANCE	HTC	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Chromium (+3)	3818000	177652498	35530500	<1.1
Lead	140	6514	1302.8	<4.3
Nickel	43000	2000801	400160	1.7

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 2.5 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	618.9	123.77	1.6

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

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

Chloride **–** Considering available effluent data from the current permit term (February 2023 through December 2023), the 1-day P_{99} chloride concentration is 529 mg/L, and the 4-day P_{99} of effluent data is 382 mg/L. These effluent concentrations are below the calculated WQBELs for chloride; therefore, **no effluent limits are needed. Chloride monitoring is recommended to ensure that 11 sample results are available at the next permit issuance** to meet the data requirements of s. NR 106.85, Wis. Adm. Code.

Zinc –Reasonable potential for zinc limits was present at the last permit reissuance; however, following additional monitoring, the permit was modified to remove zinc limits, and monitoring only was required for the remainder of the permit term. Effluent sampling from September 2019 through July 2024 is shown in the table below.

Zinc Effluent Data

	Zinc, Total Recoverable (µg/L)
1-day P_{99}	118
4-day P_{99}	84
30-day P_{99}	67
Mean	58
Std	20
Sample size	32
Range	22 - 104

Considering the available data above, the 1-day P_{99} and the 4-day P_{99} effluent concentrations are below the calculated WQBELs for zinc; therefore, **no effluent limits are needed. However, zinc monitoring is recommended to ensure that a minimum of 11 sample results are available at the next permit issuance.**

Mercury – The permit application did not require monitoring for mercury because the Gratiot Wastewater Treatment Facility is categorized as a minor facility as defined in s. NR 200.02(8), Wis. Adm. Code. In accordance with s. NR 106.145(3)(a)3, Wis. Adm. Code, a minor municipal discharger shall monitor, and report results of influent and effluent mercury monitoring once every three months if, "there are two or more exceedances in the last five years of the high-quality sludge mercury concentration of 17 mg/kg specified in s. NR 204.07(5), Wis. Adm. Code." A review of the past five years of sludge characteristics data reveals that all the sample results are within expected analytical ranges and well below the 17 mg/kg level. The average concentration in the sludge (n=2) from July 2019 through August 2024 was 0.85 mg/kg, with a maximum reported concentration of 1.0 mg/kg. Therefore, **no mercury monitoring is recommended at Outfall 001.**

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

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR 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.

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 270 sample results were reported from July 2019 through August 2024. The maximum reported value was 7.5 s.u. (Standard pH Units). The effluent pH was 7.4 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 7.2 s.u. The mean plus the standard deviation multiplied by a factor of 2.33, an estimate of the upper ninety ninth percentile for a normally distributed dataset, is 7.2 s.u. Therefore, a value of 7.2 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 7.2 s.u. into the equation above yields an ATC = 29.54 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	59
1-Q_{10}	1555

The 2×ATC method yields the most stringent limits for Gratiot Wastewater Treatment Facility.

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 July 2019 through August 2024, with those results being compared to the calculated limits to determine the need to include ammonia limits in the Gratiot Wastewater Treatment Facility permit. That need is determined by calculating 99th upper percentile (or P_{99}) values for ammonia during each of the month ranges and comparing the daily maximum values to the daily maximum limit.

Ammonia Nitrogen Effluent Data

	Ammonia Nitrogen (mg/L)
1-day P_{99}	12.01
4-day P_{99}	6.51
30-day P_{99}	3.01
Mean*	1.57
Std	2.99
Sample size	36
Range	<0.08 - 8.54

*"<" means that the pollutant was not detected at the indicated level of detection. The mean concentration was calculated using zero in place of the non-detected (ND) result.

Note: A sample result of 314 mg/L on 05/23/2023 was removed from the dataset since it is an outlier and not believed to be representative of normal effluent conditions.

Based on this comparison, there is no reasonable potential for the discharge to exceed any of the calculated ammonia nitrogen limits. **No limits are needed for ammonia nitrogen, but monitoring for one year during the permit term is recommended.**

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BACTERIA

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

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

E. coli monitoring is recommended at the same frequency that fecal coliform monitoring is required in the current permit. Since Gratiot Wastewater Treatment Facility's permit requires weekly monitoring, the 410 counts/100 mL limit will effectively function as a daily maximum limit unless the facility performs additional monitoring. Any additional monitoring beyond what is required by the permit must also be reported on the DMR as required in the standard requirements section of the permit.

These limits are required during May through September. No changes are recommended to the current recreational period and the required disinfection season.

Effluent Data

Gratiot Wastewater Treatment Facility has monitored effluent *E. coli* during the 2023 and 2024 disinfection seasons, and a total of 39 results are available. A geometric mean of 126 counts/100 mL was not exceeded, with a maximum monthly geometric mean of 9 counts/100 mL. Effluent data has not exceeded 410 counts/100 mL, and the maximum reported value was 38 counts/100 mL. Based on this effluent data, it appears that **the facility can meet new *E. coli* limits and a compliance schedule is not needed in the reissued permit.**

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 Gratiot Wastewater Treatment Facility does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average phosphorus loading is less than 150 lbs/month, which is the threshold for municipalities in accordance with s. NR 217.04(1)(a)1, Wis. Adm. Code, and therefore, **no technology-based limit is required.**

Attachment #1

Annual Average Mass Total Phosphorus Loading

Month	Average Phosphorus Concentration (mg/L)	Total Effluent Flow (Million Gallons)	Calculated Mass (lbs/month)
September 2023	6.22	0.282	15
October 2023	5.40	0.265	12
November 2023	4.68	0.262	10
December 2023	4.64	0.327	13
January 2024	4.36	0.363	13
February 2024	4.70	0.307	12
March 2024	4.48	0.329	12
April 2024	3.05	0.965	25
May 2024	3.80	0.581	18
June 2024	3.52	0.684	20
July 2024	2.62	1.166	25
August 2024	3.34	0.395	11
Average			**16**

Total P (lbs/month) = Monthly average (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
Where total flow is the sum of the actual (not design) flow (in MGD) for that month

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 Wolf Creek.

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

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

Where:

WQC = 0.075 mg/L for Wolf Creek
Qs = 100% of the 7-Q_2 of 7.0 cfs
Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code
Qe = effluent flow rate = 0.035 MGD = 0.054 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated as a median using the procedures specified in s. NR

102.07(1)(b) to (c), Wis. Adm. Code. All representative data from the most recent 5 years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

A previous evaluation resulted in a WQBEL of 0.075 mg/L using a background concentration of 0.142 mg/L. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. No additional data were available for consideration, **so a continuation of the WQBEL of 0.075 mg/L as a six-month average is recommended.**

Effluent Data
The following table summarizes effluent total phosphorus monitoring data from July 2019 through August 2024.

Total Phosphorus Effluent Data

	mg/L	lbs/day
1-day P_{99}	8.04	1.75
4-day P_{99}	5.82	1.02
30-day P_{99}	4.64	0.64
Mean	4.05	0.48
Std	1.31	0.35
Sample size	270	270
Range	0.85 - 8.41	0.006 - 3.31

Reasonable Potential Determination
The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion because the 30-day P_{99} of reported effluent total phosphorus data is greater than the calculated WQBEL**.** Therefore, **a WQBEL is required.**

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

Mass 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 upstream of a phosphorus impaired water. **This final mass limit shall be 0.075 mg/L × 8.34 × 0.035 MGD = 0.022 lbs/day expressed as a six-month average.**

Water Quality Trading
A water quality trading plan has been submitted as an alternative compliance option to offset any total phosphorus discharged from Outfall 001 that exceeds the WQBELs. The phosphorus WQBELs may be expressed as computed compliance limits, but a Minimum Control Level (MCL) must be set as a limit not to be exceeded at the outfall location. **It is recommended that the MCL be set equal to the existing interim limit of 7.7 mg/L if enough trading credits can be secured.** Final determination of the MCL

will be decided once the WQT plan has been reviewed and approved, which is outside the scope of this memo.

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 July 2019 through August 2024.

Gratiot Wastewater Treatment Facility last monitored effluent temperatures from February 2011 through September 2013 (shown in the table below). Since there have been no changes to the treatment process or thermal loading to the facility, this data is considered to be representative.

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	54	55	-	120
FEB	57	58	-	120
MAR	62	62	-	120
APR	60	61	115	120
MAY	65	66	-	120
JUN	71	74	-	120
JUL	77	78	-	120
AUG	72	72	-	120
SEP	69	72	-	120
OCT	59	60	112	120
NOV	61	61	-	120
DEC	56	56	-	120

Reasonable Potential

Based on the historical effluent data, no effluent limits are recommended for temperature. Furthermore, at temperatures above approximately 103°F, conventional biological treatment systems do not function

properly and experience upsets. There is no indication that this has ever occurred in this treatment system. Therefore, there is no reasonable potential for the discharge to exceed the calculated limits. **No monitoring or effluent limits are recommended for temperature.**

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 6%, 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:

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

Where:

Q_e = annual average flow = 0.035 MGD = 0.054 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} =3.5 cfs ÷ 4 = 0.88 cfs

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

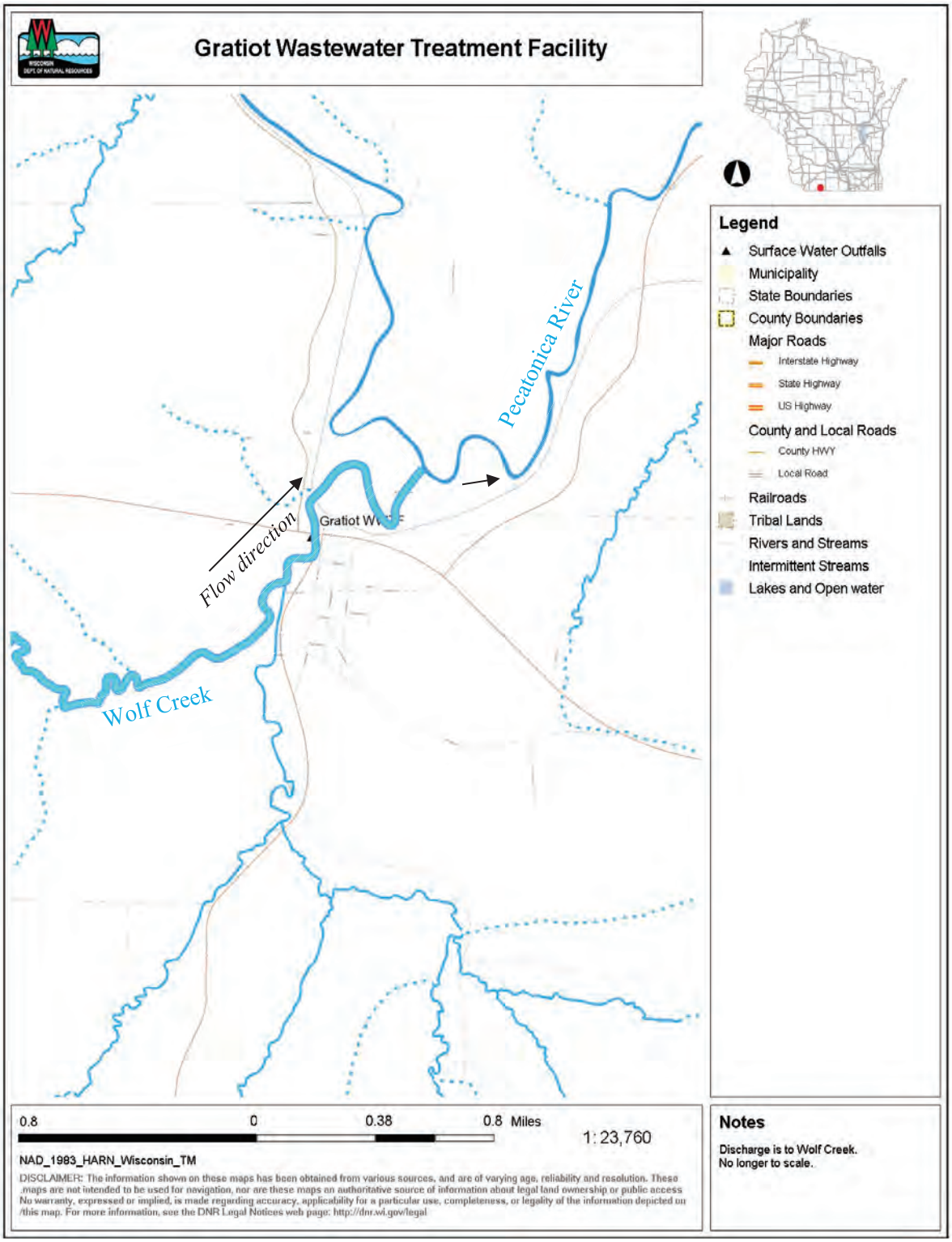
	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 6% **0 Points**
Historical	No data.	No data.

Attachment #1

	Acute	Chronic
Data	**5 Points**	**5 Points**
Effluent Variability	Little variability, no upsets or significant violations, consistent WWTF operations. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	WWSF **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	No reasonable potential for limits based on ATC. Ammonia nitrogen, arsenic, cadmium, chloride, copper, nickel, and zinc detected. Additional Compounds of Concern: None. **3 Points**	No reasonable potential for limits based on CTC. Ammonia nitrogen, arsenic, cadmium, chloride, copper, nickel, and zinc detected. Additional Compounds of Concern: None. **3 Points**
Additives	No additives used. **0 Points**	No additives used. **0 Points**
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. **0 Points**	Same as Acute. **0 Points**
Total Checklist Points:	**13 Points**	**13 Points**
Recommended Monitoring Frequency (from Checklist):	None.	None.
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

- **No WET testing is required** because information related to the discharge indicates the potential for effluent toxicity is believed to be low.

Attachment #2
Site Map



Attachment #3

Ammonia Nitrogen Calculations from the WQBEL Memo Dated June 28, 2018

		Spring	Summer	Winter
		April & May	June – Sept.	Oct. - March
Background Information	7-Q_{10} (cfs)	3.5	3.5	3.5
	7-Q_2 (cfs)	7	7	7
	Ammonia (mg/L)	0.07	0.06	0.12
	Temperature (°C)	6	19	4
	pH (s.u.)	8.09	8.08	8.2
	% of Flow used	25	100	25
	Reference Weekly Flow (cfs)	0.875	3.5	0.875
	Reference Monthly Flow (cfs)	1.4875	5.95	1.4875
Criteria mg/L	4-day Chronic			
	Early Life Stages Present	**5.32**	**4.15**	4.48
	Early Life Stages Absent	5.50	3.56	**6.00**
	30-day Chronic			
	Early Life Stages Present	**2.13**	**1.66**	1.79
	Early Life Stages Absent	2.20	1.42	**2.40**
Effluent Limitations mg/L	Weekly Average			
	Early Life Stages Present	**90.21**	**268.58**	74.98
	Early Life Stages Absent	93.31	229.69	**100.99**
	Monthly Average			
	Early Life Stages Present	**58.70**	**177.52**	47.75
	Early Life Stages Absent	60.76	151.24	**65.02**

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
3911 Fish Hatchery Road
Fitchburg, WI 53711

Tony Evers, Governor
Karen Hyun, Ph.D., Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

April 10, 2025

Chris McGlynn
Clerk/Treasurer
5630 Main Street
Gratiot, WI 53541

Subject: Gratiot Wastewater Treatment Facility - WPDES Permit WI-0024139
Water Quality Trading Plan – CONDITIONAL APPROVAL

Dear Chris McGlynn:

The Department recently received a water quality trading plan (WQT Plan) for compliance with phosphorus effluent limits at the Gratiot Wastewater Treatment Facility. The initial plan was received in December of 2024 and updated versions were received in February and March of 2025. Based on WDNR review, the final WQT Plan (dated March 2025) is in general conformance with the WDNR Water Quality Trading Guidance and Section 283.84 of the Wisconsin Statutes. The WQT plan proposes installation of streambank stabilization. The timeline for practice installation, as set forth in the WQT plan, indicates practices will be installed by October 2026. 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 beginning January 1, 2026.

Please note that this WQT plan approval is not to be construed as approval to commence work regulated under other state or local authorities, such as Chapter 30 waterways and wetlands permitting, floodplain, or construction activities.

Table 1: Total Phosphorus Credits Available per WQT-2025-0011

Year	Available Credits (lbs/yr) – Total
2026	289
2027	289
2028	289
2029	289
2030	289
2031	289

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-2025-0011 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.

If you have any questions or comments, please contact me at 608-419-4155 or at betsyjo.howe@wisconsin.gov.

Thank You,

BetsyJo Howe

BetsyJo Howe
Regional WQT Coordinator
Wisconsin Department of Natural Resources

e-CC:
Dick Herbst, Village
Raymond Pickett, Village
Logan Hoppman, Delta 3 Engineering
Jordan Fure, Delta 3 Engineering
Amanda Perdzock, WDNR
Caitlin Oconnell, WDNR
Matt Claucherty, WDNR

WATER QUALITY TRADING PLAN

Date: March 28, 2025

Village of Gratiot
Wastewater Treatment Facility

WPDES Permit No. WI-0024139-10-1
10925 Simons Lane
Gratiot, Wisconsin 53541

Prepared by:

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DELTA 3
EVERY ANGLE COVERED

Project Number: D20-151

TABLE OF CONTENTS

Attachments

I. Executive Summary

This Water Quality Trading Plan summarizes the Village of Gratiot's (Village) plan to utilize Water Quality Trading (WQT) for compliance with the final total phosphorus limit as provided in the Wisconsin Pollutant Discharge Elimination System (WPDES) Permit #WI 0024139-10-1. The WQT Credit generation will include nonpoint source reduction of Total Phosphorus (TP) as modeled by the NRCS Streambank Erosion Estimator. Credits are then applied to the daily monitoring reports to demonstrate compliance. The Wastewater Treatment Facility (WWTF) currently treats approximately 0.0144 MGD and discharges effluent with an average Total Phosphorus (TP) concentration of approximately 4.56 mg/L. The WWTF is unable to provide chemical treatment for TP reduction and plans to meet the final 0.075 mg/L monthly average TP limit through Water Quality Trading.

NRCS Streambank Erosion modeling methods were used to calculate the TP credits that would be generated based on the installation of best management practices (BMPs). These credits will be used to demonstrate compliance with the final total phosphorus limit as proposed in the WPDES Permit.

As demonstrated in modeling results from Table 1.1, the WWTF has the ability to register approximately **289 credits.** The implementation of this WQT Plan will result in compliance with the final TP limits. The WWTF intends to monitor TP credit usage and intends to perform construction of additional BMPs as needed for future effluent TP to comply with WPDES Permits Limits. A new Water Quality Trading Plan will be submitted at that time for new BMP practices and credit production.

Table 1.1 – Modeling Results

ID	Lateral Recession Rate (ft/yr.)	Current Phosphorus Loading (lbs./yr.)	Proposed Phosphorus Loading (lbs./yr.)	Proposed Phosphorus Reductions (lbs./yr.)	Trade Ratio	Proposed Phosphorus Credits
B	0.30	9	0	9	2:1	5
C	0.40	22	0	22	2:1	11
D	0.50	61	0	61	2:1	31
E	0.50	37	0	37	2:1	18
F	0.45	41	0	41	2:1	21
G	0.40	7	0	7	2:1	3
H	0.45	24	0	24	2:1	12
I-1	0.40	9	0	9	2:1	4
I-2	0.30	15	0	15	2:1	8
J	0.50	29	0	29	2:1	15
K	0.50	40	0	40	2:1	20
L	0.40	37	0	37	2:1	18
M	0.45	11	0	11	2:1	6
N	0.40	91	0	91	2:1	46
O	0.40	62	0	62	2:1	31
P	0.30	15	0	15	2:1	8
Q	0.30	10	0	10	2:1	5
R	0.30	19	0	19	2:1	9
S	0.30	14	0	14	2:1	7
T	0.40	11	0	11	2:1	5
U	0.40	11	0	11	2:1	6
					Total	**289**

NOTE:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty-Habitat Adjustment):1

Delivery = 0 (Trading within same HUC-12 Watershed)

Downstream = 0 (For trades upstream of Outfall 001)

Equivalency = 0 (Not necessary of Total Phosphorus)

Uncertainty: *Streambank Stabilization with Habitat Restoration* = 2

II. **Background**

The purpose of this Water Quality Trading Plan (Plan) is to describe the Village's use of Water Quality Trading to comply with the total phosphorus limits as provided in the Village's WPDES Permit #WI-0024139-10-1. The Plan was developed following the Notice of Intent to Conduct Water Quality Trading, provided in Attachment #1. The Water Quality Trading Checklist Form 3400-208 is provided in Attachment #2.

The Village of Gratiot (Village) is a small rural community located in Lafayette County at the intersection of Wisconsin State Trunk Highway (S.T.H.) '11' and S.T.H. '78'. The Village is geographically located just south of the Pecatonica River along Wolf creek in southwest Wisconsin. The Village owns and operates a Wastewater Treatment Facility (WWTF) which serves a population of approximately 224 residents.

The Village is comprised primarily of residential development with no major industries. The Village is situated on rolling hills with the grade typically sloping throughout the area between 5% and 15%. The topography of the area is shown in Attachment #3.

The current sanitary sewer collection system consists of approximately 51 sanitary manholes; two (2) sanitary lift stations; and 8,976 feet of sanitary sewer. Compositions vary between cast iron pipe (CIP), vitrified clay pipe (VPC), truss pipe, and polyvinyl chloride pipe (PVC). The manholes are composed entirely of precast structures. Please refer to Attachment #4 – Sanitary Sewer Map for location of sanitary sewer collection system components.

