Permit Fact Sheet

General Information

Permit Number	WI-0049689-06-0
Permittee Name and Address	Hub Rock Sanitary District #1 16977 State Road 80, Richland Center, WI 53581
Permitted Facility Name and Address	Hub Rock Sanitary District #1 WWTF CTH "DD", ROCKBRIDGE, WISCONSIN
Permit Term	January 01, 2026 to December 31, 2030
Discharge Location	NE ¼ of SW ¼ of Section 15, T11N_R1E, Town of Rockbridge, Richland County
Receiving Water	Pine River in Upper Pine River of Wisconsin River (lower) in Richland County
Stream Flow ($Q_{7,10}$)	29 cfs
Stream Classification	Class II Trout Stream cold water community.
Discharge Type	Existing, Continuous
Annual Average Design Flow (MGD)	0.0256 MGD
Industrial or Commercial Contributors	None
Plant Classification	A4 - Ponds, Lagoons and Natural Systems; D - Disinfection; SS - Sanitary Sewage Collection System
Approved Pretreatment Program?	N/A

Facility Description

Hub Rock Sanitary District #1 operates a wastewater treatment facility serving a population of approximately 100 residents in the Town of Rockbridge and the unincorporated community of Hub City. Treatment consists of two aerated lagoons operated in series, with four cells for treatment, followed by chlorine contact disinfection and dechlorination prior to discharge to the Pine River.

Substantial Compliance Determination

After a desk top review of all discharge monitoring reports, CMARs, land application reports, compliance schedule items, and a site visit on 8/25/2025, this facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Tanner Connors on 9/4/2025.

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	0.01 MGD (2024)	Influent: 24-hr flow proportional composite sample collected from the influent manhole after the parshall flume near the upper building.
001	0.01 MGD (2024)	Effluent: 24-Hr flow proportional composite sampler intake located in the first effluent manhole, prior to discharge to the Pine River. Grab samples collected and flow meter located at the last manhole.
002	N/A	Representative composite grab lagoon sludge samples shall be taken from each lagoon and then combined for one sample. If a lagoon is scheduled for desludging additional sampling may be required, Department approval required.

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	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Flow Prop Comp	

Changes from Previous Permit:

Influent limitations and monitoring requirements were evaluated for this permit term and no changes were required in this permit section.

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	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	Weekly	24-Hr Flow Prop Comp	
Suspended Solids, Total	Monthly Avg	30 mg/L	Weekly	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	
Chlorine, Total Residual	Daily Max	38 ug/L	Daily	Grab	May - September
Chlorine, Total Residual	Weekly Avg	38 ug/L	Daily	Grab	May - September
Chlorine, Total Residual	Monthly Avg	38 ug/L	Daily	Grab	May - September
E. coli	Geometric Mean - Monthly	126 #/100 ml	Weekly	Grab	May - September
E. coli	% Exceedance	10 Percent	Monthly	Calculated	May - September. See the E. coli Percent Limit section. Enter the result in the DMR on the last day of the month.
Nitrogen, Ammonia Variable Limit		mg/L	Weekly	24-Hr Flow Prop Comp	Look up the variable ammonia limit from the 'Variable Ammonia Limitation' table and report the variable limit in the Ammonia Variable Limit column on the eDMR.
Nitrogen, Ammonia (NH3-N) Total	Daily Max - Variable	mg/L	Weekly	24-Hr Flow Prop Comp	Report the daily maximum Ammonia result in the Nitrogen, Ammonia (NH3-N) Total column of the eDMR. See Ammonia

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					Limitation Section.
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	72 mg/L	Weekly	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	72 mg/L	Weekly	24-Hr Flow Prop Comp	
Phosphorus, Total	Monthly Avg	2.9 mg/L	Weekly	24-Hr Flow Prop Comp	Limit effective throughout the permit term, as it represents a minimum control level. See Water Quality Trading (WQT) sections for more information.
Phosphorus, Total		lbs/day	Weekly	Calculated	Report daily mass discharged using Equation 1a. in the Water Quality Trading (WQT) section.
WQT Credits Used (TP)		lbs/month	Monthly	Calculated	Report WQT TP Credits used per month using Equation 2c. in the Water Quality Trading (WQT) section. Available TP Credits are specified in Table 2 and in the approved Water Quality Trading Plan.
WQT Computed Compliance (TP)	Monthly Avg	0.225 mg/L	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 4a. in the Water Quality Trading (WQT) section. Value entered on the last day of the month.
WQT Computed Compliance (TP)	6-Month Avg	0.075 mg/L	Monthly	Calculated	Value entered on the last day of the month. Value entered at the end of the six-month period (June 30 and December 31).
WQT Computed Compliance (TP)	6-Month Avg	0.016 lbs/day	Monthly	Calculated	Report the WQT TP Computed Compliance value using Equation 4b. in the Water Quality Trading (WQT) section. Value

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					entered at the end of the six-month period (June 30 and December 31).
WQT Credits Used (TP)	Annual Total	131 lbs/yr	Annual	Calculated	The sum of total monthly credits used may not exceed Table 2 values listed in the permit.
Chloride		mg/L	Monthly	24-Hr Flow Prop Comp	
Copper, Total Recoverable	Daily Max	78 mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring upon reissuance. Limit effective starting January 2030. See Copper schedule.
Copper, Total Recoverable	Monthly Avg	78 mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring upon reissuance. Limit effective starting January 2030. See Copper schedule.
Copper, Total Recoverable	Weekly Avg	78 mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring upon reissuance. Limit effective starting January 2030. See Copper schedule.
Copper, Total Recoverable	Daily Max	0.038 lbs/day	Monthly	Calculated	Monitoring upon reissuance. Limit effective starting January 2030. See Copper schedule.
Hardness, Total as CaCO3		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring on the same day Copper samples are collected.
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section of the permit.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual in rotating quarters. See Nitrogen Series Monitoring section of the permit.
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual in rotating quarters. See Nitrogen Series Monitoring section of the permit. Total Nitrogen shall be calculated as the sum of

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
					reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.
Acute WET		TUa	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET section.

Changes from Previous Permit

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

- **pH-** Sample frequency increased.
- **E. coli-** Fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits.
- **Copper & Hardness-** monitoring and copper limits with schedule for meeting Copper limits added.
- **Acute WET-** Acute WET testing added.

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 7/3/2025.

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. Sampling frequency for pH increased to 5/week which is the standard for all municipal WWTF.

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.

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 Pine River is 0.075 mg/L. In this case, *the WQBEL is 0.225 mg/L (monthly average), 0.075 mg/L & 0.016 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 0.3 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 current interim limit will be retained as a minimum control value.

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-2025-0017) or approved amendments thereof. The total 'WQT TP Credits' available are designated in the approved WQT Plan. The Sanitary District has implemented streambank stabilization. The WQT Plan proposes the generation of 124 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	Lagoon	Lagoon	N/A	N/A
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** If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? **No** 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- LAGOON SLUDGE

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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	
Nitrogen, Total Kjeldahl		Percent	Per Application	Composite	
Nitrogen, Ammonia (NH3-N) Total		Percent	Per Application	Composite	
Phosphorus, Total		Percent	Per Application	Composite	
Phosphorus, Water Extractable		% of Tot P	Per Application	Composite	
Potassium, Total Recoverable		Percent	Per Application	Composite	
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	Once	Calculated	Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information.
PFAS Dry Wt			Once	Grab	Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information.

Changes from Previous Permit:

Sludge limitations and monitoring requirements were 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.

PCB – Sampling year updated.

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

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

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

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

4 Schedules

4.1 Copper Schedule

This schedule requires the permittee to comply with the following required actions related to discharge limits for copper.