The Village of Gratiot owns and operates a WWTF that utilizes a Recirculating Sand Filter (RSF) treatment system. Wastewater enters the WWTF by first passing through the Solids Settling Tanks. Wastewater then proceeds to the wet well and dousing pumps. Following the wet well and dousing pumps, wastewater is distributed to four (4) Sand Filtration Cells. Following the Sand Filtration Cells, wastewater then enters the recirculation channel where wastewater is either returned to the dosing chamber for further treatment or sent to the UV Disinfection Channel. Effluent is disinfected seasonally via UV disinfection prior to discharge to Wolf Creek. The WWTF has an average daily design flow of 0.035 MGD. Please see Attachment #5 for the WWTF flow schematic.

The monthly average influent and effluent flows and loadings at the WWTF for 2022, 2023, and 2024 are provided in Table 2.1, Table 2.2, and Table 2.3, respectively. An annual average summary table is provided in Table 2.4.

Table 2.1 – 2022 Monthly Averages

	Flow	BOD_5		Suspended Solids		Total Phosphorus		Total Phosphorus
	(MGD)	(mg/L)		(mg/L)		(mg/L)		(lbs./day)
	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Effluent
Jan. (’22)	0.0092	85	13	75	5	-	5.01	0.38
Feb. (’22)	0.0108	112	6	95	4	-	4.88	0.44
Mar. (’22)	0.0153	100	2	103	2	-	4.95	0.63
Apr. (’22)	0.0188	82	2	86	3	-	4.35	0.68
May (’22)	0.0117	100	1	118	1	-	4.86	0.47
June (’22)	0.0103	108	0	175	1	-	7.60	0.65
July (’22)	0.0116	76	1	120	2	-	6.07	0.59
Aug. (’22)	0.0149	58	1	102	0	-	5.23	0.65
Sept. (’22)	0.0096	68	0	107	0	-	5.48	0.44
Oct. (’22)	0.0277	67	0	79	1	-	4.18	0.97
Nov. (’22)	0.0128	95	0	133	0	-	2.94	0.31
Dec. (’22)	0.0128	92	2	118	3	-	3.86	0.41
Annual Average =	**0.0138**	**87**	**2**	**109**	**2**	**-**	**4.95**	**0.55**

Table 2.2 – 2023 Monthly Averages

	Flow	BOD_5		Suspended Solids		Total Phosphorus		Total Phosphorus
	(MGD)	(mg/L)		(mg/L)		(mg/L)		(lbs./day)
	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Effluent
Jan. (’23)	0.0129	93	2	115	2	-	4.12	0.44
Feb. (’23)	0.0179	104	4	155	2	-	4.34	0.65
Mar. (’23)	0.0214	68	3	82	1	-	2.67	0.48
Apr. (’23)	0.0119	85	2	113	1	-	3.90	0.39
May (’23)	0.0132	100	1	147	2	-	4.59	0.51
June (’23)	0.0093	81	0	116	1	-	5.25	0.41
July (’23)	0.0167	87	1	118	0	-	5.60	0.78
Aug. (’23)	0.0091	51	1	66	1	-	4.49	0.34
Sept. (’23)	0.0094	56	1	62	1	-	6.22	0.49
Oct. (’23)	0.0086	65	0	67	1	-	5.40	0.39
Nov. (’23)	0.0087	139	4	66	2	-	4.68	0.34
Dec. (’23)	0.0105	134	4	79	1	-	4.64	0.41
Annual Average =	**0.0125**	**89**	**2**	**99**	**1**	**-**	**4.66**	**0.47**

Table 2.3 – 2024 Monthly Averages

	Flow	BOD_5		Suspended Solids		Total Phosphorus		Total Phosphorus
	(MGD)	(mg/L)		(mg/L)		(mg/L)		(lbs./day)
	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Effluent
Jan. ('24)	0.0117	147	3	106	3	-	4.36	0.43
Feb. ('24)	0.0106	141	3	87	3	-	4.70	0.42
Mar. ('24)	0.0106	136	4	99	1	-	4.48	0.40
Apr. ('24)	0.0322	77	2	48	2	-	3.05	0.82
May ('24)	0.0188	116	2	65	3	-	3.80	0.60
June ('24)	0.0228	93	1	65	1	-	3.52	0.67
July ('24)	0.0376	87	2	128	2	-	2.62	0.82
Aug. ('24)	0.0128	73	0	79	1	-	3.34	0.36
Sept. ('24)	0.0100	74	4	85	2	-	4.99	0.42
Oct. ('24)	0.0088	69	2	102	1	-	5.05	0.37
Nov. ('24)	0.0103	57	5	59	1	-	4.75	0.41
Dec. ('24)	-	-	-	-	-	-	-	-
Annual Average =	**0.0169**	**97**	**3**	**84**	**2**	**-**	**4.06**	**0.52**

Table 2.4 – Annual Averages

Year	Flow	Total Phosphorus	Total Phosphorus
	(MGD)	(mg/L)	(lbs./day)
	Effluent	Effluent	Effluent
2022	0.0138	4.95	0.55
2023	0.0125	4.66	0.47
2024	0.0169	4.06	0.52
Annual Average =	**0.0144**	**4.56**	**0.51**

Currently, the Village has been able to maintain an average Total Phosphorus effluent of 4.56 mg/L which is well within the WPDES interim limit of 7.7 mg/L. The Village has also implemented source reduction measures such as investigating potential TP contributors. Village has discovered no major contributors and no other point sources have been identified.

The Village has investigated watershed compliance alternatives such as Water Quality Trading (WQT) and Adaptive Management (AM). Stream monitoring in 2022 confirmed that Wolf Creek exceeds the Water Quality Criteria (WQC) of 0.075 mg/L for Total Phosphorus. Following discussion with the DNR and initial investigation, the Village elected to move forward with WQT. Utilizing the results from PRESTO, the watershed of the WWTF has a nonpoint source ratio of 0:100 at the point of discharge and is considered to be nonpoint-source dominated. Therefore, the Village intends to perform WQT projects upstream of the outfall but within the Village's Hydrological Unit Code – 12 (HUC-12) watershed #070900030901 as provided in Attachment #6.

Flow and loading data from 2022 through 2024 was utilized to determine credits needed. Annual effluent TP was estimated at 200 lbs. The final limit would allow annual discharge of 3 lbs. The Village would be required to offset at least 197 lbs. of effluent TP. Calculations for required WQT reductions are provided below.

1) The current annual Phosphorus loading discharged at the WWTF is calculated as follows:

Seasonal Average Daily Flow (Q) = 0.0144 MGD
Average Phosphorus concentration = 4.56 mg/L

0.0144 MGD x 4.56 mg/L x 8.34 x 365 days/yr. = **200 lbs./yr**.

2) The proposed allowable annual Phosphorus mass limit at the WWTF is calculated as follows:

Seasonal Average Daily Flow (Q) = 0.0144 MGD
Proposed Seasonal Phosphorus Concentration Limit = 0.075 mg/L

0.075 mg/L x 0.0144 MGD x 8.34 x 365 days/yr. = **3 lbs./yr**.

3) Reduction of Total Phosphorus required at WWTF -

200 lbs./yr. – 3 lbs./yr. = **197 lbs./yr.**

To generate the required 197 TP credits, the Village intends to perform streambank stabilization. The Village intends to generate additional credits as a factor of safety and for future growth.

III. Location and Description of Credit Generation Sites

The Village discharges to Wolf Creek (Lower Pecatonica River Watershed, SP07 – Sugar Pecatonica River Basin) at Outfall 001. As mentioned previously, the Village intends to perform WQT projects within the Village's HUC-12 #070900030901. The Village plans to perform streambank stabilization which will utilize grading and/or riprap to prevent the erosion of sediment from the streambanks. Projects will occur on private-owned property. Streambank stabilization will not only prevent sediment from entering the stream, but will also prevent phosphorus, nitrogen, and other pollutants from discharging to Wolf Creek. See Figure 3.1 for additional project location information.

Figure 3.1 – Project locations in relation to Outfall 001

IV. Methods for Nonpoint Source Load Reduction

A. Methods Used to Generate Load Reductions

The project location described above was inspected by a Professional Engineer in order to identify locations of severe erosion along the Wolf Creek and Trout Brook. Signs to identify severe erosion include but are not limited to: streambanks missing vegetation, streambank slumps, rills in the streambank, tree roots extruding from the streambank, fallen trees as a result of soil being eroded from underneath the trunk. The primary method to remediate the erosion sites is to re-grade the existing streambanks for the length of the active erosion to a more stable slope of 6:1. At a 6:1 slope, streambanks with vegetation alone are generally able to inhibit erosion from flowing rivers and streams under ordinary circumstances. The use of riprap as a method to remediate the actively eroding streambanks allows us to protect the streambanks from erosion and retain a steeper slope of 2:1 because the riprap is able to absorb and deflect the energy of the flowing water. The advantage of re-grading the streambank at a steeper slope is that less material will have to be excavated and removed from the site for construction. A cost analysis was performed to balance the use of riprap and standard re-grading. Additionally, the use of riprap allows us keep from infringing on property lines, roadways, and agriculture fields.

The Water Quality Trading Plan identifies streambank stabilization practices that will reduce TP runoff from nonpoint sources. The Village has the ability to generate TP load reductions through streambank grading and/or rip-rap of approximately 3,690 lineal feet of streambank.

Streambank Stabilization will be performed as per NR 328 *Shore Erosion Control Structures in Navigable Waterways and* NRCS 580 *Streambank and Shoreline Protection*. Streambank shaping will eliminate the discharge of sediment to the stream. The streambank stabilization project will occur within HUC-12 #070900030901 in order to generate TP credits. Standard Plans and Specifications for the Project Site will be provided by a Professional Engineer. The Village will also acquire all required permits and authorizations for the Projects.

To register credits, the Village has entered into trade agreements with Property Owners pursuant to *s. 283.84(1)(b), Wis. Stats*.

B. History of Project Site

The Project is planned within the Lower Pecatonica River Watershed. The project location is along the Wolf Creek and Trout Brook on private properties. Land use consists of agricultural crop field and floodplain forest. No mapped wetlands will be impacted by the WQT Project as indicated in Attachment #7 – Wetland Map. No fill shall be deposited within floodplain or wetlands.

The streambanks have experienced significant erosion as the watershed has been cleared for residential and agricultural use. Residential development and agricultural practices caused long term deposition of silt within the floodplain followed by decades of stream morphology eroding a new channel through the deposition. The banks within the project location are generally outside bends of the stream which receive higher stream velocity and thus have a higher erosion potential.

The banks are bare with slumps, rills and severe vegetative overhang throughout. Severe erosion indicators such as undercuts, slumps, tree roots, and fallen trees are readily visible throughout the site. The erosion indicators demonstrate the lateral recession rate based on the NRCS Recession Rate Table.

C. Trade Ratio

The Plan identifies trading practices that will reduce TP runoff. However, the DNR requires a trade ratio to provide a safety factor for meeting water quality standards. Trade ratios consider pollutant reductions of varying certainty, location, and type. For the given WQT practice, a trade ratio of 2:1 was calculated. The trade ratio is derived as follows:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty-Habitat Adjustment):1
Delivery = 0 (Trading within same HUC-12 Watershed)
Downstream = 0 (For trades upstream of Outfall 001)
Equivalency = 0 (Not necessary of Total Phosphorus)
Uncertainty: *Streambank Stabilization with Habitat Restoration* = 2

The uncertainty factor was determined from Appendix H – Management Practices and Associated Information of the Wisconsin Department of Natural Resources *Guidance for implementing Water Quality Trading in WPDES Permits (Edition 2)*.

Habitat restoration will consist of 14 bed logs installed approximately every 300 feet within each reach. Bed log locations are provided on Plan Sheets in Attachment #12. Furthermore, 21 swamp white oaks will be planted within the riparian area to maintain canopy cover to maintain stream metabolism. Bed logs will provide the following habitat benefits:

- Increase roughness within the channel which creates current breaks, shelter, and resting areas for aquatic organisms.
- The log will provide an environment beneficial for algae, macroinvertebrates, and other aquatic organisms that support aquatic food chains.
- Reduce water velocity and ability of the flow to erode and carry sediment.

D. Model Used to Derive Load Reductions

NRCS Streambank Erosion modeling methods were used to calculate the total phosphorus credits that would be generated based on the installation of BMPs. These credits will be used to demonstrate compliance with the final total phosphorus limit as

proposed in the WPDES Permit. Modeling results are provided in Table 4.1. If the Plan or model inputs change during construction, the Village will submit to the DNR the revised models and calculations to more accurately reflect the number of credits generated.

Table 4.1 – Modeling Results

ID	Lateral Recession Rate (ft/yr.)	Current Phosphorus Loading (lbs./yr.)	Proposed Phosphorus Loading (lbs./yr.)	Proposed Phosphorus Reductions (lbs./yr.)	Trade Ratio	Proposed Phosphorus Credits
B	0.30	9	0	9	2:1	5
C	0.40	22	0	22	2:1	11
D	0.50	61	0	61	2:1	31
E	0.50	37	0	37	2:1	18
F	0.45	41	0	41	2:1	21
G	0.40	7	0	7	2:1	3
H	0.45	24	0	24	2:1	12
I-1	0.40	9	0	9	2:1	4
I-2	0.30	15	0	15	2:1	8
J	0.50	29	0	29	2:1	15
K	0.50	40	0	40	2:1	20
L	0.40	37	0	37	2:1	18
M	0.45	11	0	11	2:1	6
N	0.40	91	0	91	2:1	46
O	0.40	62	0	62	2:1	31
P	0.30	15	0	15	2:1	8
Q	0.30	10	0	10	2:1	5
R	0.30	19	0	19	2:1	9
S	0.30	14	0	14	2:1	7
T	0.40	11	0	11	2:1	5
U	0.40	11	0	11	2:1	6
					Total	**289**

NOTE:

Trade Ratio = (Delivery + Downstream + Equivalency + Uncertainty-Habitat Adjustment):1

Delivery = 0 (Trading within same HUC-12 Watershed)
Downstream = 0 (For trades upstream of Outfall 001)
Equivalency = 0 (Not necessary of Total Phosphorus)
Uncertainty: *Streambank Stabilization with Habitat Restoration* = 2

A section of the Wolf Creek and Trout Brook was surveyed by a licensed Professional Engineer for areas of erosion. Each erosion site identified was measured for average height of erosion, length of erosion, and rate of erosion. Bank heights were hand measured with a tape measure and recorded approximately every 50' for each site. All erosion sites were categorized with a corresponding ID. The data, narrative, and photos documenting the current state of eroding streambanks are provided in Attachment #8.

Soil testing has been completed to determine TP concentrations within the soil at each erosion site. A composite sample was gathered for each site ID. Sampling included the use of a soil sampler which pulled ¾" cores at 8" depth. Cores were taken from each soil horizon throughout the length of the eroding bank to obtain a representative soil sample for the corresponding streambank ID. Soils maps and soil testing data are provided in Attachment #9.

With the collected data, the NRCS Streambank Erosion Estimator was used to calculate TP loss from each site of the eroding streambank. The lateral recession rate of the eroding bank is a critical component for the NRCS Streambank Erosion Estimator. Lateral recession rate was estimated based on the on-site evaluation, photos, and site descriptions. The modeling data for the NRCS Streambank Erosion Estimator is available in Attachment #10. The streambank grading design will eliminate streambank erosion thus eliminating TP inputs within the Project areas.

E. Operation and Maintenance

An Operation and Maintenance (O&M) Plan is provided in Attachment #11. The O&M plan describes how the Stream Stabilization Practices will be operated and maintained. The O&M Plan also addresses response procedures for Practice Registration, BMP Inspection, Noncompliance Notification, and Notification of Trade Agreement Termination.

As previously mentioned, the Village is planning to perform streambank stabilization by implementing BMPs along Wolf Creek and Trout Brook streambanks. The stabilization practices will be installed and maintained per the Plans and Specifications as provided in Attachment #12. BMPs are to follow NR 328 Shore Erosion Control Structures in Navigable Waterways and NRCS 580 Streambank and Shoreline Protection. Restoration landscaping and seeding will be installed following construction and will be closely monitored for a minimum of two (2) growing seasons to ensure the new seeding grows and erosion is not prevalent. Weeds and invasive vegetation growth will be addressed if present. The BMP will be inspected following heavy rain events at a minimum. Inspection will be used to determine appropriate actions in order to maintain the BMP for continuous and ongoing streambank stabilization and TP credit generation.

The BMPs will be inspected annually by a licensed Professional Engineer to ensure that the BMPs are functioning as intended in order to meet the requirements of this WQT Plan.

V. Trade Timeline

Schedule for Installation of the above mentioned trading practices for Total Phosphorus Credit Generation for TP compliance is provided in Table 5.1 below.

Table 5.1 – Trade Timeline

Item	Completion Timeline
Site Investigation	November 2024
Conceptual Design	December 2024
Final Design	February 2025
DNR Review of Final Design	April 2025
Wetland Delineation	April-May 2025
Construction within a Floodplain Permit Application	April 2025
Construction Permit Applications	April 2025
Construction of BMPs	June - September 2025
Phosphorus Credit Registration	September 2025
Use of Phosphorus Credits (Ongoing for Permit Compliance)	January 2026

Credits will be used by the Village following DNR reissuance of the WPDES Permit. Credits will continue as long as the trading practices are maintained as outlined in this WQT Plan.

VI. Inspection Reporting

A. Tracking Procedures

The Village will track credits used monthly. The Village will report credit usage to the DNR on a monthly basis in the Discharge Monitoring Reports (DMRs). The annual report will summarize the 12 months of credit usage and credit generation. The Village will report to DNR any concern that they have that may result in a need to modify the trade agreement and/or this trade plan. For example, a need to generate additional credits based on discharge.

B. Inspection

Inspection of the BMPs shall occur during construction phase to ensure they are installed per the design and meet all applicable codes and permits. Once completed, inspections of the established BMPs shall occur each month at a minimum or following heavy rain events. A licensed professional engineer will perform an annual certification to ensure the practice is performing as designed and the Village remains in compliance.

The inspection reports will include:

i. Name and contact information of the inspector
ii. Inspection Date
iii. Relevant standards set forth in the Design Plan or Operation and Maintenance Plan
iv. Issues identified
v. When and how any issues identified were addressed
vi. When and how any issues identified will be addressed in the future

Inspection reports generated during each routine or after rain event inspection will be included with the Annual Water Quality Trading Report submitted by the Village to the DNR. Annual inspections by a professional engineer will typically occur in Spring. This time of year is ideal for evaluating the condition of BMPs as it follows the freeze/thaw which poses the greatest potential for changes to the BMPs. Minimal vegetation cover will allow for adequate visual inspection.

C. Management Practice Registration Form

The Village will file a completed registration form 3400-207 for Water Quality Trading Management Practice Registration separately from this Plan.

D. Annual Water Quality Trading Report Submittal

The following shall be submitted to the DNR by January 31 of each year:

i. The number of pollutant reduction credits (lbs./month) used each month of the previous year to demonstrate compliance;
ii. A summary of the annual inspection of the practice that generated any of the pollutant reduction credits used during the previous year, this inspection shall be completed by a licensed Professional Engineer;
iii. All monthly inspection reports and site photos for each BMP;
iv. 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;

v. A list of all noncompliance and the correction measures and timing to address the issues throughout the year; and

vi. An updated WQT plan if management practices have or will change.

E. Monthly Certification of Management Practices

Each month, the Village will certify that the BMPs are maintained and operating in a manner consistent with this Water Quality Trading Plan or provide a statement noting noncompliance with this Plan. The monthly Discharge Monitoring Report (DMR) will include the following statement as a certification of compliance when the Credit Generating Practice is operating in a manner consistent with the Plan:

> "I certify that to the best of my knowledge that the management practices identified in the approved water quality trading plan as the source of phosphorus credits is installed, established and properly maintained."

F. Notification of Failure to Generate Credits

The Village will notify DNR by telephone call to DNR's regional wastewater compliance engineer within 24 hours or next business day of becoming aware that phosphorus credits used or intended for use by Village are not being generated as outlined in this Water Quality Trading Plan.

The Village will submit a written notification within five days after the Village recognizes that the phosphorus credits are not being generated as outlined in the Trading Plan. DNR may waive the requirement for submittal for a written notice within five days and instruct the Village to submit the written notice with the next regularly scheduled monitoring report required by Village's WPDES Permit.

The written notice will contain a description of how and why the TP credits are not being generated as outlined in the Water Quality Trading Plan, the steps taken or planned to prevent reoccurrence of the identified problems and the length of time anticipated it will take to address the issue.

The Village will work to rectify the problem as laid out in the Operation and Maintenance Plans.

G. Conditions under which Management Practices May Be Inspected

Any DNR authorized officer, employee, or representative has the right to access and inspect the credit generating practice so long as the Village's trade agreement with the property owner(s) and this Water Quality Trading Plan remain in effect. Notification to the property owner prior to access is required.

VII. Certification –

The undersigned hereby certifies that this Water Quality Trading Plan is accurate and correct to the best of his knowledge.