Required Action	Due Date
Report on Effluent Discharges: Submit a report on copper effluent discharge with conclusions regarding compliance with copper limitations that become effective at the end of this compliance schedule. The report shall summarize monitoring results, report on possible copper reduction efforts, assess corrosion control activities and describe any other options for meeting water quality standards.	01/01/2027
Action Plan: Submit an action plan for complying with the effluent limitation. If construction is required, include plans and specifications with the submittal.	01/01/2028
Initiate Actions: Initiate actions identified in the plan.	01/01/2029
Complete Actions: Complete actions necessary to achieve compliance with the effluent limitations.	01/01/2030

Explanation of Schedule

The available copper data indicates that copper limits are warranted. This schedule allows the permittee time to collect additional data, identify sources of copper in the effluent, and complete actions required to meet copper limits. If additional data and/or the source of copper is identified and resolved, the permittee may request the department reevaluate reasonable potential for exceeding copper limits. Please be aware that a modification to change the effective date for the copper limits will require 6-9 months.

4.2 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.	01/31/2026
Annual WQT Report #2: Submit an annual WQT report that shall cover the previous year.	01/31/2027
Annual WQT Report #3: Submit an annual WQT report that shall cover the previous year.	01/31/2028
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.	01/31/2029
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.	01/31/2030

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.

4.3 Lagoon Desludge Plan

Required Action	Due Date
Submit Lagoon Desludge Plan: The permittee shall submit a management plan if removal of sludge will occur during the permit term. At a minimum, the plan shall address how the sludge will be sampled, removed, transported, and disposed of. No desludging may occur unless approval from the Department is obtained. Daily logs shall be kept that record where the sludge has been disposed. The plan is due a minimum of 90 days prior to desludging as part of lagoon abandonment.	

Explanation of Schedule

A plan for desludging the lagoon as part of the abandonment of the WWTF is required. This plan shall be submitted 90 days prior to desludging.

4.4 Land Application Management Plan

A management plan is required for the land application system.

Required Action	Due Date
Land Application Management Plan Submittal: Submit a management plan to optimize the land application system performance and demonstrate compliance with ch. NR 204, Wis. Adm. Code, by the Due Date. This management plan shall 1) specify information on pretreatment processes (if any); 2) identify land application sites; 3) describe site limitations; 4) address vegetative cover management and removal; 5) specify availability of storage; 6) describe the type of transporting and spreading vehicle(s); 7) specify monitoring procedures; 8) track site loading; 9) address contingency plans for adverse weather and odor/nuisance abatement; and 10) include any other pertinent information. Once approved, all landspreading activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes. The plan is due 90 days prior to land application.	

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

Other Comments

None

Attachments

Water Quality Based Effluent Limits – July 3, 2025

Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

Prepared By: Jennifer Jerich, Wastewater Specialist

Date: 8/14/2025

Revision date post fact check:

Revision date post public notice:

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 07/03/2025

TO: Jennifer Jerich – SCR

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for Hub Rock Sanitary District #1
WPDES Permit No. WI-0049689-06

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 Hub Rock Sanitary District #1 in Richland County. This municipal wastewater treatment facility (WWTF) discharges to the Pine River, located in the Upper Pine River Watershed in the Lower Wisconsin 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						1,2
BOD_5			45 mg/L	30 mg/L		1
TSS			45 mg/L	30 mg/L		1
pH	9.0 s.u.	6.0 s.u.				1
Residual Chlorine	38 µg/L		**38 µg/L**	**38 µg/L**		1,3
E. coli May – September				126#/100 mL geometric mean		4
Ammonia	Variable		**72 mg/L**	**72 mg/L**		1,3,5
Phosphorus WQT MCL Final				 2.9 mg/L 0.225 mg/L	 0.075 mg/L 0.016 lbs/day	1,6
Chloride						7
Copper	78 µg/L 0.038 lbs/day		**78 µg/L**	**78 µg/L**		3,8
Hardness						2
TKN, Nitrate+Nitrite, and Total Nitrogen						9
Acute WET						10

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
4. Bacteria limits apply during the disinfection season of May through September. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.

5. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit. These limits apply year-round.

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	72	$7.0 < pH \leq 7.1$	44	$8.0 < pH \leq 8.1$	9.3
$6.1 < pH \leq 6.2$	71	$7.1 < pH \leq 7.2$	39	$8.1 < pH \leq 8.2$	7.7
$6.2 < pH \leq 6.3$	69	$7.2 < pH \leq 7.3$	35	$8.2 < pH \leq 8.3$	6.3
$6.3 < pH \leq 6.4$	67	$7.3 < pH \leq 7.4$	31	$8.3 < pH \leq 8.4$	5.2
$6.4 < pH \leq 6.5$	65	$7.4 < pH \leq 7.5$	27	$8.4 < pH \leq 8.5$	4.3
$6.5 < pH \leq 6.6$	63	$7.5 < pH \leq 7.6$	23	$8.5 < pH \leq 8.6$	3.5
$6.6 < pH \leq 6.7$	60	$7.6 < pH \leq 7.7$	19	$8.6 < pH \leq 8.7$	2.9
$6.7 < pH \leq 6.8$	56	$7.7 < pH \leq 7.8$	16	$8.7 < pH \leq 8.8$	2.5
$6.8 < pH \leq 6.9$	52	$7.8 < pH \leq 7.9$	14	$8.8 < pH \leq 8.9$	2.1
$6.9 < pH \leq 7.0$	48	$7.9 < pH \leq 8.0$	11	$8.9 < pH \leq 9.0$	1.8

6. The minimum control level (MCL) is effective as an end of pipe limit. The final limits are met with water quality trading (WQT) credits.
7. Monitoring at a frequency to ensure that 11 samples are available at the next permit issuance.
8. These are WQBELs for copper which may become effective after a compliance schedule. If there is no longer reasonable potential for copper limits after more effluent data is available, the limits may be removed prior to the effective date.
9. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Sections 283.37(5) and 283.55(1)(e), Wis. Stats, and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the permit term. Total Nitrogen is the sum of nitrate (NO_3), nitrite (NO_2), and total Kjeldahl nitrogen (TKN) (all expressed as N).
10. Two acute WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge.

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

Attachments (3) – Narrative, Map, & 2009 Ammonia Limits Calculations

PREPARED BY: Nicole Krueger, Water Resources Engineer – SER

E-cc: Tanner Conners, Wastewater Engineer – SCR
Lisa Creegan, Regional Wastewater Supervisor – SCR
Diane Figiel, Water Resources Engineer – WY/3
Nate Willis, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Hub Rock Sanitary District #1

WPDES Permit No. WI-0049689-06

Prepared by: Nicole Krueger

PART 1 – BACKGROUND INFORMATION

Facility Description

Hub Rock Sanitary District #1 operates a wastewater treatment facility serving a population of approximately 100 residents in the Town of Rockbridge and the unincorporated community of Hub City. Treatment consists of two aerated lagoons operated in series, with four cells for treatment, followed by chlorine contact disinfection and dechlorination prior to discharge to the Pine River. Between cell #2 and cell #3, alum is added to assist in phosphorus treatment. The system is designed to treat an annual average of 0.0256 MGD of domestic wastewater and presently receives an average of 0.024 MGD for treatment annually.

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

Existing Permit Limitations

The current permit, which expired on 06/30/2025, includes the following effluent limitations and monitoring requirements.

Parameter	Daily Maximum	Daily Minimum	Weekly Average	Monthly Average	Six-Month Average	Footnotes
Flow Rate						1
BOD_5			45 mg/L	30 mg/L		2,3
TSS			45 mg/L	30 mg/L		2,3
pH	9.0 s.u.	6.0 s.u.				2
Residual Chlorine	38 µg/L		**38 µg/L**	**38 µg/L**		4
E. coli May – September				126#/100 mL geometric mean		5
Ammonia	Variable		**72 mg/L**	**72 mg/L**		4
Phosphorus WQT MCL Final				 2.9 mg/L 0.225 mg/L	 0.075 mg/L 0.016 lbs/day	6
TKN, Nitrate+Nitrite, and Total Nitrogen						1

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. These limits are based on the Warm Water Sport Fish (WWSF)/Cold Water (CW) community of the immediate receiving water as described in s. NR 210.05(1), Wis. Adm. Code.
4. Limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
5. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
6. The minimum control level (MCL) is effective as an end of pipe limit. The final limits are met with water quality trading (WQT) credits.

Receiving Water Information

- Name: Pine River
- Waterbody Identification Code (WBIC): 1220600
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Cold Water (CW) community, non-public water supply and recreational use.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS at SW ¼, SE ¼, SEC. 10, T11N-R1E at Rockbridge, near where Outfall 001 is located.

  7-Q_{10} = 29 cubic feet per second (cfs)
  7-Q_2 = 47 cfs
  90-Q_{10} = 40 cfs
  Harmonic Mean Flow = 58 cfs using a drainage area of 117 mi^2

  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 = 249 mg/L as $CaCO_3$. This value represents the geometric mean of data from chronic WET testing at Richland Center, downstream of Hub Rock from 09/14/2021 – 10/22/2024.
- % 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 the Pine River at STH 14 in Richland Center (SWIMS Station 533029) is used for this evaluation. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: There are several other dischargers to the Pine River; however, they are not in the immediate vicinity and the mixing zones do not overlap. Therefore, the other dischargers do not impact this evaluation.
- Impaired water status: The Pine River at County Highway AA, 5.7 miles downstream, is 303(d) listed as impaired for total phosphorus.

Effluent Information

- Design flow rate(s):

  Annual average = 0.0256 million gallons per day (MGD)
  Daily maximum = 0.059 MGD

  For reference, the actual average flow from 06/01/2020 – 04/30/2025 was 0.0086 MGD.

- Hardness = 264 mg/L as $CaCO_3$. This value represents the geometric mean of four samples collected in February and March 2024 which were reported on the permit application.

- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Wastewater source: Domestic wastewater and no industrial contributors.
- Water supply: Private wells.
- Additives: Hub Rock has included one additive in the permit application that have the potential to be present in Outfall 001. These additives are listed below:
  - Alum – phosphorus removal
  - Chlorine – disinfection
  - An additive review is not necessary for any additives where either the toxicity is well documented and understood, can be controlled by a WQBEL, or are not believed to be present in the discharge. This is the case upon initial review of alum. Therefore, an additive review is not needed at this time.
- 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, 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)
02/21/2024	38.4	03/11/2024	102	04/01/2024	4.41
02/22/2024	9.1	03/14/2024	101	04/08/2024	4.16
02/27/2024	8.74	03/15/2024	87	04/22/2024	3.77
03/04/2024	18	03/18/2024	87.1		
1-day P_{99} = 219 µg/L					
4-day P_{99} = 119 µg/L					

Chloride Effluent Data

Sample Date	Chloride (mg/L)
02/22/2024	151
02/27/2024	148
03/06/2024	86.3
03/12/2024	112
Average	124

The following table presents the average concentrations and loadings at Outfall 001 from 06/01/2020 – 04/30/2025 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameters with Effluent Limits

	Average Measurement	Average Mass Discharged
BOD_5	3.36 mg/L*	
TSS	3.95 mg/L*	
pH field	7.64 s.u.	

Attachment #1

	Average Measurement	Average Mass Discharged
Ammonia Nitrogen	0.92 mg/L*	
E. coli	3.68 #/100 mL**	
Phosphorus	1.97 mg/L	0.31 lbs/day
Chlorine	<100 µg/L*	

*Results below the limit of detection (LOD) were included as zeroes in calculation of average.
** The average measurement for bacteria is calculated as a geometric mean. Values reported below the LOD are replaced with a value of 1 for the calculation of the geometric mean.

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 Hub Rock, 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 = 23.2 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	MEAN BACK-GRD.	MAX. EFFL. LIMIT**	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day P_{99}	1-day MAX. CONC.
Chlorine		19.0		38.1	7.61	<100		
Arsenic		340		680	136	<0.77		
Cadmium	264	13.3	0.08	26.5	5.3	<0.084		
Chromium	264	3993	3	7986	1597	<0.7		
Copper	264	38.8	3.5	77.6			**219**	**102**
Lead	264	273		546	109	<1.08		
Nickel	264	1067		2133	427	<0.98		
Zinc	264	281		563	113	<26		
Chloride (mg/L)		757	4.89	1514	303	124		

* 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 = 7.25 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	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	4-day P_{99}
Chlorine		7.28		1340		<100	
Arsenic		152		28010	5602	<0.77	
Cadmium	175	3.82	0.08	688	138	<0.084	
Chromium	249	182	3	32941	6588	<0.7	
Copper	249	22.6	3.5	3517			119
Lead	249	67.6		12444	2489	<1.08	
Nickel	249	113		20783	4157	<0.98	
Zinc	249	267		49194	9839	<26	
Chloride (mg/L)		395	4.89	71798	14360	124	

* 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 = 14.6 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HTC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Cadmium	370	0.08	136911	27382	<0.084
Chromium (+3)	3818000	3	1413080767	282616153	<0.7
Lead	140		51815	10363	<1.08
Nickel	43000		15914751	3182950	<0.98

Monthly Average Limits based on Human Cancer Criteria (HCC)
RECEIVING WATER FLOW = 14.6 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	HCC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Arsenic	13.3		4922	984	<0.77

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

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

Total Residual Chlorine – Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of de-chlorination. Specifically, **a daily maximum limit 38 µg/L is required. The current weekly and monthly average limits of 38 g/L based on expression of limits requirements per s. 106.07(3), Wis. Adm. Code, are also recommended to continue in the reissued permit.**

Copper – Considering available effluent data from the permit application (02/21/2024 – 04/22/2024), the 1-day P_{99} is 219 µg/L, with a maximum concentration of 102 µg/L. The maximum effluent concentration and the 1-day P_{99} of the effluent data exceed the calculated daily maximum limit of 78 µg/L, **therefore, concentration and mass limits, as well as monthly monitoring, are required.**

The acute mass limitation of 0.038 lbs/day is recommended and is based on the concentration limit and the peak daily design flow rate of 0.059 MGD (77.6 µg/L * 0.059 MGD * 8.34/1000) in accordance with s. NR 106.07(2)(a), Wis. Adm. Code.

Sections NR 106.07(3) and NR 205.067(7), Wis. Adm. Code require WPDES permits contain weekly average and monthly average limitations for municipal dischargers whenever practicable and necessary to

protect water quality. **Therefore, a weekly average and monthly average limits of 78 µg/L is required** to meet expression of limits requirements in addition to the daily max limit.

Quarterly hardness monitoring is also recommended because of the relationship between hardness and daily maximum limits based on acute toxicity criteria.

Chloride – Considering available effluent data from the permit application (02/22/2024 – 03/12/2024), the average is 124 mg/L.

This concentration is below 1/5th of 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.**

Mercury – The permit application did not require monitoring for mercury because Hub Rock 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 from 11/15/2021 – 03/11/2024 was 0.052 mg/kg, with a maximum reported concentration of 0.156 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.

The limited data above shows the municipal water supply is below 1/5th of the applicable PFOS and PFOA criteria. Based on the effluent flow rate and lack of indirect dischargers contributing to the collection system, **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. The current permit has daily maximum, weekly average and monthly average limits. These limits are re-evaluated at this time due to the following changes:

- Subchapter IV of ch. NR 106, Wis. Adm. Code allows limits based on available dilution instead of limits set to twice the acute criteria.
- Section NR 106.07(3), Wis. Adm. Code requires weekly and monthly average limits for municipal treatment plants.
- The maximum expected effluent pH has changed

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

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

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

Where:

A = 0.275 and B = 39.0 for a Cold-Water Category 4 fishery, and
pH (s.u.) = that characteristic of the effluent.