Village of Gratiot Wastewater Treatment Facility

By: Raymond Pickett

Ray Picket
Operator
Village of Gratiot
5630 Main Street
P.O. Box 189
Gratiot, WI 53541
Telephone: (608) 558-5155
Email: vogpatrolman@gmail.com

Attachment #1

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

Notice of Intent to Conduct Water Quality Trading

Form 3400-206 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., and ch. NR 217 Wis. Adm. Code, 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
Village of Gratiot	WI- 0024139	

Facility Address	City	State	ZIP Code
10925 Simons Lane	Gratiot	WI	53541

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Jordan Fure (Delta 3 Eng.)	875 South Chestnut Street	Platteville	WI	53818

Project Name
Gratiot Water Quality Trading Plan

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Wolf Creek	Total Phosphorus	070900030901

Is the permittee in a point or nonpoint source dominated watershed?
(See PRESTO results - http://dnr.wi.gov/topic/surfacewater/presto.html)

- ○ Point source dominated
- ◉ Nonpoint source dominated

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4/CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☒ Agricultural nonpoint source discharge
- ☐ Other - Specify: _____

Are any of the credit generators in a different HUC 12 than the applicant?

- ○ Yes; HUC 12: _____
- ◉ No
- ○ Unsure

Are any of the credit generators downstream of the applicant?

- ◉ Yes
- ○ No
- ○ Unsure

Will a broker/exchange be used to facilitate trade?

- ○ Yes; Name: _____
- ◉ No
- ○ Unsure

Point to Point Trades (Traditional Municipal / Industrial Discharge, MS4, CAFO)

Discharge Type	Permit Number	Name	Contact Address	Is the point source credit generator currently in compliance with their permit requirements?
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure
○ Traditional ○ MS4 ○ CAFO				○ Yes ○ No ○ Unsure

Point to Nonpoint Trades (Non-permitted Agricultural, Non-Permitted Urban, etc.)

List the practices that will be used to generate credits:

Non-permitted Agricultural - Best Management Practices

Method for quantifying credits generated:

- ☐ Monitoring
- ☒ Modeling, Names: NRCS Erosion Estimator; SNAP-Plus
- ☐ Other: _____

Projected date credits will be available: 01/01/2024

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.

Signature of Preparer	Date Signed
Jordan Funk	10/19/21

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
Brian Singer	10/25/21

Attachment #2

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

Water Quality Trading Checklist

Form 3400-208 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any WPDES permittee that intends to pursue pollutant 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
Village of Gratiot	WI- 0024139	

Facility Address	City	State	ZIP Code
10925 Simons Lane	Gratiot	WI	53541

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Jordan Fure (Delta 3 Eng.)	875 South Chestnut Street	Platteville	WI	53818

Project Name
Gratiot Water Quality Trading Plan

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Wolf Creek	Total Phosphorus	070900030901

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☒ Agricultural nonpoint source discharge
- ☐ Other - Specify: _____

Are any of the credit generators in a different HUC 12 than the applicant?
- ○ Yes; HUC 12: _____
- ◉ No

Are any of the credit generators downstream of the applicant?
- ○ Yes
- ◉ No

Will a broker/exchange be used to facilitate trade?
- ○ Yes *(include description and contact information in WQT plan)*
- ◉ No

Point to Point Trades (Traditional Municipal / Industrial, MS4, CAFO)

Are each of the point source credit generators identified in this section in compliance with their WDPES permit requirements?
- ○ Yes
- ○ No

Discharge Type	Permit Number	Name	Contact Information	Trade Agreement Number
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				
○ Traditional ○ MS4 ○ CAFO				

Point to Point Trades (Traditional Municipal / Industrial, MS4, CAFO) *cont.*

Does plan have a narrative that describes:			Plan Section
a. Summary of discharge and existing treatment including optimization	◯ Yes	◯ No	
b. Amount of credit being generated	◯ Yes	◯ No	
c. Timeline for credits and agreements	◯ Yes	◯ No	
d. Method for quantifying credits	◯ Yes	◯ No	
e. Tracking and verification procedures	◯ Yes	◯ No	
f. Location of credit generator in proximity to receiving water and credit user	◯ Yes	◯ No	
g. Other: ______________	◯ Yes	◯ No	

Point to Nonpoint Trades (Non-Permitted Urban, Agricultural, Other)

Discharge Type	Practices Used to Generate Credits	Method of Quantification	Trade Agreement Number	Have the practice(s) been formally registered?
◯ Urban NPS ◉ Agricultural NPS ◯ Other	Streambank Stabilization	NRCS Streambank Erosion Estimator		◯ Yes ◉ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part
◯ Urban NPS ◯ Agricultural NPS ◯ Other				◯ Yes ◯ No ◯ Only in part

Does plan have a narrative that describes:			Plan Section
a. Description of existing land uses	◉ Yes	◯ No	Section IV
b. Management practices used to generate credits	◉ Yes	◯ No	Section IV
c. Amount of credit being generated	◉ Yes	◯ No	Section IV
d. Description of applicable trade ratio per agreement/management practice	◉ Yes	◯ No	Section IV
e. Location where credits will be generated	◉ Yes	◯ No	Section III
f. Timeline for credits and agreements	◉ Yes	◯ No	Section V
g. Method for quantifying credits	◉ Yes	◯ No	Section IV

Does plan have a narrative that describes:			Plan Section
h. Tracking procedures	◉ Yes	○ No	Section VI
i. Conditions under which the management practices may be inspected	◉ Yes	○ No	Section VI
j. Reporting requirements should the management practice fail	◉ Yes	○ No	Section VI
k. Operation and maintenance plan for each management practice	◉ Yes	○ No	Section IV
l. Location of credit generator in proximity to receiving water and credit user	◉ Yes	○ No	Section III
m. Practice registration documents, if available	○ Yes	◉ No	
n. History of project site(s)	◉ Yes	○ No	Section IV
o. Other: _____	○ Yes	◉ No	

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- 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
Jordan Finne	12-19-24

Authorized Representative Signature

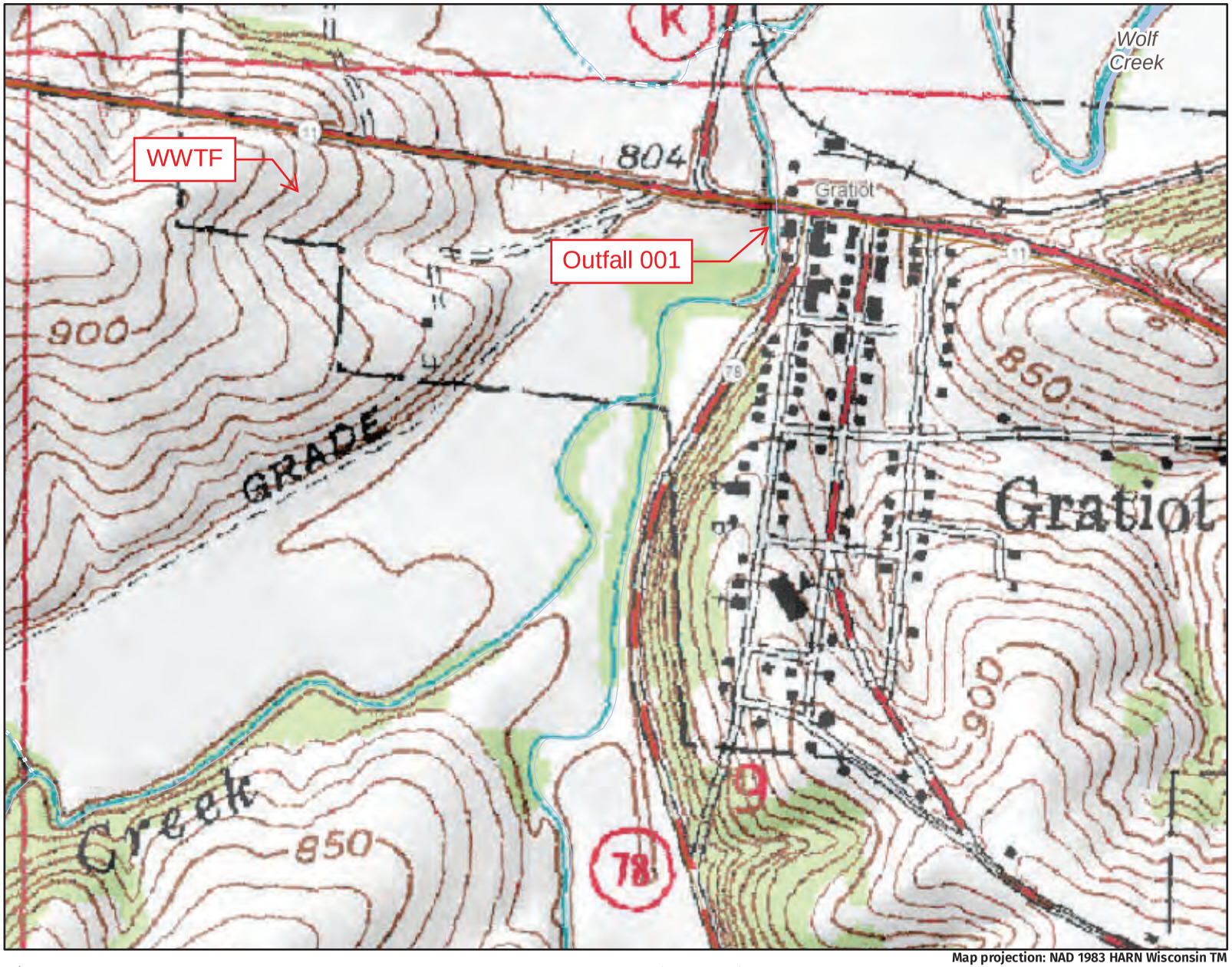
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. 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
Raymond Pickett	12-19-2024

Attachment #3

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Topography Map



Legend: (some map layers may not be displayed)

- 24K Lakes and Open Water
- 24K Streams and Rivers
- 24K Intermittent Streams

24K USGS DRGs

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 8
- 9
- 10
- 11

Notes:

Map projection: NAD 1983 HARN Wisconsin TM

N

Map: 0 560 1,120 Feet
0 160 320 Meters

Service Layer Credits:
EN Basic Basemap WTM Ext: , Topographic Maps:

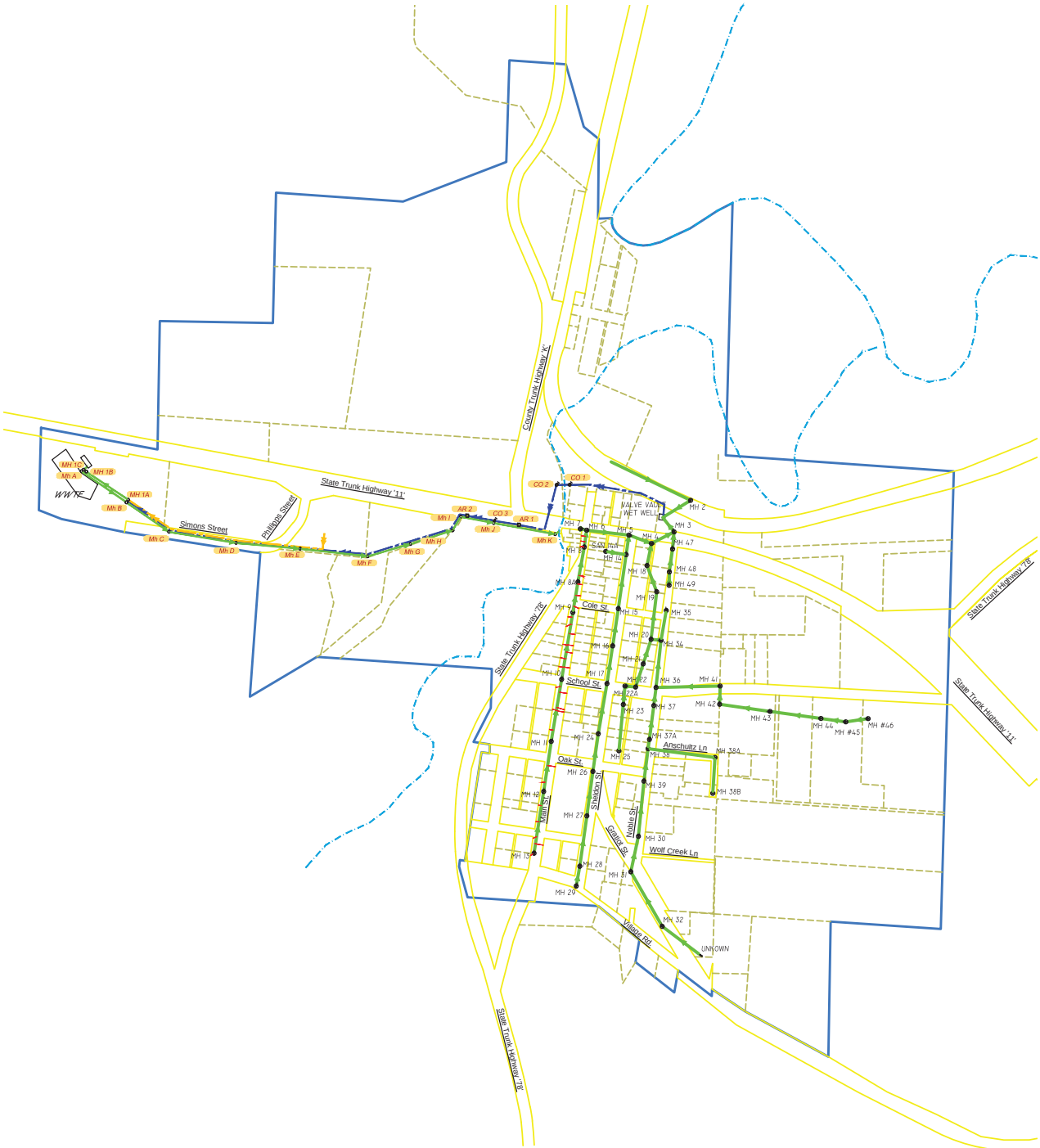
Date Printed: 12/19/2024 3:28 PM

Attachment #4

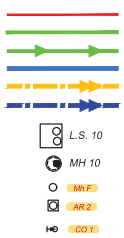
Sanitary Sewer System Map

Village of Gratiot

Lafayette County, Wisconsin



Legend

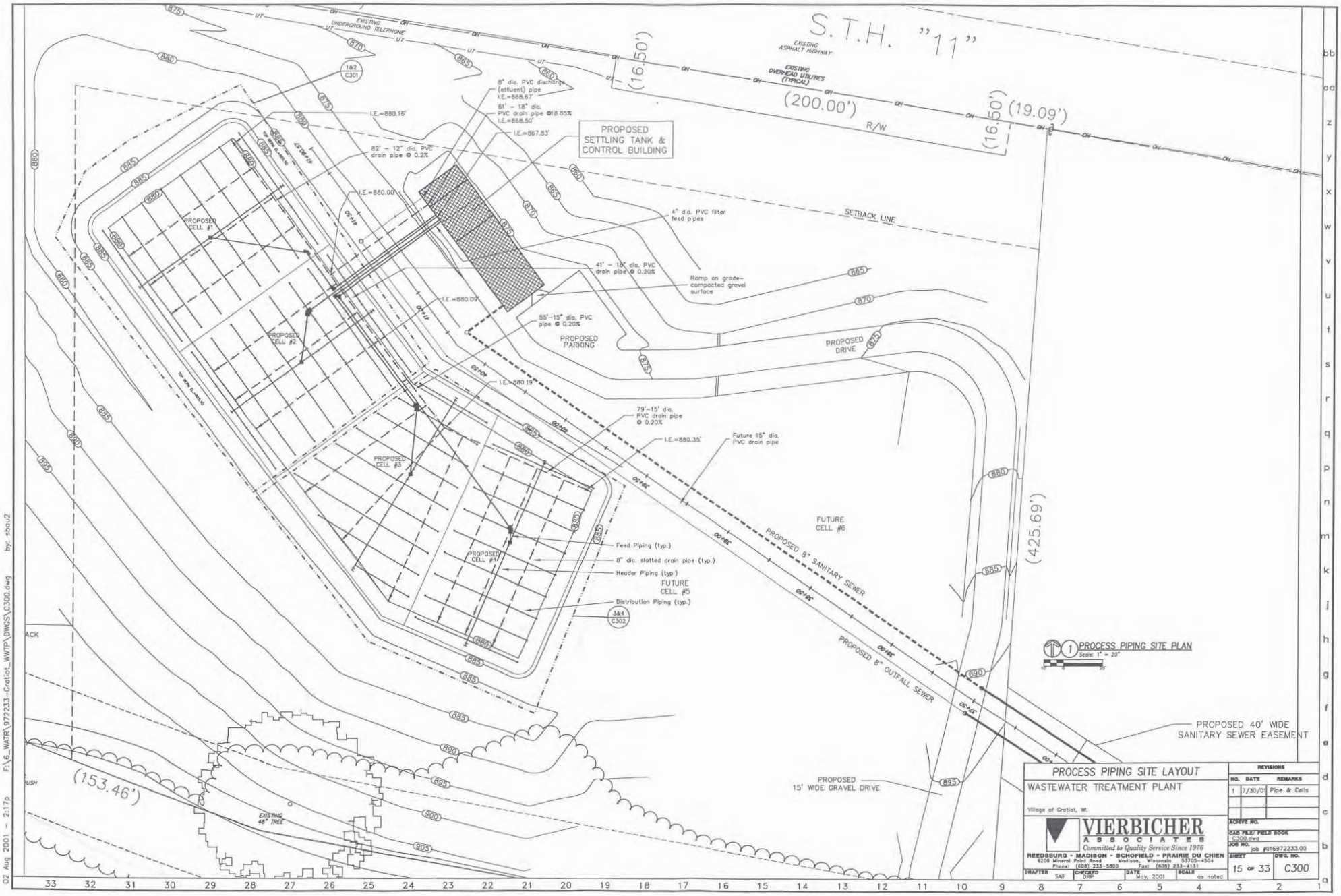


- Existing Lateral
- Existing 8" Sanitary Sewer
- Existing Flow Direction
- 2008 Corporate Limits
- Existing 2" Sanitary Force Main
- Existing 4" Sanitary Force Main
- L.S. 10 — Existing Lift Station
- MH 10 — Existing Sanitary Manhole
- MH F — Existing Outfall Manhole
- AR 2 — Existing Air Relief Manhole
- CO 1 — Existing Cleanout

Drawn by: C.Coyier
Date: Jan, 2021
Revised by:
Date:

DELTA 3
EVERY ANGLE COVERED
PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING • ARCHITECTURE
GRANT WRITING • LAND DEVELOPMENT • PLANNING & CADD SERVICES
875 SOUTH CHESTNUT STREET PHONE: (608) 348-5355
PLATTEVILLE, WISCONSIN 53818
898 JACKSON STREET PHONE: (563) 542-9005
DUBUQUE, IOWA 52001

Attachment #5



PROCESS PIPING SITE LAYOUT

WASTEWATER TREATMENT PLANT

Village of Gratiot, WI.

REVISIONS		
NO.	DATE	REMARKS
1	7/30/01	Pipe & Cells

VIERBICHER ASSOCIATES
Committed to Quality Service Since 1976
REEDSBURG - MADISON - SCHOFIELD - PRAIRIE DU CHIEN
5200 Mineral Point Road, Madison, Wisconsin 53705-4504
Phone: (608) 233-5800 Fax: (608) 233-4131

ACHIEVE NO.