The effluent pH data was examined as part of this evaluation. A total of 249 sample results were reported from 06/09/2020 – 04/29/2025. The maximum reported value was 7.9 s.u. (Standard pH Units). The effluent pH was 7.9 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 7.9 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 7.9 s.u. Therefore, a value of 7.9 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 7.9 s.u. into the equation above yields an ATC = 10.1 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 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	13.5
1-Q_{10}	3935

The 2×ATC method yields the most stringent limits for Hub Rock.

The current permit has variable daily maximum effluent limits based on effluent pH. Presented below is a table of daily maximum limitations corresponding to various effluent pH values.

Daily Maximum Ammonia Nitrogen Limits – CW

Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L	Effluent pH s.u.	Limit mg/L
$6.0 \leq pH \leq 6.1$	72	$7.0 < pH \leq 7.1$	44	$8.0 < pH \leq 8.1$	9.3
$6.1 < pH \leq 6.2$	71	$7.1 < pH \leq 7.2$	39	$8.1 < pH \leq 8.2$	7.7
$6.2 < pH \leq 6.3$	69	$7.2 < pH \leq 7.3$	35	$8.2 < pH \leq 8.3$	6.3
$6.3 < pH \leq 6.4$	67	$7.3 < pH \leq 7.4$	31	$8.3 < pH \leq 8.4$	5.2
$6.4 < pH \leq 6.5$	65	$7.4 < pH \leq 7.5$	27	$8.4 < pH \leq 8.5$	4.3
$6.5 < pH \leq 6.6$	63	$7.5 < pH \leq 7.6$	23	$8.5 < pH \leq 8.6$	3.5

6.6 < pH ≤ 6.7	60	7.6 < pH ≤ 7.7	19	8.6 < pH ≤ 8.7	2.9
6.7 < pH ≤ 6.8	56	7.7 < pH ≤ 7.8	16	8.7 < pH ≤ 8.8	2.5
6.8 < pH ≤ 6.9	52	7.8 < pH ≤ 7.9	14	8.8 < pH ≤ 8.9	2.1
6.9 < pH ≤ 7.0	48	7.9 < pH ≤ 8.0	11	8.9 < pH ≤ 9.0	1.8

Section NR 106.33(2), Wis. Adm. Code, was updated effective September 1, 2016. As a result, seasonal 20 and 40 mg/L thresholds for including ammonia limits in municipal discharge permits are no longer applicable under current rules. As such, the table has been expanded from the table in the current permit to included ammonia nitrogen limits throughout the pH range.

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 06/02/2020 – 04/29/2025.

Ammonia Nitrogen Effluent Data

	Ammonia Nitrogen mg/L
1-day P_{99}	6.04
4-day P_{99}	3.29
30-day P_{99}	1.60
Mean*	0.92
Std	1.32
Sample size	249
Range	<0.05 - 7.3

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

Reasonable Potential
The need to include ammonia limits in Hub Rock's permit is determined by calculating 99th upper percentile (or P_{99}) values for ammonia and comparing those to the calculated limits. Since the permit currently has weekly and monthly average limits year-round, **the limits must be retained regardless of reasonable potential**, consistent with s. NR 106.33(1)(b), Wis. Adm. Code:

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

Conclusions and Recommendations
In summary, after rounding to two significant figures, the following ammonia nitrogen limitations are recommended. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm Code. Additional limits to meet the requirements in s. NR 106.07, Wis. Adm Code, are denoted in bold text.

Attachment #1

Final Ammonia Nitrogen Limits

	Daily Maximum mg/L	Weekly Average mg/L	Monthly Average mg/L
Year-round	Variable	72	**72**

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.

Because Hub Rock 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 to s. NR 217.04(1)(a)1, Wis. Adm. Code, and therefore no technology-based limit is required.

Annual Average Mass Total Phosphorus Loading

Month	Monthly Avg. mg/L	Total Flow MG/month	Total Phosphorus lb./mo.
May 2024	2.86	0.408	9.74
Jun 2024	2.85	0.283	6.72
Jul 2024	1.32	0.271	2.99
Aug 2024	1.82	0.320	4.85
Sep 2024	2.06	0.276	4.74
Oct 2024	2.31	0.629	12.1
Nov 2024	1.40	0.282	3.28
Dec 2024	0.81	0.182	1.24
Jan 2025	0.69	0.184	1.05
Feb 2025	0.81	0.225	1.52
Mar 2025	1.90	0.268	4.25
Apr 2025	1.56	0.211	2.75
Average			4.60

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 the Pine River.

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 Pine River
Qs = 100% of the 7-Q_2 of 47 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 = 0.0256 MGD = 0.040 cfs
f = the fraction of effluent withdrawn from the receiving water = 0

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

A previous evaluation resulted in a WQBEL of 0.075 mg/L using a background concentrations of 0.106 and 0.139 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. Additional data were considered in estimating the background phosphorus concentration.

A review of all available in stream total phosphorus data from 06/06/2011 – 09/24/2020 stored in the Surface Water Integrated Monitoring System database indicates the median background total phosphorus concentration in the Pine River at STH 60 (SWIMS station ID 10031637) is 0.149 mg/L.

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

Effluent Data

The following table summarizes effluent total phosphorus monitoring data from 06/02/2020 – 04/29/2025.

Total Phosphorus Effluent Data

	Concentration mg/L	Mass lbs/day
1-day P_{99}	4.23	2.48
4-day P_{99}	2.96	1.39
30-day P_{99}	2.29	0.62
Mean	1.97	0.31
Std	0.72	0.56
Sample size	247	50

	Concentration mg/L	Mass lbs/day
Range	0.055 – 4.52	0 – 2.73

Reasonable Potential Determination
The discharge has reasonable potential to cause or contribute to an exceedance of the water quality criterion and is currently operating the treatment facility to remove phosphorus and meet the WQBELs. Therefore, **the WQBELs are required to continue in the reissued permit per ss. NR 217.15 and 205.067(5), Wis. Adm. Codes.**

Water Quality Trading Minimum Control Level
A water quality trading (WQT) plan has been submitted as an alternative compliance option to offset any total phosphorus discharged from Outfall 001 that exceed the phosphorus WQBELs. The phosphorus WQBELs may be expressed as computed compliance limits, but a minimum control level (MCL) must be set as a limit not to be exceeded at the outfall location. **Therefore, the phosphorus MCL of 2.9 mg/L as a monthly average is recommended during the reissued permit.**

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.

Due to the amount of upstream flow available for dilution in the limit calculation (Qs:Qe >20:1), the lowest calculated limitation is 120° F (s. NR 106.55(6)(a), Wis. Adm. Code).

At temperatures above ~103°F, conventional biological treatment systems stop functioning properly and experience upsets. There is no indication that this has ever occurred at this treatment system. This information, coupled with the lack of significant industrial heat load, lead to the conclusion that there is no reasonable potential for the discharge to exceed the 120°F limitation. **No limits or monitoring is recommended to be included in the reissued permit 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 1%,** 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 = 0.0256 MGD = 0.040 cfs
f = fraction of the Q_e withdrawn from the receiving water = 0
Q_s = ¼ of the 7-Q_{10} = 29 cfs ÷ 4 = 7.25 cfs

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 001 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.
- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

WET Data History

Date Test Initiated	Acute Results LC_{50} %			
	C. dubia	Fathead minnow	Pass or Fail?	Used in RP?
05/17/2017	>100	>100	Pass	Yes
08/07/2019	>100	>100	Pass	Yes