CAD FILE/ FIELD BOOK: C300.dwg

JOB NO.: Job #016972233.00

DRAFTER	CHECKED	DATE	SCALE
SAB	DRP	May, 2001	as noted

SHEET: 15 OF 33

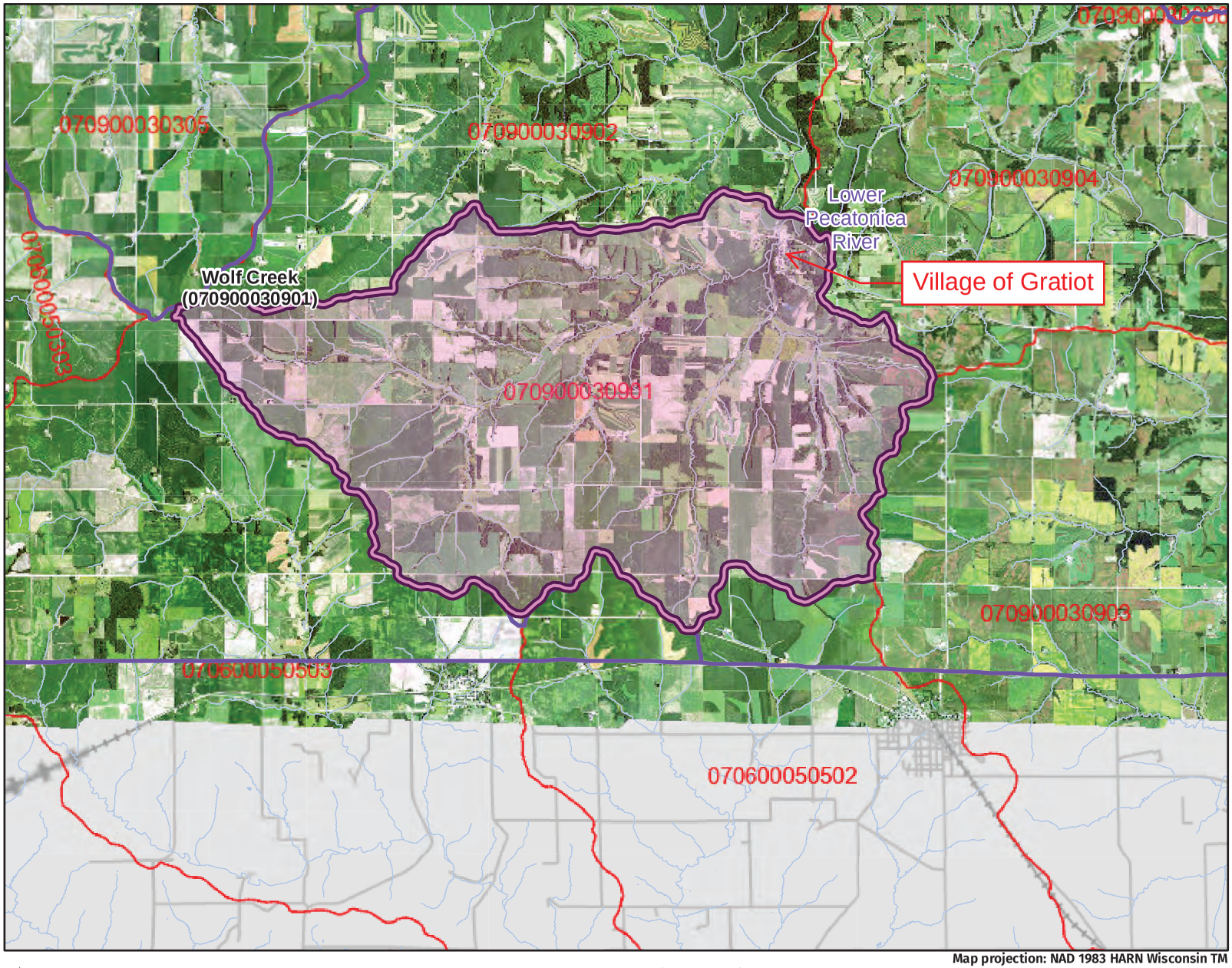
DWG. NO.: C300

02 Aug 2001 - 2:17p F:\6_WATR\972233-Gratiot_WWTP\DWGS\C300.dwg by: sbau2

Attachment #6

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

HUC-12 Watershed Map



Legend: (some map layers may not be displayed)

- Watersheds
- 12-digit HUCs (Subwatersheds)
- 24K Lakes and Open Water
- 24K Streams and Rivers

2015 Leaf On

- Red: Band_1
- Green: Band_2
- Blue: Band_3
- City or Village
- State Boundaries
- County Boundaries

Major Roads

- Interstate Highway
- State Highway
- US Highway

Notes:

Map projection: NAD 1983 HARN Wisconsin TM

N

Map: 0 8,000 16,000 Feet
0 2,000 4,000 Meters

Service Layer Credits:
2015 Leaf On: , EN Basic Basemap WTM Ext: , Hydrologic Units (HUCs): U. S. Department of Agriculture, Natural Resources Conservation Service

Date Printed: 12/16/2024 2:45 PM

Attachment #7

Gratiot Wetland Map

Legend

- Wetland Indicators
- Wetland Class Areas
- Wetland Class Points
  - Dammed pond
  - Excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
  - Filled excavated pond
- Filled Points
- Wetland Class Areas
- Filled Areas
- Wetland Class Areas
- Wetland Class Points
  - Dammed pond
  - Excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
  - Filled excavated pond
- Filled Points
- Wetland Class Areas
- Filled Areas
- Wetland Identifications and Confirmations
- NRCS Wetspots
- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads

Notes

0.5 0 0.25 0.5 Miles

NAD_1983_HARN_Wisconsin_TM

1: 15,840

Attachment #8

Current State of Eroding Streambanks Documentation					
ID	Eroding Bank Height Measurement #	Eroding Bank Height (Feet)	Eroding Bank Length (Feet)	Erosion Rate (Feet/Year)	Soil Type
B	1	3.4	78.1	0.30	Silt Loam
	2	4.8			
	3	8.5			
	4	-			
	5	-			
	AVERAGE	5.6			
C	1	5.2	132.9	0.40	Silt Loam
	2	6.5			
	3	5.3			
	4	-			
	5	-			
	AVERAGE	5.7			
D	1	9.3	297.1	0.50	Silt Loam
	2	6.9			
	3	7.3			
	4	6.6			
	5	7.2			
	AVERAGE	7.5			
E	1	4.7	228.8	0.50	Silt Loam
	2	4.4			
	3	5.7			
	4	6.2			
	5	-			
	AVERAGE	5.3			
F	1	6.4	229.1	0.45	Silt Loam
	2	6.8			
	3	6.9			
	4	6.2			
	5	-			
	AVERAGE	6.6			
G	1	3.1	81.8	0.40	Silt Loam
	2	-			
	3	-			
	4	-			
	5	-			
	AVERAGE	3.1			
H	1	6.9	136.1	0.45	Silt Loam
	2	6.7			
	3	-			
	4	-			
	5	-			
	AVERAGE	6.8			

I-1	1	5.6	60.9	0.40	Silt Loam
	2	-			
	3	-			
	4	-			
	5	-			
	AVERAGE	5.6			
I-2	1	5.4	140.7	0.30	Silt Loam
	2	5.8			
	3	-			
	4	-			
	5	-			
	AVERAGE	5.6			
J	1	5.2	147.6	0.50	Silt Loam
	2	5.8			
	3	-			
	4	-			
	5	-			
	AVERAGE	5.5			
K	1	5.1	239.3	0.50	Silt Loam
	2	5.6			
	3	6.3			
	4	5.5			
	5	-			
	AVERAGE	5.6			
L	1	7.5	256.7	0.40	Silt Loam
	2	7.2			
	3	6.5			
	4	5.6			
	5	5.4			
	AVERAGE	6.4			
M	1	7.5	75.2	0.45	Silt Loam
	2	5.2			
	3	-			
	4	-			
	5	-			
	AVERAGE	6.4			
N	1	6.6	572.8	0.40	Silt Loam
	2	7.8			
	3	7.2			
	4	5.8			
	5	6.4			
	AVERAGE	6.8			

O	1	7.1	367.9	0.40	Silt Loam
	2	6.8			
	3	7.3			
	4	-			
	5	-			
	AVERAGE	7.1			
P	1	5.2	149.5	0.30	Silt Loam
	2	5.5			
	3	5.0			
	4	-			
	5	-			
	AVERAGE	5.2			
Q	1	7.3	88.3	0.30	Silt Loam
	2	5.9			
	3	-			
	4	-			
	5	-			
	AVERAGE	6.6			
R	1	5.8	159.9	0.30	Silt Loam
	2	6.0			
	3	5.7			
	4	-			
	5	-			
	AVERAGE	5.8			
S	1	8.1	100.2	0.30	Silt Loam
	2	8.0			
	3	-			
	4	-			
	5	-			
	AVERAGE	8.1			
T	1	5.0	81.9	0.40	Silt Loam
	2	7.2			
	3	-			
	4	-			
	5	-			
	AVERAGE	6.1			
U	1	7.4	67.6	0.40	Silt Loam
	2	6.8			
	3	-			
	4	-			
	5	-			
	AVERAGE	7.1			

Photo #1

ID: B
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, and exposed tree roots.

Photo #2

ID: C

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and erosion encroaching on existing bridge.

Photo #3

ID: C

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, near vertical banks, and erosion encroaching on existing bridge.

Photo #4

ID: D
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #5

ID: D
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, fallen trees, and vertical banks.

Photo #6

ID: D
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, fallen trees, and vertical banks.

Photo #7

ID: E

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and fallen trees.

Photo #8

ID: E
Viewing Direction: Downstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #9

ID: E

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, near vertical banks. There is a hole in the streambank where you can see the bank was washed out completely from behind the tree roots.

Photo #10

ID: E

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #11

ID: F

Viewing Direction: Downstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #12

ID: G

Viewing Direction: Downstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, vertical banks, and rill visible.

Photo #13

ID: H
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #14

ID: H
Viewing Direction: NA
Comments: Holes in the existing streambank caused from erosion.

Photo #15

ID: H

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #16

ID: I-1
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #17

ID: I-2

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #18

ID: J

Viewing Direction: Downstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #19

ID: J
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #20

ID: K
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #21

ID: K

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #22

ID: L
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #23

ID: L
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #24

ID: L

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #25

ID: L
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Photo #26

ID: M
Viewing Direction: Upstream
Comments: Large tree fallen into creek due to streambank erosion.

Photo #27

ID: M

Viewing Direction: Downstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, vertical banks.

Photo #28

ID: N

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #29

ID: N

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks. Topsoil indicated above recently fell into river due to excessive undercutting of streambank.

Photo #30

ID: N
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and fallen trees.

Photo #31

ID: O

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #32

ID: O

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, fallen trees, and vertical banks.

Photo #33

ID: P

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and vertical banks.

Photo #34

ID: Q

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and fallen trees.

Photo #35

ID: R

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, fallen trees, and vertical banks.

Photo #36

ID: S
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, fallen trees, and near vertical banks.

Photo #37

ID: T

Viewing Direction: Upstream

Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, fallen trees, and near vertical banks.

Photo #38

ID: T

Viewing Direction: Upstream

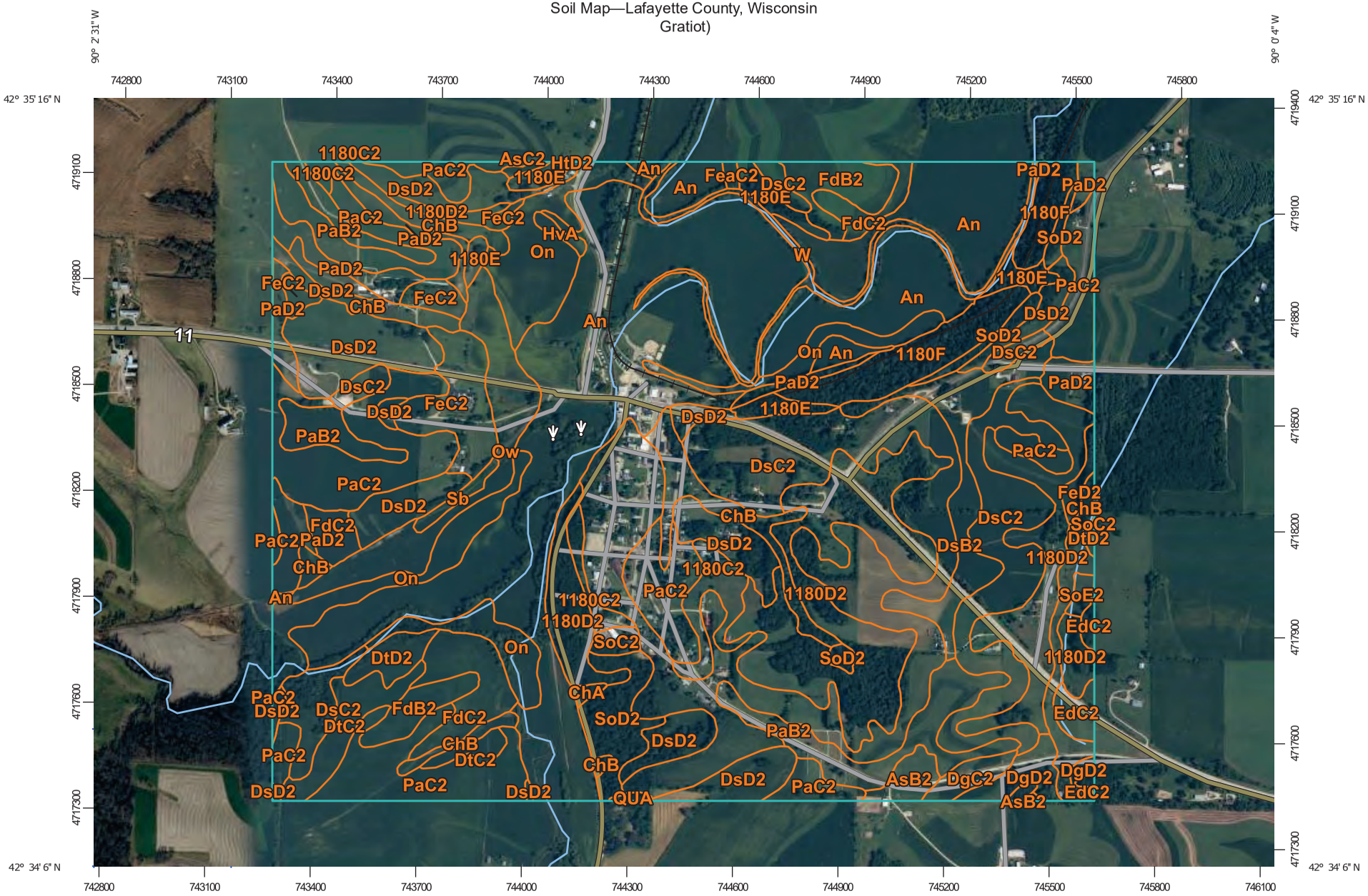
Comments: Severe undercutting beneath tree.

Photo #39

ID: U
Viewing Direction: Upstream
Comments: Severe undercut with slump, vegetative overhang, bare soil, exposed tree roots, and near vertical banks.

Attachment #9

Soil Map—Lafayette County, Wisconsin
Gratiot)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lafayette County, Wisconsin
Survey Area Data: Version 19, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 12, 2020—Nov 13, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1180C2	Newglarus-Dunbarton silt loams, 6 to 12 percent slopes, moderately eroded	13.5	1.3%
1180D2	Newglarus-Dunbarton silt loams, 12 to 20 percent slopes, moderately eroded	102.8	9.8%
1180E	Newglarus-Dunbarton, very stony, silt loams, 20 to 30 percent slopes, very rocky	13.2	1.3%
1180F	Newglarus-Dunbarton, very stony, silt loams, 30 to 60 percent slopes, very rocky	24.6	2.3%
An	Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded	217.5	20.7%
AsB2	Ashdale silt loam, 2 to 6 percent slopes, moderately eroded	5.3	0.5%
AsC2	Ashdale silt loam, 6 to 12 percent slopes, moderately eroded	0.7	0.1%
ChA	Chaseburg silt loam, moderately well drained, 0 to 2 percent slopes	0.9	0.1%
ChB	Chaseburg silt loam, moderately well drained, 2 to 6 percent slopes	29.5	2.8%
DgC2	Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded	4.4	0.4%
DgD2	Dodgeville silt loam, 12 to 20 percent slopes, moderately eroded	7.4	0.7%
DsB2	Newglarus silt loam, moderately deep, 2 to 6 percent slopes, moderately eroded	22.0	2.1%
DsC2	Newglarus silt loam, moderately deep, 6 to 12 percent slopes, moderately eroded	165.4	15.8%
DsD2	Newglarus silt loam, moderately deep, 12 to 20 percent slopes, moderately eroded	70.9	6.8%
DtC2	Newglarus complex, 6 to 12 percent slopes, moderately eroded	12.7	1.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DtD2	Newglarus complex, 12 to 20 percent slopes, moderately eroded	5.9	0.6%
EdC2	Edmund silt loam, 6 to 12 percent slopes, moderately eroded	5.1	0.5%
FdB2	Fayette silt loam, 2 to 6 percent slopes, moderately eroded	16.3	1.6%
FdC2	Fayette silt loam, 6 to 12 percent slopes, moderately eroded	22.2	2.1%
FeaC2	Festina silt loam, 6 to 12 percent slopes, moderately eroded	0.8	0.1%
FeC2	Fayette silt loam, valleys, 6 to 12 percent slopes, moderately eroded	22.1	2.1%
FeD2	Fayette silt loam, valleys, 12 to 20 percent slopes, moderately eroded	2.4	0.2%
HtD2	Hixton sandy loam, 12 to 20 percent slopes,moderately eroded	0.4	0.0%
HvA	Huntsville silt loam, 0 to 2 percent slopes	1.3	0.1%
On	Orion silt loam, 0 to 3 percent slopes, occasionally flooded	52.7	5.0%
Ow	Ettrick silt loam, 0 to 2 percent slopes, frequently flooded	24.5	2.3%
PaB2	Palsgrove silt loam, 2 to 6 percent slopes, moderately eroded	32.0	3.1%
PaC2	Palsgrove silt loam, 6 to 12 percent slopes, moderately eroded	102.1	9.7%
PaD2	Palsgrove silt loam, 12 to 20 percent slopes, moderately eroded	28.0	2.7%
QUA	Quarry	0.5	0.1%
Sb	Sable silt loam, benches	2.1	0.2%
SoC2	Sogn silt loam, 2 to 12 percent slopes, moderately eroded	2.5	0.2%
SoD2	Sogn silt loam, 12 to 20 percent slopes, moderately eroded	18.1	1.7%
SoE2	Sogn silt loam, 20 to 30 percent slopes, moderately eroded	1.6	0.2%
W	Water	8.7	0.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WoB	Worthen silt loam, 2 to 6 percent slopes	8.4	0.8%
Totals for Area of Interest		**1,048.9**	**100.0%**

ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

710 Commerce Drive
PO Box 169
Watertown, WI 53094

Total Phosphorus Analysis 04/15/2024

Delta 3 Engineering

Field ID	Sample ID	Total P (ppm)	BMP ID
Gratiot D20-151	Right X-Sec1	807.2	B
Gratiot D20-151	Right X-Sec2	672.4	D
Gratiot D20-151	RX-3	621.2	D
Gratiot D20-151	RX-4	758.9	E
Gratiot D20-151	RX-5	669	E
Gratiot D20-151	RX-6	637.5	H
Gratiot D20-151	RX-7	721.3	H
Gratiot D20-151	RX-8	680.1	K
Gratiot D20-151	RX-9	687.6	K
Gratiot D20-151	RX-10	733.5	K
Gratiot D20-151	LX-11	625.3	F
Gratiot D20-151	LX-12	686.7	F
Gratiot D20-151	LX-13	818.3	F
Gratiot D20-151	LX-14	746.5	G
Gratiot D20-151	LX-15	855.6	G
Gratiot D20-151	LX-16	696.2	L
Gratiot D20-151	LX-17	635.5	L
Gratiot D20-151	LX-18	653	L
Gratiot D20-151	LX-19	702.4	O
Gratiot D20-151	LX-20	750.6	O
Gratiot D20-151	LX-21	642.1	O

ROCK RIVER LABORATORY, INC.
AGRICULTURAL ANALYSIS

710 Commerce Drive
PO Box 169
Watertown, WI 53094

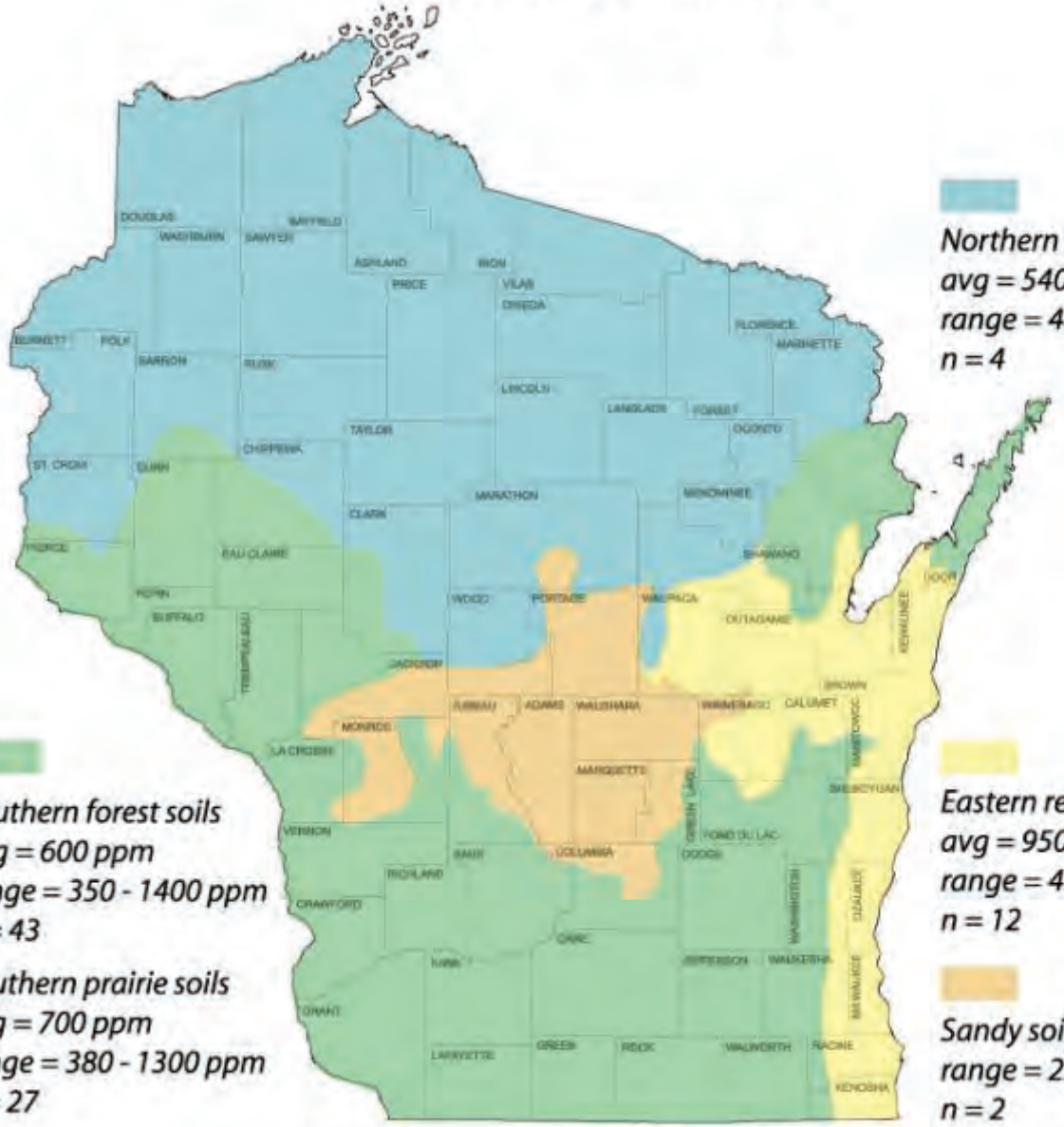
Total Phosphorus Analysis 12/5/24

Delta 3 Engineering

Field ID	Sample ID	Total P (ppm)
A	1	960.4
AA	1	634.1
BB	1	666.1
C	1	838.9
I	1	735.7
I2	1	702
I2	2	795.2
J	1	896
J	2	803.5
M	1	620.2
N	1	662.4
N	2	691.3
N	3	730.3
P2	A	782.3
P2	B	735.3
Q	1	701.9
R	1	756
R	2	835.5
S	1	655.2
T	1	619.6
U	1	699.3

Field ID	Sample ID	Total P (ppm)
V	1	582
V	2	718.5
W	1	643.2
X	1	650.3
Y	1	820.6
Y	2	796.2
Z	1	532.2

Soil Total P



Northern loamy soils
avg = 540 ppm
range = 480-580 ppm
n = 4

Southern forest soils
avg = 600 ppm
range = 350 - 1400 ppm
n = 43

Southern prairie soils
avg = 700 ppm
range = 380 - 1300 ppm
n = 27

Eastern red soils
avg = 950 ppm
range = 430 - 2820 ppm
n = 12

Sandy soils
range = 250 - 400 ppm
n = 2

Organic soils: range = 1330 - 1350 ppm, n = 2

Attachment #10

NRCS Excel Workbook Estimating 'Other' Erosion Types June 2006

Annual soil loss predictions for conservation planning purposes are made with current soil loss prediction technology (RUSLE2). RUSLE2 estimates sheet, rill and interrill erosion. Erosion that is seasonal in nature and caused by concentrated flow, however, is not predicted by RUSLE2.

This workbook provides conservation planners with simple tools and processes to help estimate the amount of erosion occurring in ephemeral gullies, classic gullies and on streambank erosion sites.

Definitions:

Rill Erosion: consists of the removal of soil by concentrated water running through little streamlets, or headcuts. Detachment in a rill occurs if the sediment in the flow is below the amount the load can transport and if the flow exceeds the soil's resistance to detachment. As detachment continues or flow increases, rills will become wider and deeper. Rills may be of any size but are usually less than four inches deep. Rills are:

<> generally parallel on the slope, but may converge,
<> generally of uniform spacing and dimension,
<> generally appear at different locations on the landscape from year to year,
<> generally shorter than ephemeral cropland gullies,
<> usually end at a concentrated flow channel, or an area where the slope flattens and deposition occurs,
<> are on the same portion of the slope that is used to determine the length of slope (L) for RUSLE2,
<> many small, but conspicuous channels running in the direction of slope gradient

Rill erosion is considered in the RUSLE2 calculations.

Ephemeral Gully Erosion: Small erosion channels formed on crop fields as a result of concentrated flow of runoff water. These channels are routinely eliminated by tillage of the field but return following subsequent runoff events. Ephemeral Gullies are small enough to be eliminated (temporarily) with the use of typical farm tillage equipment and they:

<> recur in the same area of concentrated flow each time they form,
<> frequently form in well-defined depressions in natural drainage ways,
<> are generally wider, deeper, and longer than the rills in the field,

Ephemeral Gullies are **not** calculated by the RUSLE2 program.

Gully Erosion: Permanent gullies are formed when channel development has progressed to the point where the gully is too wide and too deep to be tilled across. These channels carry large amounts of water after rains and deposit eroded material at the foot of the gully. They disfigure landscape and make the land unfit for growing crops. Gullies:

<> may grow or enlarge from year to year by head cutting and lateral enlarging,
<> often occur in depressions or natural drainage ways,
<> may begin as ephemeral gullies that were left in the field untreated,
<> may, over time, become partially stabilized by grass, weeds or woody vegetation,

Gully erosion is not calculated by the RUSLE2 program.

Streambank Erosion: The wearing away of streambanks by flowing water. The removal of soil from streambanks is typically caused by the direct action of stream flow and/or wind/wave action, typically occurring during periods of high flow. Streambank erosion:

<> is a natural process that generally increases when unprotected streambanks (e.g. no woody vegetation) are subject to the actions of flowing water and ice damage.

<> is a common occurrence on many Vermont river channels that are experiencing geomorphic adjustments

---

The soil loss from ephemeral gullies, gullies and streambank erosion areas can be estimated by calculating the volume of soil removed by erosion processes. The volume of soil loss can be multiplied by the typical unit weight of the soil (based on soil texture) which is eroded. Approximate soil unit weights are expressed below[1]:

Soil Texture	Estimated Dry Density lb/ft^3
Gravel	110
Sand	105
Loamy Sand	100
Sandy Loam	100
Fine Sandy Loam	100
Sandy Clay Loam	90
Silt Loam	85
Silty Clay Loam	85
Silty Clay	85
Clay Loam	85
Organic	22

Procedure for estimating Ephemeral Soil Erosion:

The following formula will be used to calculate annual estimated ephemeral gully erosion:

$$\frac{\text{Ephemeral Gully } \mathbf{Length} \times \text{Gully Average } \mathbf{Width} \times \text{Gully Average } \mathbf{Depth}}{2000} \times \text{Soil Weight (lbs/ft}^3\text{)} \times \text{Occurrences per Year} = \mathbf{Estimated} \text{ Soil Loss (Tons per Year)}$$

* Ephemeral gully erosion may reform multiple times per year, and under certain conditions it may not form in a given year. The voided volume which would be calculated after a runoff event is not necessarily representative of an annual rate, but is representative of only the specific event. This erosion can be calculated for individual storms and can be summed for a yearly estimate.

1 Data from published soil surveys, laboratory data, and soil interpretation record are to be used where available. Parent materials, soil consistency, soil structure, pore space, soil texture, and coarse fragments all influence unit weight.

Procedure for estimating Gully Soil Erosion:

The following formula will be used to calculate annual estimated classic gully erosion:

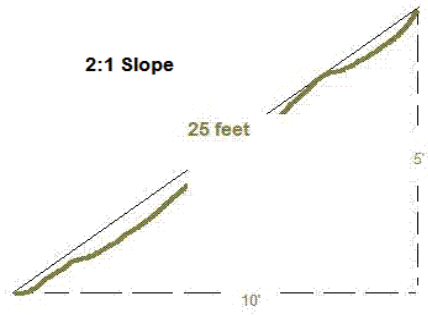
$$\frac{\text{Gully } \textbf{Length} \text{ X (Average } \textbf{Width} \text{ X Average } \textbf{Depth} \text{ X 0.5) X } \textbf{Soil Weight} \text{ (lbs/ft3)}}{2000} \;/\; \text{Formation Years} = \textbf{Estimated} \text{ Soil Loss Per Year (Tons)}$$

Procedure for estimating Streambank Soil Erosion (Direct Volume Method):

The following formula will be used to calculate annual estimated streambank erosion unless a field measurement procedure[2] is used:

$$\frac{\text{ing Bank } \textbf{Length} \text{ X Eroding Bank Height X Lateral Recession Rate (FT/YR) X Soil Weight (lb}}{2000} = \textbf{Estimated} \text{ Soil Loss Per Year (Tons)}$$

** Eroding bank height is measured along the bank, not the vertical height of bank. Example: if vertical height of an eroding streambank is 5 feet, and the bank is on a 2:1 slope, the total eroding bank distance is 25 feet -- 1/2 (Base X Height).



***The average annual recession rate is the thickness of soil eroded from a bank surface (perpendicular to the face) in an average year.

Stream bank erosion sometimes presents itself as a major occurance in a given year, whereas the same bank may not erode significantly for a period of years if no major runoff events occur. Recession rates need to be calculated as an average of years when erosion does and does not occur. Recession rate is not calculated as the erosion occurring after a single event.

Use available resources to assist in the estimation of recession rate: use past and present aerial photography, old survey records, and any other information that helps to determine the bank condition at known times in the past. When such information is lacking or insufficient, field observations and professional judgement are needed to estimate recession rates.
It is often not possible to directly measure recession rates in the field. Therefore, the following table has been included which relates recession rates to narrative descriptions of banks eroding at different rates (Table from NRCS Wisconsin guidance).

Lateral Recession Rate (ft/yr)	Category	Description
0.01-0.05	Slight	Some bare bank but active erosion not readily apparent. Some rills but no vegetative overhang. No exposed tree roots.
0.06-0.2	Moderate	Bank is predominantly bare with some rills and vegetative overhang. Some exposed tree roots but no slumps or slips.
0.3-0.5	Severe	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross section becomes U-shaped as opposed to V-shaped.
0.5+	Very Severe	Bank is bare with gullies and severe vegetative overhang. Many fallen trees, drains and culverts eroding out and changes in cultural features as above. Massive slips or washouts common. Channel cross section is U-shaped and stream course may be meandering.

2 The best way to quantify streambank erosion is to measure it directly in the field. The basic procedure in measuring streambank erosion is to survey, flag, or in some way fix a "before" image of the channel you are evaluating in order to establish the baseline condition. Changes due to erosion can then be monitored over time by going back to the study area and re-measuring from the fixed reference points.
Channel cross-sections can be surveyed and plotted on a periodic basis to monitor change. Stakes or pins can be driven into channel banks flush with the surface. The amount of stake or pin exposed due to erosion is the amount of change at the streambank erosion site between your times of observation.
The time required to monitor a site often precludes this method of data collection. The Direct Volume Method can be used to estimate streambank erosion at your site.

Acknowledgements: This Excel workbook was created as a planning tool for use by conservation planners. The basic format and content of the tool is a compilation of various similar tools, processes and procedures employed by NRCS in several states including: Indiana, Iowa, Kansas, Maryland, Michigan, Missouri, Nebraska, Oklahoma, South Dakota and Wisconsin. Some of the terminology in the 'Definitions' section of this Readme document closely mirrors these sources.

NRCS Streambank and Irrigation Ditch Erosion Estimator (Direct Volume Method)

Farmer / Cooperator Name: Village of Gratiot
Tract Number: Varies
Evaluated By: L. Hoppman
Evaluation Date: December 23, 2024

Field Number	Eroding Strmbnk Reach #; or Ditch Side/Bottom	Eroding Bank or Ditch Length (Feet)	Eroding Bank Height; or Ditch Bottom Width* (Feet)	Area of Eroding Strmbank or Ditch (FT^2)	Lateral or Ditch Bottom Recession Rate (Estimated) (FT / Year)	Estimated Volume (FT^3) Eroded Annually	Soil Texture	Approximate Pounds of Soil per FT^3	Estimated Soil Loss (Tons/Year)	Average Soil Total Phosphorus (ppm)	Estimated Phosphorus Loss (Pounds/Year)	Trade Ratio	WQT Credits
Stietz Property	B	78.1	5.6	437	0.30	131	Silt Loam	85	6	807	9	2:1	5
	C	132.9	5.7	758	0.40	303	Silt Loam	85	13	839	22	2:1	11
	D	297.1	7.5	2,236	0.50	1,118	Silt Loam	85	48	647	61	2:1	31
	E	228.8	5.3	1,213	0.50	606	Silt Loam	85	26	714	37	2:1	18
	F	229.1	6.6	1,512	0.45	680	Silt Loam	85	29	710	41	2:1	21
	G	81.8	3.1	254	0.40	101	Silt Loam	85	4	801	7	2:1	3
	H	136.1	6.8	925	0.45	416	Silt Loam	85	18	679	24	2:1	12
	I-1	60.9	5.6	341	0.40	136	Silt Loam	85	6	736	9	2:1	4
	I-2	140.7	5.6	788	0.30	236	Silt Loam	85	10	749	15	2:1	8
	J	147.6	5.5	812	0.50	406	Silt Loam	85	17	850	29	2:1	15
	K	239.3	5.6	1,340	0.50	670	Silt Loam	85	28	700	40	2:1	20
	L	256.7	6.4	1,643	0.40	657	Silt Loam	85	28	662	37	2:1	18
	M	75.2	6.4	478	0.45	215	Silt Loam	85	9	620	11	2:1	6
	N	572.8	6.8	3,872	0.40	1,549	Silt Loam	85	66	695	91	2:1	46
	O	367.9	7.1	2,600	0.40	1,040	Silt Loam	85	44	698	62	2:1	31
	P	149.5	5.2	777	0.30	233	Silt Loam	85	10	759	15	2:1	8
	Q	88.3	6.6	583	0.30	175	Silt Loam	85	7	702	10	2:1	5
	R	159.9	5.8	927	0.30	278	Silt Loam	85	12	796	19	2:1	9
	S	100.2	8.1	812	0.30	243	Silt Loam	85	10	655	14	2:1	7
	T	81.9	6.1	500	0.40	200	Silt Loam	85	8	620	11	2:1	5
	U	67.6	7.1	480	0.40	192	Silt Loam	85	8	699	11	2:1	6
				TOTAL		**9,585**			**407**		**575**		**289**

Streambank or Ditch Erosion Calculation Formula:

$$\frac{\text{Eroding Bank/Ditch Length} \times \text{Eroding Bank Ht or Ditch Bottom Width} \times \text{Lateral or Ditch Bottom Recession Rate (FT/YR)} \times \text{Soil Weight (lbs/ft}^3\text{)}}{2000} = \text{Estimated Soil Loss Per Year (Tons)}$$

$$\text{Soil Total Phosphorus (ppm)} \times 10^{-6} \times \text{Estimated Soil Loss (Tons/Year)} \times 2000 \text{ Pounds/Ton} = \text{Estimated Phosphorus Loss Per Year (Pounds)}$$

Attachment #11

Water Quality Trading
Operation and Maintenance Plan

Introduction:
The Water Quality Trading (WQT) Operation and Maintenance (O&M) Plan is meant to be a working document and should be updated as new trading practices are implemented. Currently, the Operation and Maintenance Plan revolves around the Best Management Practice (BMP) construction along a stream/river. The attached *BMP Inspection Form* should be completed during annual inspections of BMPs and following major storm events. Inspection forms shall be retained for at least five (5) years to ensure compliance with the WQT Plan.

Publicly Owned BMP:
Village representative to complete inspection form annually and following major storm events. The form will then be provided to the Maintenance Supervisor following inspection. The Village will address maintenance issues identified during inspection within 30 days. Substantial maintenance issues may require an extended timeframe for generation of plans, specifications, and a public bid process to perform the work. Inspections and O&M activities shall be reported in the annual WQT Report sent to the DNR.

Privately Owned BMP:
Village representative to complete inspection form annually and following major storm events. The form will then be provided to the Maintenance Supervisor following inspection. The Village will address maintenance issues identified during inspection within 30 days. Substantial maintenance issues may require an extended timeframe for generation of plans, specifications, and a public bid process to perform the work. Maintenance expenses will be incurred by either by the Village or Private Property Owner depending on agreement with the Village. The Private Property Owner will be allowed to perform maintenance activities at the expense of the Private Property Owner. Inspections and O&M activities shall be reported in the annual WQT Report sent to the DNR.

Quality Assurance:
Riprap gradation and composition shall be provided for each source of material. Streambank shaping and riprap shall be installed per the Lafayette County Land Conservation Department and NRCS Standards. Contractors to supply rock that is approved by the NRCS and meets criteria in Wisconsin Construction Spec.9.

Installation:
- Staking provided by the Engineer.
- Do not place riprap over frozen or spongy subgrade surfaces.
- Place riprap as indicated on Construction Plans. Do not dump rip-rap over the bank.
- Blend riprap with existing bank.
- Spread soil out in a layer of less than 4” and seed down. Do not spread soil in wetlands.
- All disturbed areas and soil must be seeded and mulched.
- Install habitat structures per Plans and Specifications.

Practice Registration:
The purpose of the “Water Quality Trading Management Practice Registration” form is to report to DNR that a management practice identified in the trading plan has been properly installed and is established and effective. This information will be used to track implementation progress, verify compliance and perform audits, as necessary. A registration form should be submitted for every management practice that

has been identified in the trading plan. If practices are established prior to trading plan submittal, registration forms may be submitted with the trading plan. Otherwise, registration forms should be submitted during the permit term as practices become effective or with the annual report. A blank *Water Quality Trading Management Practice Registration Form 3400-207* is attached and should be submitted following implementation of the trading practice.

Tracking Procedures:
The Village will track credits used monthly. The Village will report credit usage to the DNR on a monthly basis in the Discharge Monitoring Reports (DMRs). The annual report will summarize the 12 months of credit usage and credit generation. The Village will report to DNR any concern that they have that may result in a need to modify the trade agreement and/or this trade plan. For example, a need to generate additional credits based on discharge.

Inspections/Maintenance Considerations:

- A *BMP Inspection Form* is attached.
    - ID: As noted on Construction Plans
    - Condition of BMP: Excellent; Good; Fair; or Poor
    - Required Maintenance: Provide a description of maintenance required for the BMP.
    - Maintenance Estimate: Provide an estimate for how long the maintenance will take to complete or a dollar value for completion. This will help determine if the Village will perform the work or if the Village will hire another entity to perform the work.
    - Date Completed: Following completion of the required maintenance, input the date of completion.
    - Comments: Provide the required maintenance activity along with any other useful information. If the cell provided is not large enough for Comments, write "See Back of Sheet" and provide comments on the reverse side of the Form.
    - Photos Taken: The inspector shall take photographic evidence to represent and archive the condition of each BMP.
- Following installation, inspect the disturbed areas closely over the next few months to ensure that seeding grows.
    - The swamp white oaks shall be monitored with the monthly BMP inspections. In the event of a swamp white oak which has been planted as part of this WQT Plan falls over, dies, or has been removed for any reason will need to be replaced immediately.
- BMPs may settle or shift especially after flooding events or freeze/thaw.
- May need to control weed and brush growth.
- Inspect stabilized areas as needed.
- At a minimum, inspect after major storm events.
- If a BMP has been damaged, repair it promptly to prevent a progressive failure.
- If repairs are needed repeatedly at a location, evaluate the site to determine if the original design conditions have changed.

Routine Maintenance Items that can be performed by Village:

- Evaluate BMP condition
  - Reconstruct/replace BMPs that have settled, shifted, or washed out.
- Manage Vegetation
  - Remove invasive/noxious plants.
  - Reseed areas as necessary.
- Manage Garbage
  - Remove garbage and other debris that could otherwise impair the streambank stability.

Monthly Certification:

Each month, the Village will certify that the BMPs are maintained and operating in a manner consistent with this Water Quality Trading Plan or provide a statement noting noncompliance with this Plan. The monthly Discharge Monitoring Report (DMR) will include the following statement as a certification of compliance when the Credit Generating Practice is operating in a manner consistent with the Plan:

> "I certify that to the best of my knowledge that the management practices identified in the approved water quality trading plan as the source of phosphorus credits is installed, established and properly maintained."

Annual Inspection:

An annual inspection of the BMPs will be performed by a licensed Professional Engineer to ensure that the BMPs are functioning as intended in order to meet the requirements of the WQT Plan.

Noncompliance:

The Village will notify DNR by telephone call to DNR's regional wastewater compliance engineer within 24 hours or next business day of becoming aware that phosphorus credits used or intended for use by Village are not being generated as outlined in this Water Quality Trading Plan.

The Village will submit a written notification within five days after the Village recognizes that the phosphorus credits are not being generated as outlined in the Trading Plan. DNR may waive the requirement for submittal for a written notice within five days and instruct the Village to submit the written notice with the next regularly scheduled monitoring report required by Village's WPDES Permit.

The written notification should include:

- Description of noncompliance and cause.
- Period of noncompliance including dates and times.
- Schedule for attaining compliance including time and steps toward compliance.
- Plan to prevent reoccurrence of the noncompliance.

Notification of Trade Agreement Termination:

If a trade agreement or the trading plan needs to be terminated during the permit term, the permittee should submit a Notice of Termination to the wastewater engineer/specialist to inform DNR of the termination. DNR staff should use this information to determine if a permit modification is required due to the termination, the termination will result in non-compliance, or other permit actions are required due to the termination. When credits are reduced or eliminated for any reason, the permittee is still required to meet their WQBELs without any grace period. To prevent noncompliance with WQBELs, changes to trading plans must be addressed before credits are lost. Modifying the permit/trading plan will require at least 180 days. A blank *Notification of Water Trade Agreement Termination Form 3400-209* is attached and should be submitted to DNR prior to practice termination, no later than the submittal date of the annual report.

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 WI-	Facility Site Number

Facility Address	City	State	ZIP Code

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

Project Name

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					

County	Closest Receiving Water Name	Land Parcel ID(s)	Parameter(s) being traded

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

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

Notification of Water Trade Agreement Termination

Form 3400-209 (1/14)

Notice: Pursuant to s. 283.84, Wis. Stats., and ch. NR 217 Wis. Adm. Code, 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 WI-	Facility Site Number

Facility Address	City	State	ZIP Code

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

Project Name

Credit Generator Information

Credit generator type (select all that apply):

- ☐ Permitted Discharge (non-MS4/CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☐ Urban nonpoint source discharge
- ☐ Agricultural nonpoint source discharge
- ☐ Other - Specify:

Trade Agreement number(s) to be terminated including affected land parcel ID(s):

Amount of trading credit being terminated	Effective date of termination

Reason for termination

Is this agreement being updated or replaced?

- ◯ Yes
- ◯ No
- ◯ Unsure

Will this termination result in non-compliance with the effective limit or other permit requirements?

- ◯ Yes; Name: _____
- ◯ No
- ◯ Unsure

The preparer certifies all of the following:

- I am familiar with the specifications submitted for this application, and I believe all applicable items in this checklist have been addressed.
- I have completed this document to the best of my knowledge and have not excluded pertinent information.