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

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

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

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

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

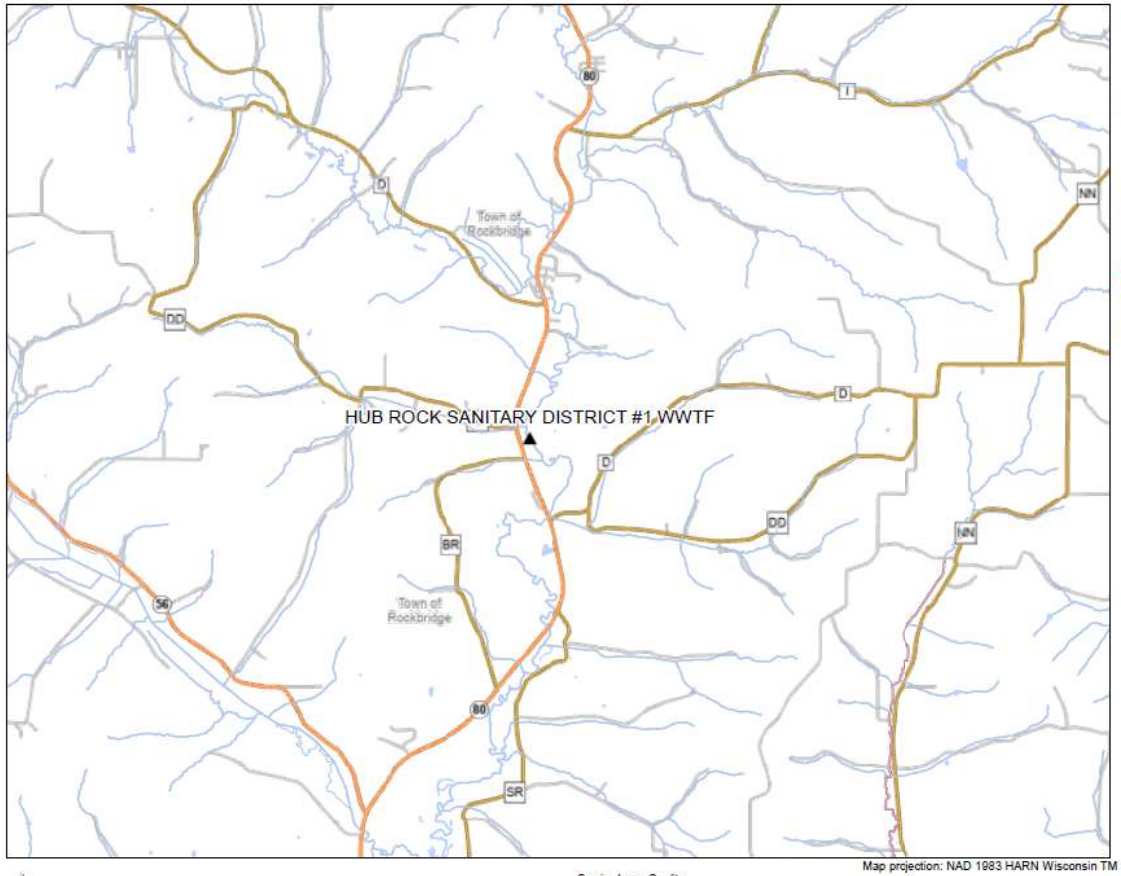
	Acute	Chronic
AMZ/IWC	Not Applicable. **0 Points**	IWC = 1%. **0 Points**
Historical Data	2 tests used to calculate RP. No tests within the last 5 years. **5 Points**	0 tests used to calculate RP. **5 Points**
Effluent Variability	Little variability, no violations or upsets, consistent WWTF operations. **0 Points**	Same as Acute. **0 Points**
Receiving Water Classification	Coldwater **5 Points**	Same as Acute. **5 Points**
Chemical-Specific Data	Reasonable potential for limits for copper based on ATC; Ammonia nitrogen limit carried over from the current permit. Ammonia and chloride detected. Additional Compounds of Concern: None. **7 Points**	No reasonable potential for limits based on CTC; Ammonia nitrogen limit carried over from the current permit. Ammonia, copper, and chloride detected. Additional Compounds of Concern: None. **3 Points**
Additives	1 Biocide and 1 Water Quality Conditioner added. Permittee has proper P chemical SOPs in place: No **4 Points**	All additives used more than once per 4 days. **4 Points**
Discharge Category	0 Industrial Contributors. **0 Points**	Same as Acute. **0 Points**
Wastewater Treatment	Secondary or Better	Same as Acute.

	Acute	Chronic
	0 Points	**0 Points**
Downstream Impacts	No impacts known **0 Points**	Same as Acute. **0 Points**
Total Checklist Points:	**21 Points**	**17 Points**
Recommended Monitoring Frequency (from Checklist):	2 tests during permit term	No tests needed
Limit Required?	No	No
TRE Recommended? (from Checklist)	No	No

- After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) and other information described above, 2 tests/permit term acute WET tests are recommended in the reissued permit. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge.

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Hub Rock SD #1 Location



Legend: (some map layers may not be displayed)

- Surface Water Outfalls
- 24K Streams and Rivers
- IWL - River Stream Beach Shore
- Rivers and Streams
- Intermittent Streams
- Open Water

Latest Leaf Off Imagery

- Red: Band_1
- Green: Band_2
- Blue: Band_3

Notes:

Map projection: NAD 1983 HARN Wisconsin TM

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

N

Service Layer Credits:
Latest Leaf Off Imagery: , Basic Basemap (Cached):

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

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

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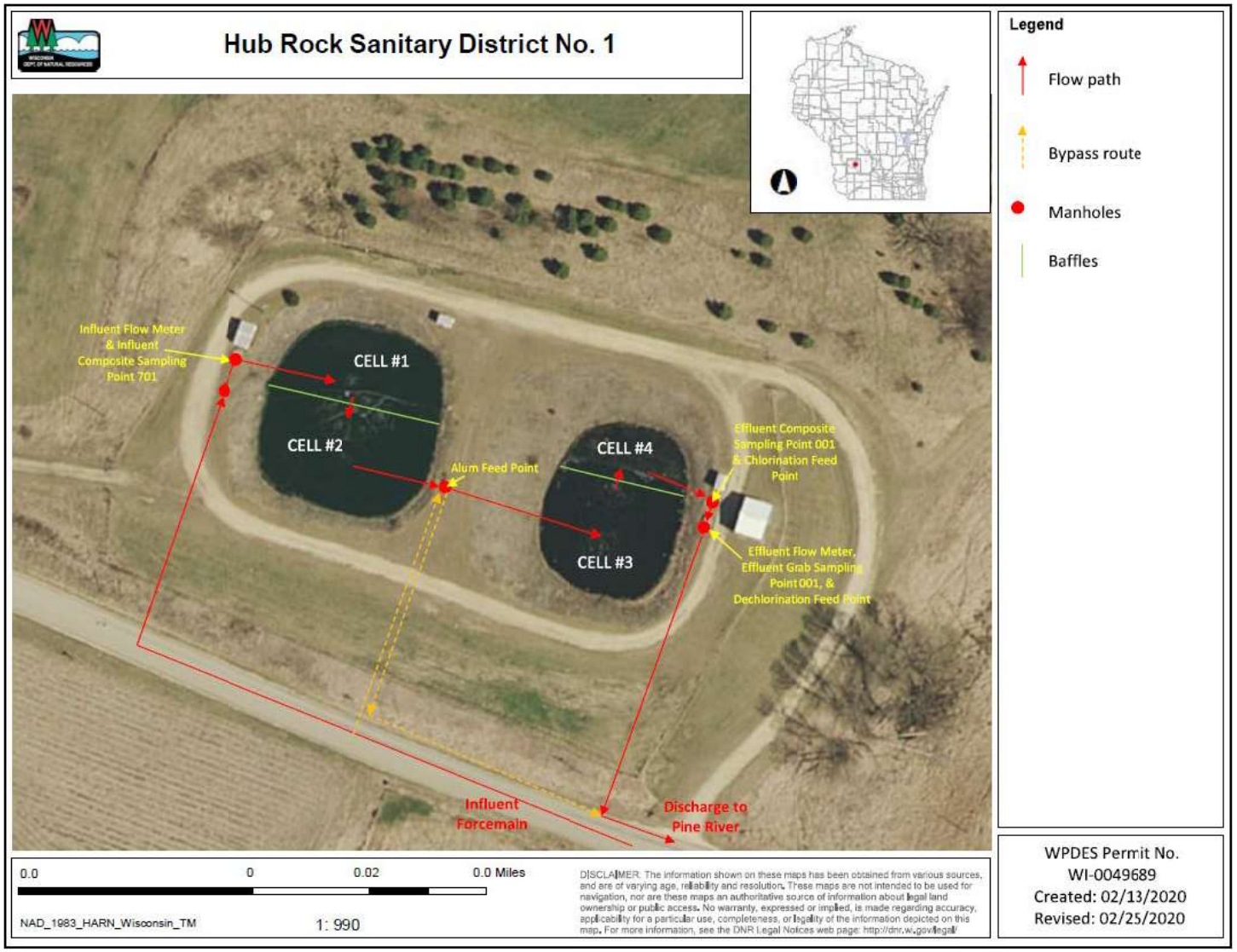
Attachment #2