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

DELTA 3
Platteville, Wisconsin
Dubuque, Iowa
P 608.348.5355
P 563.542.9005
E mail@delta3eng.biz
W www.delta3eng.biz

Streambank BMP Inspection Form

Date & Time:	
Inspector/Title:	
Weather:	
Reason for Inspection:	Monthly ☐ Precipitation Event ☐ Annual P.E. ☐ Other ☐:
Last Inspection Photos Date*:	

* inspection photos should be taken annually at minimum

ID	Vegetative Condition	Structural Condition	Bed Log and/or Tree Condition	Required Maintenance	Maintenance Estimate (Time and/or Cost)	Date Maintenance Completed	Comments

Photos Taken? ☐ Yes ☐ No

Attachment #12

PROPOSED 2025 STREAM IMPROVEMENTS

OWNER: VILLAGE OF GRATIOT, WI

G:\CAD\Civil\DiggersSymbol.jpg

DIGGERS HOT LINE IS OPEN:
24 HOURS A DAY 7 DAYS A WEEK, 365 DAYS A YEAR!
TO NOTIFY DIGGERS HOTLINE OF YOU INTENT TO DIG CALL:
MILWAUKEE AREA - (414) 259-1181
TOLL FREE: (800) 242-8511
HEARING IMPAIRED (TDD) (800) 542-2289

UTILITIES NOTE:

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLAN HAVE BEEN OBTAINED BY FIELD CHECKS, A UTILITY LOCATE THROUGH DIGGERS HOTLINE, AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE SURVEYOR DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR SHOULD VERIFY LOCATIONS W/ THE UTILITY COMPANIES AND THE " VILLAGE OF GRATIOT " PRIOR TO STARTING ANY EXCAVATION.

PROJECT LOCATION MAP
SCALE: N.T.S.

SHEET INDEX:

SHEET TITLE:	SHEET DESCRIPTION:	DATE OF ISSUE:	DATE OF REVISION:
G000	TITLE SHEET & PROJECT LOCATION MAP	DECEMBER 24, 2024	-
G001	LEGEND & GENERAL NOTES	DECEMBER 24, 2024	-
C101	PLAN VIEW	DECEMBER 24, 2024	-
C201	DETAILS - EROSION CONTROL & NOTES	DECEMBER 24, 2024	-
C202	DETAILS - STREAM BANK	DECEMBER 24, 2024	-

PROJECT INFORMATION:

OWNER:
VILLAGE OF GRATIOT
MR. RUSSELL HERBST
VILLAGE PRESIDENT
5895 MAIN STREET
GRATIOT, WI 53541
OFFICE - (608) 922-6611

MUNICIPAL STREETS & UTILITIES:
VILLAGE OF GRATIOT
MR. RAYMOND PICKET
OPERATOR
5895 MAIN STREET
GRATIOT, WI 53541
OFFICE - (608) 922-6611
CELL - (608) 482-2228

ELECTRIC UTILITY:
SCENIC RIVERS ENERGY CO-OP
231 N SHERIDAN ST
LANCASTER, WI 53813
(800) 236-2141

NATURAL GAS UTILITY:
ALLIANT ENERGY
MR. AL MUMM
781 ENTERPRISE DRIVE
PLATTEVILLE, WI 53818
(608) 326-9481
CELL - (608) 732-7925

TELEPHONE & CABLE TELEVISION:
CENTURYLINK
MR. DOUG MCGOWAN
135 N. BONSON
PLATTEVILLE, WI 53818
(608) 482-5377

ENGINEER:
DELTA 3
ENGINEERING, LLC
PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING
GRANT WRITING • LAND DEVELOPMENT • PLANNING & CADD SERVICES
875 SOUTH CHESTNUT STREET
PLATTEVILLE, WISCONSIN 53818
PHONE: (608) 348-5355
900 JACKSON STREET
DUBUQUE, IOWA 52001
PHONE: (563) 542-4085

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:
MR. JORDAN FURE, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

PROPOSED 2025 STREAM IMPROVEMENTS
GRATIOT, WISCONSIN
PROJECT LOCATION: WOLF CREEK & TROUT BROOK - WEST OF VILLAGE
OWNER: VILLAGE OF GRATIOT - 5938 MAIN STREET, GRATIOT, WISCONSIN 53541

REVISIONS:		
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
-/-/----		------

PRELIMINARY

PROJECT NUMBER	D20-151
SHEET SCALE	NOT TO SCALE
DRAWN BY	C. BILLINGTON
DATE ISSUED	FEBRUARY 14, 2025
SHEET DESC.	TITLE SHEET & PROJECT LOCATION MAP

SHEET TITLE:
G000

LEGEND

EX. CON. MANHOLE
EX. ECC. MANHOLE
EX. LIFT STATION
EX. CLEAN OUT
EX. FIRE HYDRANT
EX. WATER SERVICE
EX. WATER VALVE
EX. YARD HYDRANT
EX. CATCH BASIN
EX. STORM INLET
EX. NATURAL GAS VALVE
EX. NATURAL GAS METER
EX. POWER POLE
EX. LIGHT POLE
EX. WARNING SIREN
EX. TEL. PEDESTAL
EX. MAILBOX
EX. LP TANK
EX. SATELLITE DISH
EX. POST OR POLE
EX. STREET SIGN
EX. EVERGREEN TREE
EX. DECIDUOUS TREE
EX. TREE STUMP
EX. BUSH/SHRUB
EX. TREE/BRUSH LINE
EX. WINDMILL
EX. PARK BENCH
EX. BENCHMARK
SURVEY CONTROL POINT
EX. PROPERTY PIN
RIGHT-OF-WAY
PROPERTY LINE
EASEMENT
EX. SAN. S. LATERAL
EX. 6" SAN. S. MAIN
EX. 8" SAN. S. MAIN
EX. 10" SAN. S. MAIN
EX. 12" SAN. S. MAIN
EX. 15" SAN. S. MAIN
EX. FLOW DIRECTION
EX. CAPPED SERVICE
EX. WATER SERVICE
EX. 4" WATER MAIN
EX. 6" WATER MAIN
EX. 8" WATER MAIN
EX. 10" WATER MAIN
EX. 12" WATER MAIN
EX. <12" STORM SEWER
EX. 12" STORM SEWER
EX. 15" STORM SEWER
EX. 18" STORM SEWER
EX. 24" STORM SEWER
EX. 27" STORM SEWER
EX. 30" STORM SEWER
EX. 36" STORM SEWER
EX. 42" STORM SEWER
EX. 48" STORM SEWER
EX. CURB AND GUTTER
EX. U.GRD N. GAS UTILITY
EX. U.GRD ELECTRIC UTILITY
EX. U.GRD CABLE TV UTILITY
EX. U.GRD TELEPHONE UTILITY
EX. U.GRD FIBER OPTIC UTILITY
EX. OVERHEAD ELECTRIC
EX. FENCE
EX. RAILROAD TRACKS
EX. CONTOUR
EX. DRAINAGE SWALE

PROP. SANITARY SEWER LATERAL
PROP. <6" SANITARY SEWER MAIN
PROP. 6" SANITARY SEWER MAIN
PROP. 8" SANITARY SEWER MAIN
PROP. 10" SANITARY SEWER MAIN
PROP. 12" SANITARY SEWER MAIN
PROP. 15" SANITARY SEWER MAIN
PROP. 18" SANITARY SEWER MAIN
PROP. CIPP LINER
PROP. FLOW DIRECTION
PROP. WATER SERVICE
PROP. <4" WATER MAIN
PROP. 4" WATER MAIN
PROP. 6" WATER MAIN
PROP. 8" WATER MAIN
PROP. 10" WATER MAIN
PROP. 12" WATER MAIN
PROP. 15" WATER MAIN
PROP. <12" STORM SEWER
PROP. 12" STORM SEWER
PROP. 15" STORM SEWER
PROP. 18" STORM SEWER
PROP. 24" STORM SEWER
PROP. 30" STORM SEWER
PROP. 36" STORM SEWER
PROP. 48" STORM SEWER
PROP. CURB AND GUTTER
PROP. CURB BACK OPENING
PROP. U.GRD GAS UTILITY
PROP. U.GRD ELECTRIC UTILITY
PROP. U.GRD CABLE TV UTILITY
PROP. U.GRD TELEPHONE UTILITY
PROP. U.GRD FIBER OPTIC UTILITY
PROP. OVERHEAD ELECTRIC
PROP. CROSSING OF N. GAS UTILITY
PROP. UTILITY POLE
PROP. LIGHT POLE
PROP. FENCE
TEMPORARY EASEMENT
CONSTRUCTION EASEMENT
ESTIMATED DISTURBANCE LIMITS
PROP. CONTOUR
PROP. DRAINAGE SWALE
PROP. SILT FENCE
PROP. EROSION CONTROL SEDIMENT LOG
PROP. PAVEMENT MARKING
PAINTED TRAFFIC ARROW
ADA PARKING DESIGNATION
PARKING STALL COUNT
RADIUS POINT/SIZE STA. ON CENTERLINE
PROP. HANDICAP RAMP WITH DETECTABLE WARNING FIELD
SOIL BORING LOCATION
RIVER FLOW DIRECTION
PROP. 4' DIA. SANITARY MANHOLE
PROP. 5' DIA. SANITARY MANHOLE
PROP. MANHOLE CHIMNEY REHABILITATION / TOP ADJUSTMENT
PROP. SANITARY LIFT STATION

PROP. TYPE 'X" CURB & GUTTER
PROP. REVERSE-PITCH CURB & GUTTER
PROP. HOT MIX ASPHALT PAVEMENT (DRIVEWAY)
PROP. 4" CONCRETE SIDEWALK
PROP. 6" CONCRETE PAVEMENT
PROP. 8" CONCRETE PAVEMENT
PROP. GRAVEL SHOULDER / DRIVEWAY
EROSION MATTING (MILD SLOPES)
EROSION MATTING (STEEP SLOPES)
PROP. REGRADING AND LANDSCAPING
PROP. STREAM BANK GRADING (6:1 SLOPES)
PROP. STREAM BANK GRADING W/RIP-RAP (2:1 SLOPES)
PROP. STORM STRUCTURES - PROFILE
PROP. STORM PIPE(RCP) - PROFILE
PROP. STORM PIPE(CMP OR HDPE) - PROFILE
PROP. SANITARY STRUCTURE - PROFILE
PROP. WATER MAIN PIPE - PROFILE
PROP. CLAY LINER - PROFILE
PROP. SANITARY SEWER FORCE MAIN - PROFILE
PROP. SPOT REPAIR - PROFILE / PLAN VIEW
PROP. CASING PIPE - PROFILE
PROP. CLEARING AND GRUBBING
PROP. BUILDING REMOVAL
PROP. SIDEWALK REMOVAL
PROP. PRESSURE-REDUCING VALVE STATION
PROP. FIRE HYDRANT
PROP. WATER SERVICE
PROP. WATER SERVICE WITH VALVE BOX SLEEVE
PROP. WATER VALVE
PROP. WATER BEND - HORIZONTAL
PROP. WATER BEND - VERTICAL
PROP. WATER BEND <5°
PROP. WATER TEE
PROP. WATER CROSS
PROP. WATER REDUCER
PROP. MJ PLUG
PROP. 4' DIA. STORM MANHOLE
PROP. 5' DIA. STORM MANHOLE
PROP. INLET
PROP. 4' DIA. INLET
PROP. 6' DIA. INLET
PROP. 4' DIA. CATCH BASIN- W/ 2'X3' CASTING
PROP. 5' DIA. CATCH BASIN- W/ 2'X3' CASTING
PROP. 6' DIA. CATCH BASIN- W/ 2'X3' CASTING
PROP. 4'X6' CATCH BASIN W/2'X3' CASTING
PROP. CURB OPENING CASTING
PROP. 2'X3' CATCH BASIN
PROP. ADJUSTED CATCH BASIN TOP
PROP. WISDOT TYPE 8 INLET
PROP. WISDOT TYPE 9 INLET
PROP. CMP ENDWALL
PROP. RCP ENDWALL

KEY NOTES [100] :

100 PROPOSED SILT FENCE FOR EROSION CONTROL.
101 PROPOSED SEDIMENT LOG FOR EROSION CONTROL.
102 PROPOSED TRACKING PAD FOR EROSION CONTROL.
103 RE-GRADE YARD/DITCH LINE (MIN. SLOPE 1.0%).
104 PROPOSED EROSION MAT CLASS I, TYPE 'B'.
105 INSTALL TYPE 'D' INLET PROTECTION.
106 PROPOSED MAIL BOX RELOCATION.
107 ITEM TO REMAIN.
108 CONTRACTOR TO REMOVE ITEM.
109 PROPOSED TURBIDITY BARRIER (TYP.) (SEE DETAIL - SHEET C203).
110 PROPOSED EROSION CONTROL REVEGETATIVE MAT (ECRM).
111 REMOVE AND SALVAGE TO OWNER IN PRE-CONSTRUCTION CONDITION.
112 REINSTALL STREET SIGN AS PER OWNER/WISDOT REQUIREMENTS.
113 PROPOSED STREAM BANK GRADING (2:1 SLOPE) WITH RIP-RAP TO TOP OF BANK (SEE DETAIL - SHEET C202).
114 PROPOSED STREAM BANK GRADING (6:1 SLOPE)(SEE DETAIL - SHEET C202).
115 PROPOSED BED LOG IN STREAM HABITAT STRUCTURE.
116 PROPOSED SWAMP WHITE OAK TREE.
200 PROPOSED SANITARY SEWER [SIZE].
201 NEW SANITARY SEWER LATERAL [SIZE].
202 REPLACE EXISTING SANITARY SEWER LATERAL.
203 RECONNECT EXISTING SANITARY SEWER LATERAL.
204 CONNECTION TO EXISTING SANITARY SEWER PIPE/STRUCTURE.
205 REMOVE EXISTING SANITARY SEWER PIPE /STRUCTURE.
206 REHABILITATE SANITARY MANHOLE; SEE TABLE 'B'.
207 SANITARY SEWER SPOT REPAIR.
208 ABANDON AND CAP EXISTING SANITARY SEWER.
209 ABANDON EXISTING SANITARY SEWER LATERAL.
210 CONTRACTOR TO FIELD VERIFY SANITARY SEWER LATERAL LOCATION/ACTIVITY AND REPLACE ACCORDING TO ENGINEER.
300 PROPOSED WATER MAIN [SIZE].
301 NEW WATER SERVICE [SIZE].
302 REPLACE EXISTING WATER SERVICE WITH 1" WATER SERVICE.
303 RECONNECT EXISTING WATER SERVICE.
304 DIRECTIONAL DRILL PROPOSED WATER SERVICE.
305 CONNECTION TO EXISTING WATER MAIN.
306 EXISTING HYDRANT TO BE REMOVED AND SALVAGED TO OWNER.
307 REMOVE EXISTING WATER MAIN VALVE BOX/STRUCTURE.
308 ADJUST EXISTING WATER MAIN VALVE BOX.
309 ABANDON, DRAIN, & CAP EXISTING WATER MAIN.
310 ABANDON EXISTING WATER SERVICE.
311 CONTRACTOR TO FIELD VERIFY WATER SERVICE LOCATION/ACTIVITY AND REPLACE ACCORDING TO ENGINEER.
312 CONTRACTOR TO PROVIDE 4" POLYSTYRENE INSULATION.
400 PROPOSED STORM SEWER [SIZE].
401 CONNECT EXISTING ROOF DRAIN TO CURB OPENING/STRUCTURE.
402 CONNECTION TO EXISTING STORM SEWER PIPE/STRUCTURE.
403 REMOVE EXISTING STORM SEWER PIPE/STRUCTURE.
404 ABANDON & CAP EXISTING STORM SEWER.
405 ADJUST EXISTING STORM STRUCTURE.
406 LARGE RIP RAP OVER FABRIC
407 FIELD VERIFY LOCATION AND DEPTH OF PIPE.
500 TREE & STUMP TO BE REMOVED (LESS THEN 12")
501 TREE & STUMP TO BE REMOVED (12" & GREATER)
502 SHRUB TO BE REMOVED.
503 CLEAR AND GRUB BRUSH LINE AS NECESSARY TO COMPLETE CONSTRUCTION. ALL CLEARING TO BE VERIFIED BY PROJECT ENGINEER.
504 REMOVE AND REINSTALL/REPLACE EXISTING LANDSCAPING, FENCE, RETAINING WALL, ETC. (IF NECESSARY).
505 REMOVE EXISTING LANDSCAPING, FENCE, RETAINING WALL, ETC.
506 POLE/PEDESTAL TO BE SECURED BY UTILITY COMPANY DURING CONSTRUCTION.
507 POLE TO BE RELOCATED BY UTILITY COMPANY.
508 GUY WIRE TO BE RELOCATED BY UTILITY COMPANY.
509 PEDESTAL TO BE RELOCATED BY UTILITY COMPANY.
510 UTILITY CONFLICT - TO BE RELOCATED/ADJUSTED BY UTILITY COMPANY.
511 POTENTIAL UTILITY CONFLICT - VERIFY WITH UTILITY COMPANY.
512 **CAUTION!** - UTILITY CROSSING.
600 REMOVE EXISTING CURB & GUTTER.
601 PROPOSED 24" CONCRETE CURB & GUTTER.
602 PROPOSED 30" CONCRETE CURB & GUTTER.
603 PROPOSED 36" CONCRETE CURB & GUTTER.
604 MATCH TO EXISTING CURB & GUTTER.
605 PROVIDE TYPE 'X' CURB.
606 PROVIDE REVERSE-PITCH CURB & GUTTER.
607 PROVIDE CURB TAPER.
608 REMOVE ASPHALT/CONCRETE/WALL/STEPS/GRAVEL.
609 PROPOSED 4" CONCRETE SIDEWALK.
610 PROPOSED 6" CONCRETE SIDEWALK/DRIVEWAY.
611 PROPOSED 6" CONCRETE PAVEMENT.
612 PROPOSED 8" CONCRETE PAVEMENT.
613 PROPOSED CONCRETE STEPS. STEP RISE HEIGHT AND STEP TREAD DEPTH SHALL MEET APPLICABLE BUILDING CODES. CONTRACTOR SHALL CONFIRM REQUIRED NUMBER OF STEPS WITH PROJECT ENGINEER PRIOR TO INSTALL.
614 PROPOSED 2' GRAVEL SHOULDER.
615 REGRADE EXISTING GRAVEL.
616 PROPOSED GRAVEL DRIVEWAY.
617 REMOVE & REPLACE GRAVEL DRIVEWAY.
618 REMOVE GRAVEL DRIVEWAY & REPLACE WITH BITUMINOUS DRIVEWAY/APRON.
619 REMOVE & REPLACE HMA PAVEMENT.
620 REMOVE & REPLACE HMA PAVEMENT DRIVEWAY.
621 PROPOSED HMA PAVEMENT.
622 MATCH TO EXISTING EDGE PAVEMENT.
623 PROPOSED RESIDENTIAL HMA PAVEMENT DRIVEWAY.
624 PROPOSED COMMERCIAL HMA PAVEMENT DRIVEWAY.
625 REMOVE & REPLACE 4" CONCRETE SIDEWALK.
626 REMOVE & REPLACE 6" CONCRETE SIDEWALK/DRIVEWAY.
627 PROPOSED HANDICAP RAMP WITH - D. WARN. FIELD [S.F].
628 SAW CUT PCC PAVEMENT.
629 SAW CUT HMA PAVEMENT.
630 PROPOSED BITUMINOUS WEDGE CURB.

NOTES:

TRAFFIC CONTROL NOTE:
ALL CONTRACTORS MUST CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE REQUIREMENTS OF THE WISCONSIN DEPARTMENT OF TRANSPORTATION. ONE LANE OF TRAFFIC MUST REMAIN OPEN DURING AND AFTER ALL CONSTRUCTION ACTIVITIES FOR EMERGENCY VEHICLE ACCESS.

STREET SIGN NOTE:
CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING, STORING, AND RESETTING ALL PERMANENT SIGNS. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING SIGNS UNTIL REMOVED. CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL TEMPORARY SIGNS THAT MAY BE REQUIRED.

TRAFFIC SIGN NOTE:
CONTRACTOR TO PROVIDE TEMPORARY TRAFFIC SIGNS FOR ANY TRAFFIC SIGNS DISTURBED DURING CONSTRUCTION. ALL DISTURBED TRAFFIC SIGNS MUST BE REPLACED AND INSTALLED AS PER LOCAL REGULATIONS AT THE COMPLETION OF THE PROJECT.

EROSION CONTROL NOTE:
CONTRACTOR TO INSTALL BACKFILL MATERIAL INTO THE EXCAVATED TRENCH AS SOON AS POSSIBLE TO IMPLEMENT EROSION CONTROL.

PROPERTY LINE AND RIGHT-OF-WAY NOTE:
ALL RIGHT-OF-WAYS AND PROPERTY LINES SHOWN ARE APPROXIMATE AND FOR ILLUSTRATIVE PURPOSES ONLY. A PROPERTY SURVEY PERFORMED BY A PROFESSIONAL LAND SURVEYOR SHOULD BE COMPLETED TO DETERMINE THE ACTUAL PROPERTY LINE AND RIGHT-OF-WAY LOCATIONS.

MAILBOX RELOCATION NOTE:
CONTRACTOR TO RELOCATE EXISTING MAILBOXES DURING CONSTRUCTION (COORDINATE AND VERIFY WITH LOCAL POSTAL SERVICE ON LOCATION). RESET BEHIND CURB AND GUTTER OR SHOULDER ACCORDING TO THE REQUIREMENTS OF THE LOCAL POSTMASTER UPON COMPLETION OF STREET CONSTRUCTION.

TREE TRIMMING NOTE:
CONTRACTOR TO PROPERLY TRIM ALL TREE BRANCHES, ROOTS, AND BUSHES DISTURBED DUE TO CONSTRUCTION.

TREE REMOVAL NOTE:
CONTRACTOR TO CONTACT ENGINEER OR ***VILLAGE OF GRATIOT*** FOR VERIFICATION PRIOR TO ANY TREE REMOVAL.

SAW CUT NOTE:
CONTRACTOR TO PROVIDE FULL DEPTH SAW CUTS AND REPLACE PAVEMENT.

UTILITIES' NOTE:
THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLAN HAVE BEEN OBTAINED BY FIELD CHECKS, A UTILITY LOCATE, AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, BUT THE SURVEYOR DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR SHOULD VERIFY LOCATIONS W/ THE UTILITY COMPANIES AND ***VILLAGE OF GRATIOT*** PRIOR TO STARTING ANY EXCAVATION.

SANITARY SEWER LATERAL NOTE:
THE LOCATION OF EXISTING SANITARY SEWER LATERALS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND STATUS OF EACH SANITARY SEWER LATERAL ENCOUNTERED. ONLY ACTIVE SANITARY SEWER LATERALS SHALL BE CONNECTED TO THE NEW SANITARY SEWER MAIN.

CASTING NOTE:
ALL EXISTING MANHOLE CASTINGS AND STORM SEWER CASTINGS TO BE REMOVED AND/OR REPLACED SHALL BE SALVAGED TO THE ***VILLAGE OF GRATIOT*** .

WATER SYSTEM NOTE:
CONTRACTOR TO SALVAGE EXISTING HYDRANTS TO BE REMOVED TO THE ***VILLAGE OF GRATIOT*** . REMOVE EXISTING HYDRANTS TO A MINIMUM DEPTH OF 4'-0".

TRACER WIRE NOTE:
TRACER WIRE (12 GAUGE) TO BE INSTALLED WITH ALL POLYVINYL CHLORIDE (PVC) WATER MAIN.

CABLE-BOND NOTE:
ALL PROPOSED CLASS 52 DUCTILE IRON PIPE WATER MAIN TO BE CABLE-BOND.

WATER SERVICE NOTE:
CONTRACTOR TO VERIFY STATUS AND LOCATION OF EACH WATER SERVICE ENCOUNTERED. CONTRACTOR TO REPLACE ACCORDING TO ENGINEER. ONLY ACTIVE WATER SERVICES SHALL BE CONNECTED TO THE NEW WATER MAIN.

SITE RESTORATION NOTE:
CONTRACTOR WILL BE RESPONSIBLE FOR REPLACEMENT OF ALL DISTURBED PROJECT AREA COMPONENTS INCLUDING, BUT NOT LIMITED TO, EXISTING CONCRETE, BITUMINOUS PAVEMENT, GRAVEL, CULVERTS, WATER AND SANITARY SEWER SYSTEM COMPONENTS, STORM SEWER SYSTEM COMPONENTS, TREES, LAWN ORNAMENTS, FENCING, YARD LANDSCAPING, RETAINING WALLS, MAILBOXES, AND LANDSCAPE AREAS.

PROPERTY DAMAGES:
THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ADJACENT PROPERTY AND FOR ANY DAMAGE TO THE SITE OR TO ADJACENT PROPERTY INCIDENTAL TO THE CONSTRUCTION ACTIVITIES. AFTER THE COMPLETION OF CONSTRUCTION, ANY AREAS ADJACENT TO THE CONSTRUCTION SITE DAMAGED BY THE CONTRACTOR DURING EXECUTION OF THE CONTRACT SHALL BE RESTORED TO MATCH THE PRECONSTRUCTION CONDITIONS.

DISCIPLINE	DESIGNATION
REMOVAL	**R**
GENERAL	**G**
CIVIL	**C**
LANDSCAPE	**L**
AQUATIC	**AQ**
ARCHITECTURAL	**A**
STRUCTURAL	**S**
ELECTRICAL	**E**
INSTRUMENTATION/CONTROLS	**N**
PROCESS	**D**
PLUMBING	**P**
HVAC /MECHANICAL	**M**

DISCIPLINE DESIGNATORS

TYPE	DESIGNATION
NOTES & SCHEDULES	**0**
PLANS	**1**
ELEVATIONS & DETAILS	**2**
CROSS-SECTIONS	**3**
DIAGRAMS	**4**

DRAWING SHEET DESIGNATION

C102
DRAWING NUMBER
DRAWING SHEET DESIGNATION
DISCIPLINE DESIGNATION (MAY HAVE MULTIPLE)

SHEET NUMBER IDENTIFICATION

ENGINEER:
DELTA 3
ENGINEERING, LLC
PROFESSIONAL CIVIL, MUNICIPAL & STRUCTURAL ENGINEERING
GRAND MARSH • LAND DEVELOPMENT • PLANNING & CAD SERVICES
875 SOUTH CHESTNUT STREET PHONE: (608) 348-5355
PLATTEVILLE, WISCONSIN 53818
600 JACKSON STREET PHONE: (563) 542-4085
DUBUQUE, IOWA 52001

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:
MR. JORDAN FURE, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

PROPOSED 2025 STREAM IMPROVEMENTS

GRATIOT, WISCONSIN

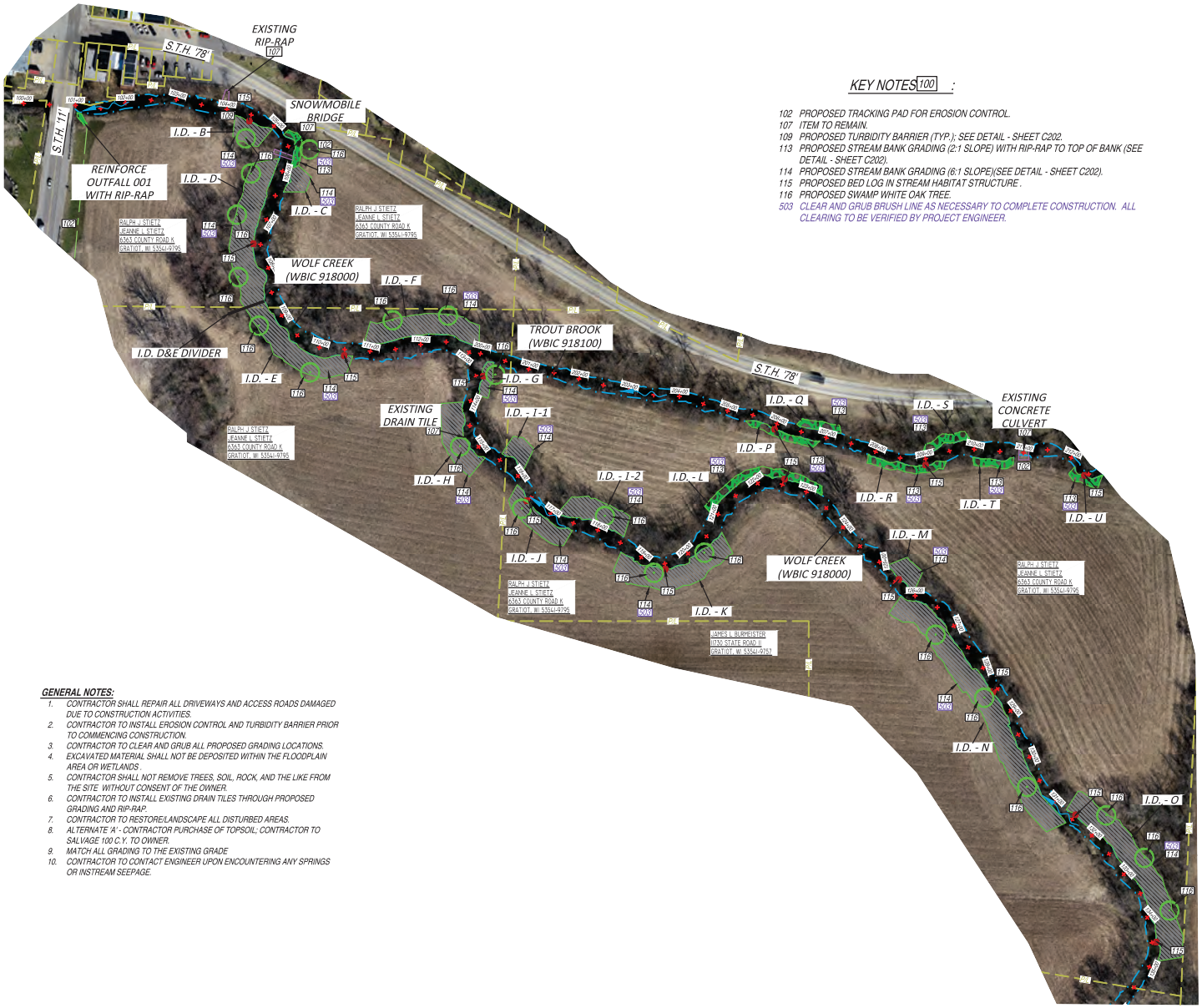
PROJECT LOCATION: WOLF CREEK & TROUT BROOK - WEST OF VILLAGE
OWNER: VILLAGE OF GRATIOT- 5838 MAIN STREET, GRATIOT, WISCONSIN 53541

REVISIONS:		
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
-/-/----		------

PRELIMINARY

PROJECT NUMBER	D20-151
SHEET SCALE	NOT TO SCALE
DRAWN BY	C. BILLINGTON
DATE ISSUED	FEBRUARY 14, 2025
SHEET DESC.	LEGEND & GENERAL NOTES

SHEET TITLE:
G001



KEY NOTES [100] :

102 PROPOSED TRACKING PAD FOR EROSION CONTROL.
107 ITEM TO REMAIN.
109 PROPOSED TURBIDITY BARRIER (TYP.); SEE DETAIL - SHEET C202.
113 PROPOSED STREAM BANK GRADING (2:1 SLOPE) WITH RIP-RAP TO TOP OF BANK (SEE DETAIL - SHEET C202).
114 PROPOSED STREAM BANK GRADING (6:1 SLOPE)(SEE DETAIL - SHEET C202).
115 PROPOSED BED LOG IN STREAM HABITAT STRUCTURE .
116 PROPOSED SWAMP WHITE OAK TREE.
503 CLEAR AND GRUB BRUSH LINE AS NECESSARY TO COMPLETE CONSTRUCTION. ALL CLEARING TO BE VERIFIED BY PROJECT ENGINEER.

SCALE: 1"=200' (11"x17")
0 50 100 150 200

GENERAL NOTES:

1. CONTRACTOR SHALL REPAIR ALL DRIVEWAYS AND ACCESS ROADS DAMAGED DUE TO CONSTRUCTION ACTIVITIES.
2. CONTRACTOR TO INSTALL EROSION CONTROL AND TURBIDITY BARRIER PRIOR TO COMMENCING CONSTRUCTION.
3. CONTRACTOR TO CLEAR AND GRUB ALL PROPOSED GRADING LOCATIONS.
4. EXCAVATED MATERIAL SHALL NOT BE DEPOSITED WITHIN THE FLOODPLAIN AREA OR WETLANDS .
5. CONTRACTOR SHALL NOT REMOVE TREES, SOIL, ROCK, AND THE LIKE FROM THE SITE WITHOUT CONSENT OF THE OWNER.
6. CONTRACTOR TO INSTALL EXISTING DRAIN TILES THROUGH PROPOSED GRADING AND RIP-RAP.
7. CONTRACTOR TO RESTORE/LANDSCAPE ALL DISTURBED AREAS.
8. ALTERNATE 'A' - CONTRACTOR PURCHASE OF TOPSOIL; CONTRACTOR TO SALVAGE 100 C.Y. TO OWNER.
9. MATCH ALL GRADING TO THE EXISTING GRADE.
10. CONTRACTOR TO CONTACT ENGINEER UPON ENCOUNTERING ANY SPRINGS OR INSTREAM SEEPAGE.

ENGINEER:
DELTA 3
ENGINEERING, LLC
PROFESSIONAL CIVIL, MUNICIPAL, & STRUCTURAL ENGINEERING
GRAND INFRASTRUCTURE DEVELOPMENT • PLANNING & CAD SERVICES
575 SOUTH CHESTNUT STREET PHONE: (608) 348-5355
PLATTEVILLE, WISCONSIN 53818
559 JACKSON STREET PHONE: (563) 542-9005
DUBUQUE, IOWA 52001

FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:
MR. JORDAN FURE, P.E.
DELTA 3 ENGINEERING, INC.
TELEPHONE: (608) 348-5355

PROPOSED 2025 STREAM IMPROVEMENTS

GRATIOT, WISCONSIN

PROJECT LOCATION: WOLF CREEK & TROUT BROOK - WEST OF VILLAGE
OWNER: VILLAGE OF GRATIOT; 5639 MAIN STREET, GRATIOT, WISCONSIN 53541

REVISIONS:

NO.	DATE	DESCRIPTION

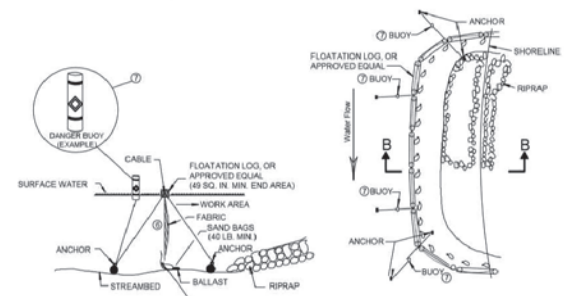
AS-BUILT: BY:

PRELIMINARY

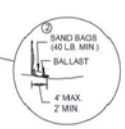
PROJECT NUMBER	D20-151
SHEET SCALE	SEE BAR SCALE
DRAWN BY	C. BILLINGTON
DATE ISSUED	FEBRUARY 14, 2025
SHEET DESC.	PLAN VIEW

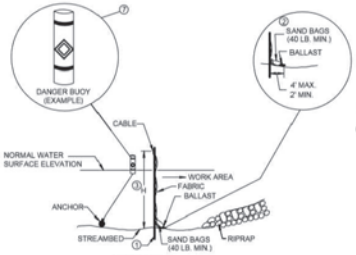
SHEET TITLE:
C101

Figure 1. Turbidity Barrier Placement Details

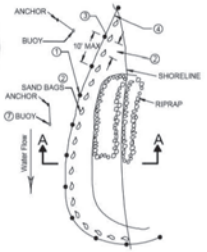


TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 5





TURBIDITY BARRIER STANDARD POST INSTALLATION



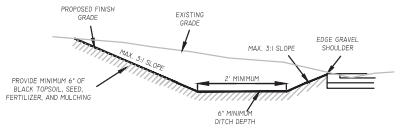
PLAN VIEW

GENERAL NOTES

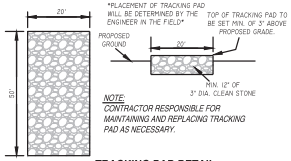
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD AND THE APPLICABLE SPECIAL PROVISIONS

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS OR PROJECT MANAGERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

1. DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
2. SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER OR PROJECT MANAGER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
3. WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.
4. IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
5. FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER OR PROJECT MANAGER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.
6. ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
7. USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.

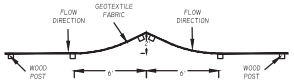


REGRADED DITCH DETAIL
SCALE: N.T.S.

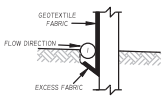


NOTE:
CONTRACTOR RESPONSIBLE FOR MAINTAINING AND REPLACING TRACKING PAD AS NECESSARY.

TRACKING PAD DETAIL
SCALE: N.T.S.



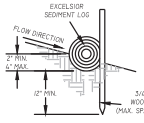
SILT FENCE - JOINING TWO LENGTHS DETAIL
SCALE: N.T.S.



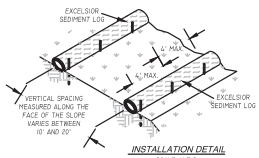
SILT FENCE - TRENCH DETAIL
SCALE: N.T.S.

GENERAL NOTES- SILT FENCE:
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE WISDOT STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION (MOST CURRENT EDITION) AND THE APPLICABLE SPECIAL PROVISIONS.

1. TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
2. WOOD POST SHALL BE A MINIMUM SIZE OF 1-1/8" X 1-1/8" OF OAK OR HICKORY.



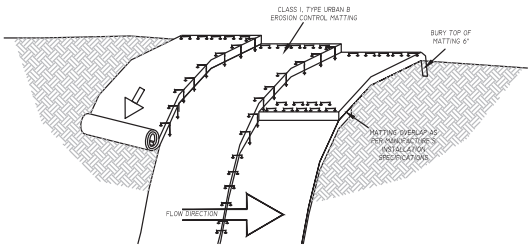
TRENCH DETAIL
SCALE: N.T.S.



INSTALLATION DETAIL
SCALE: N.T.S.

TYPE 1 = 20" ROLL (HEAVY DUTY CONCENTRATED FLOW)
TYPE 2 = 12" ROLL (HEAVY CONCENTRATED FLOW)
TYPE 3 = 9" ROLL (MILD CONCENTRATED FLOW)
TYPE 4 = 6" ROLL (LOW CONCENTRATED FLOW)

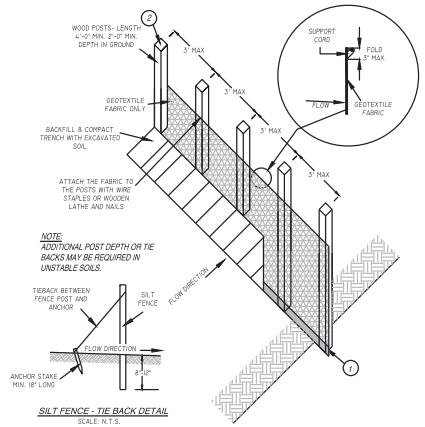
EROSION CONTROL SEDIMENT LOG
SCALE: N.T.S.



EROSION MATTING NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF FERTILIZER AND MULCH AND SEED.
2. BEGIN AT THE TOP OF THE SHOULDER (OR CHANNEL) BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN (STARTING AT DOWNSTREAM PROCEEDING UPSTREAM) HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH MANUFACTURE'S RECOMENDED OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH AN OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE BLANKETS.
6. IN HIGH CHANNEL APPLICATIONS, A STAPLE SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A ROW OF STAPLES 4" APART OVER THE ENTIRE WIDTH OF THE CHANNEL. PLACE A SECOND ROW 4" BELOW THE FIRST ROW IN A STAGERED PATTERN.
7. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

EROSION MATTING - SLOPE INSTALLATION DETAIL
SCALE: N.T.S.



NOTE:
ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS.

SILT FENCE - TIE BACK DETAIL
SCALE: N.T.S.

SILT FENCE INSTALLATION DETAIL
SCALE: N.T.S.

SILT FENCE DETAILS
SCALE: N.T.S.