Attachment #3

Ammonia Nitrogen calculations from the March 2, 2009 WQBEL memo

Water quality-based effluent limitations are evaluated in this report for Ammonia Nitrogen based upon water quality criteria in ch. NR 105 (as revised in March 2004), including acute toxicity criteria (ATC) and chronic toxicity criteria (CTC). Effluent limitations for ammonia are calculated using the procedures in s. NR 106.32. The acute criteria relate to the pH of the effluent; the chronic criteria relate to both the pH and temperature of the receiving water body. This approach will establish criteria that are necessary to assure attainment of the designated use for the water body receiving the discharge.

A 99th percentile or a reasonable maximum value may be used for effluent pH to calculate the ammonia limit depending on the number of results available, the variability of those results, and the potential for outlier values. An effluent variability analysis was conducted according to the procedures of s. NR 106.05(5) and resulted in the P_{99} of 8.0 s.u. for effluent pH.

AMMONIA (as N) LIMITS		
CLASSIFICATION:	**COLDWATER COMMUNITY**	
EFFLUENT FLOW (MGD):	0.0256	
EFFLUENT FLOW (cfs):	0.040	
MAX. EFFLUENT pH (s.u.):	8.00	
BACKGROUND INFORMATION:	***May-Sept.***	***Oct.-April***
7Q10 (cfs)	29	29
7Q2 (cfs)	47	47
Ammonia (mg/L)	0.06	0.12
Temperature (deg C)	20	5
pH (std. units)	8.21	7.97
% of river flow used:	100	25
Reference weekly flow:	29	7.25
Reference monthly flow:	39.95	9.9875
CRITERIA (in mg/L):		
Acute (@ effl. pH):	5.62	5.62
4-day Chronic (@ backgrd. pH):		
early life stages present	3.10	6.35
30-day Chronic (@ backgrd. pH)		
early life stages present	1.24	2.54
EFFLUENT LIMITS (in mg/L):		
Daily maximum (also see below)	11.23	11.23
Weekly average		
early life stages present	2227.57	1146.72
Monthly average		
early life stages present	1190.69	612.77

Note: Early life stages present limits apply throughout the year for cold water stream

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

August 27, 2025

Susan Jones, Clerk
16977 State Hwy 80
Richland Center, WI 53581

Subject: Hub Rock Sanitary District #1 WWTF - WPDES Permit WI-0049689
Water Quality Trading Plan – CONDITIONAL APPROVAL

Dear Ms. Jones:

The Department recently received a water quality trading plan (WQT Plan) for compliance with phosphorus effluent limits at the Hub Rock Sanitary District #1 WWTF. The initial plan was received in January of 2025 and updated versions were received in July of 2025 and August of 2025. Based on WDNR review, the final WQT Plan (dated August 2025) is in general conformance with the WDNR Water Quality Trading Guidance and Section 283.84 of the Wisconsin Statutes. The WQT plan proposes to utilize streambank stabilization. The timeline for practice installation, as set forth in the WQT plan, indicates all practices have been implemented, with the final project completed in 2022 in accordance with the first permit term WQT plan approval (WQT-2022-0001). 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.

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-2025-0017

Year	Available Credits (lbs/yr) – Total
2025	124
2026	124
2027	124
2028	124
2029	124
2030	124

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-2025-0017 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
SCR WQT Coordinator
Wisconsin Department of Natural Resources

e-CC:

Charles Soltis, Hub Rock Sanitary District #1
Carson Hackett, P.E., Davy Engineering, Co.
Jennifer Jerich, WDNR
Tanner Connors, WDNR

DAVY ENGINEERING

2025 STATUS AND UPDATE
WATER QUALITY TRADING PLAN
HUB ROCK SANITARY DISTRICT #1 WWTP

HUB CITY-ROCKBRIDGE, WI

UPDATE AUGUST 2025

1365-001.017

TABLE OF CONTENTS
WQT PLAN
HUB ROCK SANITARY DISTRICT #1

APPENDICES

1 SUMMARY

This *2025 Status and Update Report* follows the original WQT Plan.

The WPDES Permit for the Hub Rock wastewater treatment plant (WWTP) proposes a future phosphorus effluent limit of 0.075 mg/L. The current limit is 2.9 mg/L. The Design Flow for the WWTP is 10,000 GPD (0.010 MGD), similar to the WQT Plan submitted in 2021. The annual average flow rate discharging the WWTP from 2021-2024 was 8,600 GPD (0.0086 MGD), slightly lower than the Design Flow. A Flow of 0.0086 MGD will be used.

The chemical addition that reduces the lagoon effluent phosphorus to 1.0 mg/L was performed on a pilot basis, but it was determined to be too expensive to meet these limits consistently. The Hub Rock WWTP typically discharges between 1.5-2.5 mg/L. From 2021-2024, the WWTP averaged a total effluent phosphorus of 2.0 mg/L.

The effluent phosphorous mass loading at 2.0 mg/L is 52 lbs/year. At the same 8,600 GPD flow, the future 0.075 mg/L limit will reduce the phosphorous mass loading to 2.0 lbs/year, a reduction of 50 lbs./year which is the baseline mass.

The Brendon Clarke/Engine Creek streambank stabilization projects were constructed in 2022 and generate approximately 124 lbs/year of phosphorus credits. The 2024 annual inspection showed the streambanks were in good condition. Those credits are sufficient for the estimated existing flow and treatment performance. No further actions will be necessary to maintain compliance as the WWTP flows are not anticipated to increase.

The WWTP is located on a hill and the discharge is piped to the Pine River.

2 PURPOSE OF WATER QUALITY TRADING PLAN

The purpose of this 2025 Status and Update to the Water Quality Trading Plan is to describe how the Hub Rock WWTP utilizes WQT to comply with the phosphorus limits of modified WPDES permit WI-0049689-05-2, which expires on June 30, 2025. The WPDES permit was modified in 2024 following completion of the streambank projects to include full WQT requirements to meet final phosphorus compliance. The original Notice of Intent (NOI) was filed in November 2019 and is included in **Appendix 2-1**. The Management Practice Registrations for the constructed WQT projects are in **Appendix 15-1**.

The outfall discharges to the Pine River, which is located in the Upper Pine River Watershed in the Lower Wisconsin River Basin. Pine River flows to the southeast and discharges to the Wisconsin River approximately 18 miles south of the Hub Rock WWTP outfall location. The outfall location is located near the intersection of CTH DD and STH 80 south of the Town of Rockbridge. See **Appendix 2-2** for the Hub Rock WWTP Outfall Location Map.

The WQT project location is on the Pine River just south of the Village of Yuba approximately 7 miles northwest of the WWTP discharge along the meandering path of the Pine River. The Brendon Clarke / Engine Creek streambank restoration project is on the southeast side of Yuba, upstream of the WWTP discharge location, see **Appendix 2-3** for a comparison map of the two locations.