EROSION CONTROL NOTES:

1. GENERAL EROSION NOTES AND MAINTENANCE MEASURES ARE ILLUSTRATED ON THE PLAN SHEETS. AFTER AWARD OF THE CONTRACT, THE GENERAL CONTRACTOR SHALL INSTALL ALL BEST MANAGEMENT PRACTICES AS SHOWN ON THE PLAN SHEETS. ONCE INSTALLED, THE GENERAL CONTRACTOR SHALL CONTACT DELTA 3 ENGINEERING, INC. (608-348-5355). ONCE NOTIFIED DELTA 3 ENGINEERING INC. WILL VISIT THE SITE WITHIN 5 DAYS TO REVIEW THE SITE WITH THE GENERAL CONTRACTORS SUPERINTENDENT. UPON VISITING THE SITE, THE CONSULTING ENGINEER AND THE GENERAL CONTRACTORS SUPERINTENDENT WILL REVIEW THE SITE FOR COMPLIANCE WITH THE EROSION CONTROL MEASURES. IF AND WHEN ALL BEST MANAGEMENT PRACTICES REQUIRED TO COMMENCE SITE CONSTRUCTION ARE IN PLACE, THE CONSULTING ENGINEER AND PROJECT SUPERINTENDENT WILL SIGN AND CERTIFY THIS FACT. THIS REVIEW AND CERTIFICATION SHALL TAKE PLACE PRIOR TO THE REQUIRED PRE-CONSTRUCTION MEETING. THE SITE SUPERINTENDENT SHALL MAINTAIN AN AS-BUILT COPY OF THE EROSION CONTROL MEASURES ON SITE AT ALL TIMES. ANY ACTIVITIES INVOLVING INSTALLATION OF BEST MANAGEMENT PRACTICES SHALL BE INDICATED ON THE AS-BUILT PLAN WITH AN INSTALLED TIME AND DATE. RECORDED INFORMATION SHALL BE PERMANENTLY PLACED ON THE SITE MAP INCLUDING ANY CHANGES MADE TO THE BEST MANAGEMENT PRACTICES. IF THE SITE MAP BECOMES HARD TO READ, THE INITIAL DRAWING SHALL BE SAVED AND A CLEAN COPY SHALL BE ISSUED IN ORDER TO CONTINUE RECORDING ANY ON-SITE EROSION CONTROL ACTIVITY.
2. A COMPLETE COPY OF ALL INSPECTION REPORTS, PLAN REVISIONS, ETC., MUST BE RETAINED AT THE PROJECT SITE AT ALL TIMES DURING DURATION OF THE PROJECT AND KEPT IN THE PERMANENT PROJECT RECORDS FOR AT LEAST FIVE YEARS FOLLOWING SUBMISSION OF THE NOTICE OF TERMINATION (NOT).
3. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT ALL SUB-CONTRACTORS INVOLVED IN GROUND DISTURBING ACTIVITY COMPLY WITH THE EROSION CONTROL REQUIREMENTS.
4. DAILY INSPECTIONS BY THE PROJECT SUPERINTENDENT AND MONTHLY INSPECTIONS BY THE OWNER'S CONSTRUCTION MANAGER MUST BE MADE TO DETERMINE THE EFFECTIVENESS OF THE EROSION CONTROL MEASURES. THE GENERAL CONTRACTOR IS TO INSPECT EROSION AND SEDIMENT CONTROLS WITHIN 24 HOURS AFTER A RAINFALL EVENT OF 0.5 INCHES OR GREATER. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR REPLACE EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES AS NECESSARY WITHIN 24 HOURS OF INSPECTION.
5. ONCE THE SITE REACHES FINAL STABILIZATION, ALL PERMANENT EROSION AND SEDIMENTATION CONTROLS ARE INSTALLED AND ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS ARE REMOVED. THE GENERAL CONTRACTOR AND OWNER MUST COMPLETE A FINAL SITE INSPECTION. UPON APPROVAL BY OWNER, THE OWNER AND GENERAL CONTRACTOR, AS APPLICABLE, MUST COMPLETE AND SUBMIT A NOTICE OF TERMINATION (NOT) FORM TO BE SUBMITTED TO THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES.
6. A RECORD OF THE DATES WHEN MAJOR GROUND-DISTURBING ACTIVITIES OCCUR, WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE INITIATED MUST BE MAINTAINED UNTIL THE NOT IS FILED. CONTROLS MUST BE IN PLACE DOWN GRADIENT OF GROUND-DISTURBING ACTIVITIES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
7. A LOG OF ALL INSPECTIONS BY FEDERAL, STATE, OR LOCAL STORM WATER OR OTHER ENVIRONMENTAL AGENCIES SHALL BE KEPT BY THE GENERAL CONTRACTOR. THE LOG SHALL INCLUDE THE DATE AND TIME OF VISIT AND WHETHER A REPORT WAS ISSUED OR WILL BE ISSUED AS A RESULT OF THE INSPECTION. ANY REPORTS ISSUED SHALL BE FAXED TO THE DELTA 3 ENGINEERING INC. AT 608-348-5455 (FAX).
8. SOIL STABILIZATION - THE PURPOSE OF SOIL STABILIZATION IS TO PREVENT SOIL FROM LEAVING THE SITE. IN THE NATURAL CONDITION, SOIL IS STABILIZED BY NATIVE VEGETATION. THE PRIMARY TECHNIQUE TO BE USED AT THIS PROJECT FOR STABILIZING SITE SOIL WILL BE TO PROVIDE A PROTECTIVE COVER OF TURF GRASS OR PAVEMENT.
   (A) TEMPORARY SEEDING OR STABILIZATION - AREAS MAY BE STABILIZED TEMPORARILY WITH THE USE OF FAST-GERMINATING ANNUAL SEED, STRAW MULCH, WOOD CELLULOSE FIBERS, TACKIFIERS, NETTING OR BLANKET. WHERE CONDITIONS ARE FAVORABLE, AREAS SHALL BE TEMPORARILY STABILIZED WITHIN 7 DAYS AFTER CONSTRUCTION ACTIVITY CEASES. ALL DISTURBED GROUND WHERE THERE WILL NOT BE CONSTRUCTION FOR LONGER THAN 14 DAYS MUST BE SEEDED OR OTHERWISE STABILIZED.
   (B) PERMANENT SEEDING OR SOD - ALL AREAS AT FINAL GRADE MUST BE SEEDED OR SODDED WITHIN 3 DAYS AFTER COMPLETION OF THE MAJOR CONSTRUCTION ACTIVITY. EXCEPT FOR SMALL LEVEL SPOTS, SEEDED AREAS SHOULD GENERALLY BE PROTECTED WITH MULCH. ALL AREAS TO BE SEEDED WILL ALSO HAVE TOPSOIL AND OTHER AMENDMENTS AS STATED IN WISDOT SPECIFICATION SECTION 02900-PLANTING.
   (C) MULCHING - ALL AREAS THAT ARE TEMPORARY OR PERMANENT SEEDED SHALL BE MULCHED ACCORDING TO SECTION 627 - MULCHING OF THE WISDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION. ALL MULCH IS TO BE ANCHORED UTILIZING METHOD A, B, OR C.
   (D) EROSION CONTROL MATTING - FOR ANY SLOPES GREATER THAN 3:1, EROSION MATTING IS REQUIRED.
9. STRUCTURAL CONTROLS - BEFORE ANY MAJOR GRADING ACTIVITIES, THE FOLLOWING BEST MANAGEMENT PRACTICES SHALL BE INSTALLED ON THE PROPOSED SITE - SILT FENCE, TEMPORARY TRACKING PAD, AND STORM SEWER INLET PROTECTION.
   (A) SILT FENCE - SILT FENCE IS A SYNTHETIC PERMEABLE WOVEN OR NON-WOVEN FABRIC TYPICALLY INCORPORATING WOODEN OR METAL SUPPORT STAKES AT INTERVALS SUFFICIENT TO SUPPORT THE FENCE, WATER, AND SEDIMENT RETAINED BY THE FENCE. SILT FENCE CAN ALSO BE INSTALLED WITH A WIRE FENCE BACKING. THE FENCE IS DESIGNED TO RETAIN SEDIMENT-LADEN WATER AND ALLOW SETTLEMENT OF SUSPENDED SOILS BEFORE THE STORM WATER FLOWS THROUGH THE FABRIC FOR DISCHARGE DOWNSTREAM. SILT FENCE SHALL BE LOCATED AS SHOWN ON THE PLAN SHEETS. THE SILT FENCE TO BE INCLUDED FOR THIS PROJECT SHALL BE CONSTRUCTED PER WISCONSIN DNR TECHNICAL STANDARDS FOR SILT FENCE (CODE 1056).
   (B) TEMPORARY TRACKING PAD - ALL ACCESS POINTS FROM THE PUBLIC STREET INTO THE CONSTRUCTION SITE SHALL INCLUDE A TRACKING PAD COMPOSED OF COURSE STONE TO THE DIMENSIONS SHOWN ON DETAIL SHEET (C201). ANY SEDIMENT REACHING A PUBLIC OR PRIVATE ROAD SHALL BE REMOVED BY STREET CLEANING (NOT FLUSHING) BEFORE THE END OF EACH WORKDAY.
   (C) STORM SEWER INLET PROTECTION - CURB AND GRATED INLETS ARE PROTECTED FROM THE INTRUSION OF SILT AND SEDIMENT THROUGH A VARIETY OF SEDIMENT CONTROL PRACTICES TO ALLOW SETTLEMENT OF SUSPENDED SOILS BEFORE DISCHARGING INTO THE STORM SEWER. GRATED INLETS TYPICALLY INCLUDE A STURDY FRAME WRAPPED IN GEOTEXTILE FABRIC OR SEDIMENT LOG PERIMETER TO SLOW THE FLOW OF WATER AND ALLOW PONDING WHERE SEDIMENT MAY SETTLE OUT. CURB INLETS TYPICALLY INCLUDE SEDIMENT LOG BARRIERS HELD IN PLACE WITH GEOTEXTILE FABRIC. OTHER MANUFACTURED PRODUCTS ARE ALSO AVAILABLE. ALL STORM DRAINS SHALL BE PROTECTED BY USING STRAW BALES, SEDIMENT LOGS, FABRIC, OR EQUIVALENT BARRIER.

   FINAL SITE STABILIZATION IS ACHIEVED WHEN TURF GRASS COVER PROVIDES PERMANENT STABILIZATION FOR AT LEAST 70 PERCENT OF THE DISTURBED SOIL SURFACE, EXCLUSIVE OF AREAS THAT HAVE BEEN PAVED.
10. OTHER POLLUTANT CONTROLS
   (A) DUST CONTROL - CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE AT THE STABILIZED CONSTRUCTION EXIT. THE PURPOSE IS TO TRAP DUST AND MUD THAT WOULD OTHERWISE BE CARRIED OFF-SITE BY CONSTRUCTION EQUIPMENT.

   WATER TRUCKS OR OTHER DUST CONTROL AGENTS WILL BE USED AS NEEDED DURING CONSTRUCTION TO REDUCE DUST GENERATED ON THE SITE. DUST CONTROL MUST BE PROVIDED BY THE GENERAL CONTRACTOR TO A DEGREE THAT IS ACCEPTABLE TO THE OWNER'S CONSTRUCTION MANAGER, AND IN COMPLIANCE WITH APPLICABLE LOCAL AND STATE DUST CONTROL REGULATIONS. AFTER CONSTRUCTION, THE SITE WILL BE STABILIZED (AS DESCRIBED ELSEWHERE), WHICH WILL REDUCE THE POTENTIAL FOR DUST GENERATION.
   (B) SOLID WASTE DISPOSAL - NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, ARE ALLOWED TO BE DISCHARGED FROM THE SITE WITH STORM WATER. ALL SOLID WASTE, INCLUDING DISPOSABLE MATERIALS INCIDENTAL TO THE MAJOR CONSTRUCTION ACTIVITIES, MUST BE COLLECTED AND PLACED IN CONTAINERS. THE CONTAINERS WILL BE EMPTIED AS NECESSARY BY A CONTRACT TRASH DISPOSAL SERVICE AND HAULED AWAY FROM THE SITE. THE LOCATION OF SOLID WASTE RECEPTACLES SHALL BE SHOWN AND APPROVED BY THE OWNER.

   SUBSTANCES THAT HAVE THE POTENTIAL FOR POLLUTING SURFACE AND/OR GROUNDWATER MUST BE CONTROLLED BY WHATEVER MEANS NECESSARY IN ORDER TO ENSURE THAT THEY DO NOT DISCHARGE FROM THE SITE. FOR EXAMPLE, SPECIAL CARE MUST BE EXERCISED DURING EQUIPMENT FUELING AND SERVICING OPERATIONS. IF A SPILL OCCURS, IT MUST BE CONTAINED AND DISPOSED SO THAT IT WILL NOT FLOW FROM THE SITE OR ENTER GROUNDWATER, EVEN IF THIS REQUIRES REMOVAL, TREATMENT, AND DISPOSAL OF SOIL. IN THIS REGARD, POTENTIALLY POLLUTING SUBSTANCES SHOULD BE HANDLED IN A MANNER CONSISTENT WITH THE IMPACT THEY REPRESENT.
   (C) SANITARY FACILITIES - ALL PERSONNEL INVOLVED WITH CONSTRUCTION ACTIVITIES MUST COMPLY WITH STATE AND LOCAL SANITARY OR SEPTIC SYSTEM REGULATIONS. TEMPORARY SANITARY FACILITIES MUST BE PROVIDED AT THE SITE THROUGHOUT THE CONSTRUCTION PHASE. THEY MUST BE UTILIZED BY ALL CONSTRUCTION PERSONNEL AND MUST BE SERVICED BY A COMMERCIAL OPERATOR.
   (D) WATER SOURCE - NON-STORM WATER COMPONENTS OF SITE DISCHARGE MUST BE CLEAN WATER. WATER USED FOR CONSTRUCTION WHICH DISCHARGES FROM THE SITE MUST ORIGINATE FROM A PUBLIC WATER SUPPLIER, OR PRIVATE WELL APPROVED BY THE STATE HEALTH DEPARTMENT. WATER USED FOR CONSTRUCTION THAT DOES NOT ORIGINATE FROM AN APPROVED PUBLIC SUPPLY MUST NOT DISCHARGE FROM THE SITE. IT CAN BE RETAINED IN THE PONDS UNTIL IT INFILTRATES AND EVAPORATES.
   (E) CONCRETE WASTE FROM CONCRETE READY-MIX TRUCKS - DISCHARGE OF EXCESS OR WASTE CONCRETE AND/OR WASH WATER FROM CONCRETE TRUCKS WILL BE ALLOWED ON THE CONSTRUCTION SITE, BUT ONLY IN SPECIFICALLY DESIGNATED DIKED AREAS PREPARED TO PREVENT CONTACT BETWEEN THE CONCRETE AND/OR WASH WATER AND STORM WATER THAT WILL BE DISCHARGED FROM THE SITE. ALTERNATIVELY, WASTE CONCRETE CAN BE PLACED INTO FORMS TO MAKE RIP-RAP OR OTHER USEFUL CONCRETE PRODUCTS. THE CURED RESIDUE FROM THE CONCRETE WASHOUT DIKED AREAS SHALL BE DISPOSED IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS. THE JOB SITE SUPERINTENDENT IS RESPONSIBLE FOR ASSURING THAT THESE PROCEDURES ARE FOLLOWED.
   (F) FUEL TANKS - TEMPORARY ON-SITE FUEL TANKS FOR CONSTRUCTION VEHICLES SHALL MEET ALL STATE AND FEDERAL REGULATIONS. TANKS SHALL HAVE APPROVED SPILL CONTAINMENT WITH THE CAPACITY REQUIRED BY THE APPLICABLE REGULATIONS. THE TANK SHALL BE IN SOUND CONDITION FREE OF RUST OR OTHER DAMAGE WHICH MIGHT COMPROMISE CONTAINMENT. HOSES, VALVES, FITTINGS, CAPS, FILLER NOZZLES, AND ASSOCIATED HARDWARE SHALL BE MAINTAINED IN PROPER WORKING CONDITION AT ALL TIMES.
11. MINIMIZING EROSION AND RUNOFF DURING TRENCH OPERATIONS
   (A) EXCAVATED TRENCH MATERIALS SHALL BE PLACED ON THE UPPER SIDE OF THE TRENCH WHILE THE TRENCH IS OPEN.
   (B) EXCAVATED TRENCH MATERIAL, UPON COMPLETING WORK IN TRENCH, SHALL BE PLACED BACK IN THE TRENCH OR HAULED AWAY TO A PROPER SPOIL SITE. THE TRENCH SHALL BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY.

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FOR QUESTIONS REGARDING THIS PROJECT, PLEASE CONTACT:
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TELEPHONE: (608) 348-5355

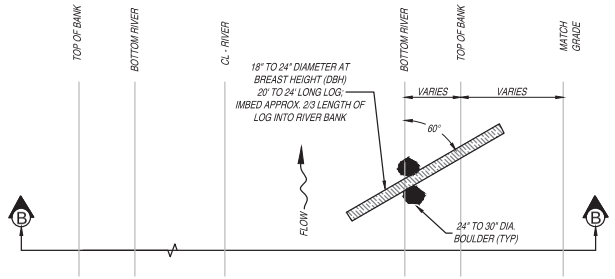
PROPOSED 2025 STREAM IMPROVEMENTS
GRATIOT, WISCONSIN
PROJECT LOCATION: WOLF CREEK & TROUT BROOK - WEST OF VILLAGE
OWNER: VILLAGE OF GRATIOT, 5630 MAIN STREET, GRATIOT, WISCONSIN 53541

REVISIONS:		
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
-/-/----		------

PRELIMINARY	
PROJECT NUMBER	D20-151
SHEET SCALE	NOT TO SCALE
DRAWN BY	C.COYIER
DATE ISSUED	FEBRUARY 14, 2025
SHEET DESC.	DETAILS - EROSION CONTROL & NOTES

SHEET TITLE:
C201

SHEET NUMBER # 4 of 5

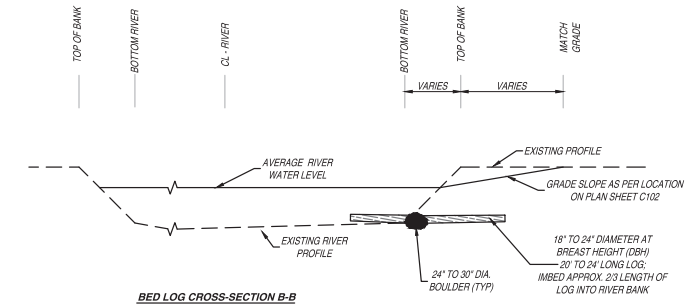


BED LOG DETAIL - PLAN VIEW

SCALE: N.T.S.

HABITAT NOTES:

1 - LOCATIONS AND ORIENTATION OF LARGE WOODY MATERIAL (LWM) AS SHOWN ON THIS SHEET ARE APPROXIMATE. FINAL LOCATIONS TO BE DETERMINED ON SITE BY THE ENGINEER.



BED LOG CROSS-SECTION B-B

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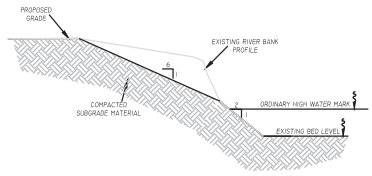
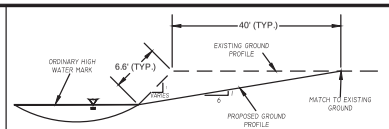


STREAMBANK GRADING (6:1 SLOPES) DETAIL

SCALE: N.T.S.



TYPICAL CROSS SECTION DETAIL (ID - B, K)

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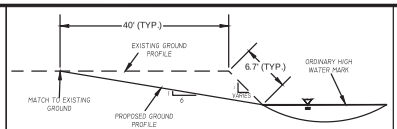

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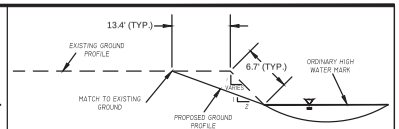

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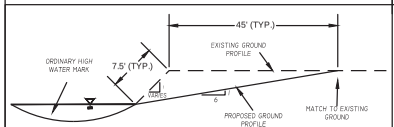

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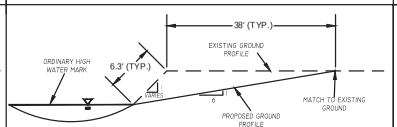

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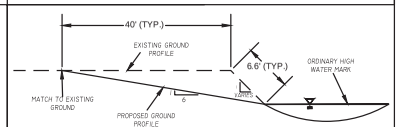
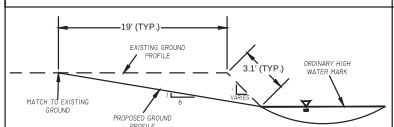


TYPICAL CROSS SECTION DETAIL (ID - F, I -1, I -2)

SCALE: N.T.S.



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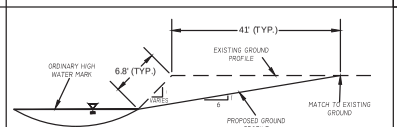

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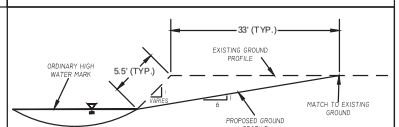

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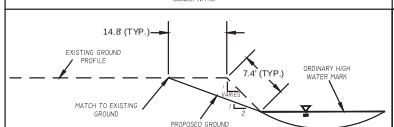

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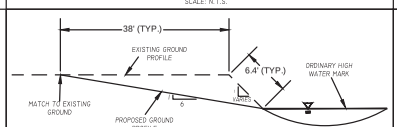

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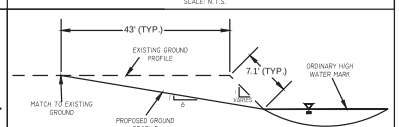

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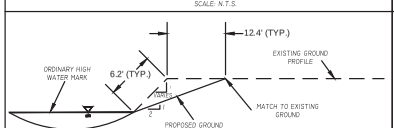

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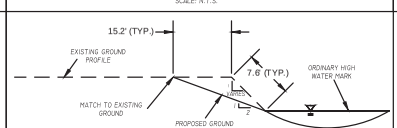

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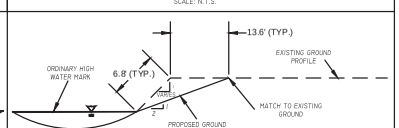

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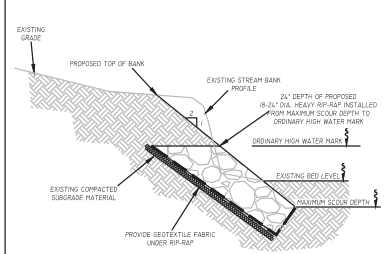
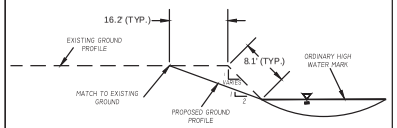


STREAMBANK GRADING (2:1 SLOPES) WITH RIP-RAP TO TOP OF BANK DETAIL

SCALE: N.T.S.



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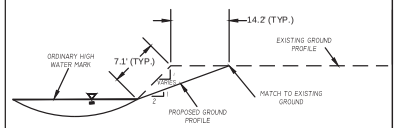

TYPICAL CROSS SECTION DETAIL (ID - T, U)

SCALE: N.T.S.

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PROPOSED 2025 STREAM IMPROVEMENTS

GRATIOT, WISCONSIN

PROJECT LOCATION: WOLF CREEK & TROUT BROOK - WEST OF VILLAGE
OWNER: VILLAGE OF GRATIOT; 5630 MAIN STREET, GRATIOT, WISCONSIN 53541

REVISIONS:		
NO.	DATE	DESCRIPTION
AS-BUILT:		BY:
-/-/----		-----

PRELIMINARY	
PROJECT NUMBER	D20-151
SHEET SCALE	NOT TO SCALE
DRAWN BY	C. BILLINGTON
DATE ISSUED	FEBRUARY 14, 2025
SHEET DESC.	DETAILS - STREAMBANK

SHEET TITLE:

C202

SHEET NUMBER # 5 of 5