3 DESCRIPTION OF EXISTING LAND USES IN VICINITY OF WQT PROJECTS

3.1 Pine River in Yuba

Pine River is 22.35-mile long and 17 miles of the river is Class II trout stream. The trout stream is largely within Richland County though the Pine River originates in Vernon County. Per the WI DNR website, "This watershed is ranked High for runoff impacts on streams, Low for runoff impacts on lakes and High for runoff impacts on groundwater and therefore has an overall rank of High." Pine River is considered a "Coldwater, Cool-Cold Headwater, Cool-Cold Mainstream, Macroinvertebrate, No Classification, Large River, Warm Mainstream, COOL-Warm Headwater, COOL-Warm Mainstream" stream under the state's Natural Community Determinations.

The soil type at the project site is identified as Orion Silt Loam, see **Appendix 3-1** for the Soils Map.

Per the DNR website under Watershed Characteristics, "Pine River is located in the Willow Creek watershed which is 153.08 mi². Land use in the watershed is primarily forest (52.10%), grassland (22.50%) and a mix of agricultural (16.80%) and other uses (8.60%). This watershed has 339.41 stream miles, 64.58 lake acres and 3,605.43 wetland acres." The Pine River Watershed Characteristics are shown in Figure 1. An aerial map of the project locations is shown in Figure 2.

PINE RIVER WATERSHED CHARACTERISITCS

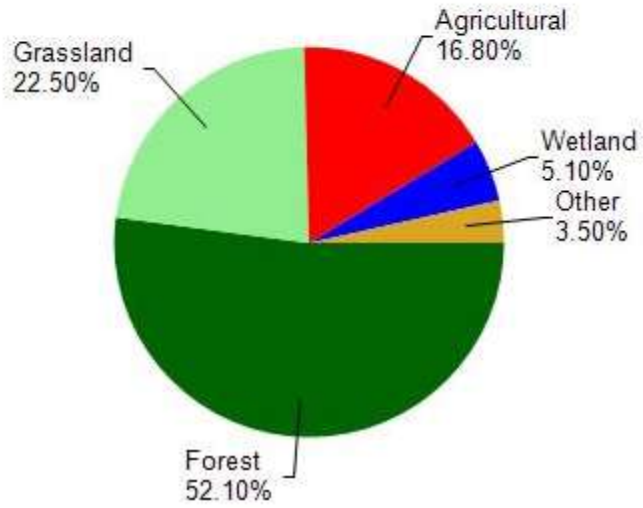


Figure 1: Pine River Watershed Characteristics

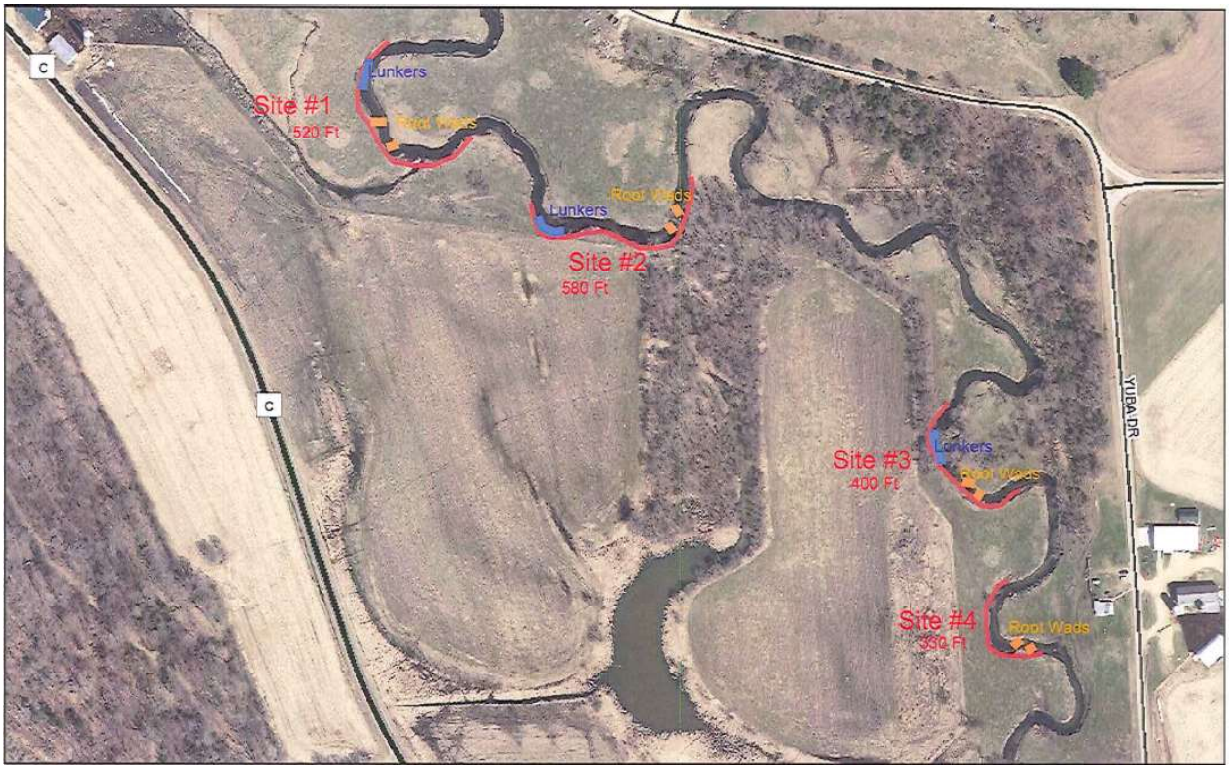


Figure 2: Pine River WQT Project Locations

4 MANAGEMENT PRACTICES USED TO GENERATE CREDITS

Streambank Stabilization. The 1,800-foot streambank stabilization site for the Engine Creek Pine River project was chosen as a good site to generate WQT credits through a streambank stabilization, as this section of streambank is where very high-velocity waters rapidly erode the banks during flood events. An annual recession rate of 0.6 feet per year was determined, but over the last few years this site has lost many feet of streambank during flood events. The basis for determining the recession rate is to use the definitions defined by NRCS, see **Appendix 4-1** for the NRCS recession rate reference material used. This site also has high levels of nonpoint source pollutants entering from farm practices. Working with the farmer on this project to install conservation practices would greatly reduce those pollutants. It was determined that riprapping the stream banks to permanently armor the banks was the best solution to the Engine Creek streambank erosion problem.

The projects were designed and constructed by the Richland County Department of Land Management. Neither the Hub Rock Sanitary District nor Davy Engineering have as-built plans. The County staff involved in the design and construction of the project are currently employed by the County. The assumption is that construction followed the locations and methods described in the WQT Plan.

Table 4.1 below shows the design quantities for the Engine Creek / Brendon Clarke project. A copy of the County's design plans is shown in **Appendix 4-2**.

TABLE 4.1 ENGINE CREEK CONSTRUCTION QUANTITES

Description	Actual Quantity	Units
Rock Riprap D50-6"	1,866	CF
Sloping & Shaping	1,830	CF
Lunkers	6	EACH
Root Wads	8	EACH
Boulders	10	EACH
Seeding & Mulching	2	Ac

4.1 Duration of Management Practice

The duration of the streambank restoration management practice can be 100+ years if maintained properly. The construction required shaping of the streambank and placement of properly sized rip rap. The landowner entered into a contract with the County and the Hub Rock Sanitary District, which requires the landowner to maintain the streambank protection for a minimum of 20-years. The County is involved with annual inspections. The operation and maintenance are discussed in more detail in Section 13 of this plan.

4.2 Description of Best Management Practices Used Streambank Stabilization.

The streambank stabilization was designed by the County and follow the NRCS 580 Code. Riprap armor was implemented on the bends where higher tractive forces are required to maintain vegetation. The County designed the riprap to follow NRCS standards by including geotextile fabric under the riprap and properly sized stones. The BMP was designed such that the riprap should not migrate due to the flow of the stream.

5 AMOUNT OF CREDIT BEING GENERATED

This Water Quality Trading Plan is to trade for the pollutant of phosphorus. Throughout the year, sediment is transported in the stream from erosion of the streambanks. The sediment contains phosphorus, which causes poor water quality. NRCS has developed a spreadsheet that estimates the annual runoff of erosion based upon whether the impaired bank is a streambank, gully, or ephemeral gully. The estimated annual sediment volume is converted to an amount of phosphorus based upon the percentage of leachable phosphorus in the soil, as determined by soil sample testing results. After installing BMPs, such as revegetation of a streambank or an armored riprap streambank, the sediment transport from the erosion has been theoretically eliminated. The estimated amount of annual phosphorus due to erosion can be calculated to determine the amount of credit generated by the BMP.

Utilizing the applicable Trade Ratios as previously determined, calculations show that an estimated 131 pounds of phosphorus per year are being prevented from entering Pine River. See **Appendix 5-1** for the Phosphorus Loss Calculation. Table 5.1 summarizes the phosphorus credits generated for each site. Additional credit can be generated with a "Habitat Adjustment" on the streambank restoration projects as further described in Section 6.5.

TABLE 5.1: PHOSPHORUS CREDIT GENERATION

Project Description	BMP Type	Trade Ratio TR	P lbs/year	TR x P lbs/year
Engine Creek - Section 1	Streambank Stabilization	2.105	74	35.2
Engine Creek - Section 2	Streambank Stabilization	2.105	83	39.4
Engine Creek - Section 3	Streambank Stabilization	2.105	57	27.1
Engine Creek - Section 4	Streambank Stabilization	2.105	47	22.3

Total	**261**	**124**

The trade ratio will be applied in the Section 6.

6 DESCRIPTION OF APPLICABLE TRADE RATIO PER AGREEMENT/MANAGEMENT PRACTICE

The estimated ratio is derived from the following formula:

Trade Ratio = Delivery + Downstream + Equivalency + Uncertainty – Habitat Adjustment:1

6.1 Delivery Factor

The delivery factor is determined by the following equation:

Delivery Factor = (1 / SPARROW delivery fraction) – 1

The WDNR implemented the Sparrow trade factors onto the Surface Data Viewer on their website. Upon review of the website the delivery factor was shown to be a 1:1 ratio (a zero in the trade ratio equation).

Pine River. The credit user and credit generator are not in the same HUC 12 basin, though the credit generator is upstream of the credit user. The distance along the Pine River is approximately 7.50 miles from the credit generator project site (Clarke / Engine Creek) to the credit user discharge point at the Pine River. This is measured using DNR's Surface Water Data Viewer. Per the *Guidance for Implementing Water Quality Trading in WPDES Permits*, the Delivery Factor section states "The delivery factor accounts for the distance between trading partners and the impact that this distance has on the fate and transport of the traded pollutant in surface waters". The delivery factor is often zero when in the same HUC 12, see **Appendix 6-1** for the HUC 12 Watershed Basin Map (070700051105). The site for the Pine River project is not within the same HUC 12. The discharge point of the user is downstream of the credit generator as well. The following shows the delivery factor calculation with the delivery fraction values identified from SWDV:

User Delivery Fraction = 0.95
Generator Delivery Fraction = 0.86

$$\text{Delivery Fraction} = 1 - \frac{\text{User Delivery Fraction} - \text{Generator Delivery Fraction}}{\text{User Delivery Fraction}}$$

$$\text{Delivery Fraction} = 1 - \frac{0.95 - 0.86}{0.95} = 0.905$$

$$\text{Delivery Factor} = \left(\frac{1}{\text{Delivery Fraction}}\right) - 1$$

$$\text{Delivery Factor} = \left(\frac{1}{0.905}\right) - 1 = 0105$$

The Delivery Factor is **0.105**.

6.2 Downstream Factor

The DNR WQT Guidance (2013) states, "The downstream factor is used to help prevent a violation of water quality criteria in the receiving water between the credit user and generator."

(pg. 16). The downstream factor is only measured when the credit generator is downstream of the credit user. If the credit generator is upstream of the user, then the downstream factor is zero.

The credit generator is upstream of the credit user (WWTP); therefore, the downstream factor is dropped from the trade equation.

The Pine River Downstream Factor is zero (0).

6.3 Equivalency Factor

The WQT for the credit user is based upon total phosphorus (TP). According to the *Guidance for Implementing Water Quality Trading in WPDES Permits* (2013), when accounting for the equivalency factor for TP, the equivalency factor is zero. This is because the differences between the soluble and sediment-bound P have been accounted for in the delivery factor (pg. 17).

The Equivalency Factor is zero (0).

6.4 Uncertainty Factor

The uncertainty factor is used to compensate for the uncertainty of the effectiveness of the WQT project/plan. The uncertainty, especially with non-point discharges, is because many factors which are not controllable determine the effectiveness of the implementation, such as climate, potential inaccuracies from field testing or the reliability of the management practice to perform under various hydrological conditions. The WDNR has established a table to help assign values to the uncertainty variable of the equation. The table is on pages 20-23 in the *Guidance for Implementing Water Quality Trading in WPDES Permits.*

6.4.1 Bank Stabilization

For bank stabilizations, WDNR has assigned a value of a two (2) with aquatic habitat restoration (this accounts for the subtraction of the habitat adjustment) and a three (3) without aquatic habitat restoration; therefore, this project has an uncertainty value of three (3). The habitat adjustment will be implemented in the following section.

The Uncertainty Factor is three (3).

6.5 Habitat Adjustment

The habitat adjustment factor is the same as the habitat restoration discussed in section 6.4 above. To be eligible to claim credit for habitat restoration, the surface water where the project work is taking place must be listed by WDNR as an impaired water body due to the pollutant which the credit user is attempting to mitigate.

Per the WDNR website, https://dnr.wi.gov/water/waterDetail.aspx?key=18493, the Pine River is considered an impaired system due to both unknown pollutants. The total phosphorus data exceeds the WisCALM listing criteria for the Fish and Aquatic Life use; however, the available biological data did not indicate impairment. Because the total phosphorus exceeds the WisCALM criteria, this stream would qualify for Aquatic Habitat Adjustment.

In order to obtain the habitat adjustment, habitat best management practices were implemented and established as part of the project. Per Table 4, pg. 21 of the *Guidance for Implementing Water Quality Trading in WPDES Permits*, the uncertainty factor for Pine River can be reduced from a three (3) to a two (2) with aquatic habitat restoration. Helping to restore aquatic restoration can come in many forms.

The following habitat structure alternatives are from the *NRCS Companion Document 580-15, EFH Notice 210-WI-122* (August 2011).

- **Random Boulder Placement.** This type of structure is placed within the streambed and will create micro habitat for several species of fish, but primarily it benefits trout. It will create mini scour holes, but care needs to be taken with the placement of the boulders, because if they are placed ineffectively then the currents can be deflected toward the streambanks causing erosion.
- **Cross-Channel Logs**. Logs and rock placed perpendicular to the stream flow create a pool area (scour holes) which provides habitat for all species of fish and can potentially provide for both snakes and turtles as well. This practice is best situated downstream of a riffle area and are best fit for slow moving areas within the stream. One of the cons of these practices is the cost to install. The rock will need to be hauled to the site and the layout needs to be precise; therefore, the installation can be labor intensive which drives up the cost.
- **Trout Lunker & Mini-Trout Lunker.** This is a built habitat, which is unique to trout. It is essentially a shelter on the side of the stream bank. These structures are best suited for corners but can be placed anywhere if there is enough stream velocity to prevent sedimentation build up within the structure. These structures need to be incorporated during the streambank stabilization work, as the habitat is incorporated into the bank.
- **Root Wads.** Root wads are a structure placed at the bank toe to provide additional microhabitat and cover for sever specials including fish, amphibians, and reptiles. Root wads provide toe support for bank revegetation and collect sediment and debris that will enhance the streambank structure over time. Root wads are comprised of approximately 10' long tree trunks (boles) buried into the streambank with treetops removed. Boles are placed perpendicular to the flow channel with root fans still attached and oriented parallel to the channel. Due to their size, root wads typically require the use of heavy equipment for collection, transport, and installation.

Habitat structures, including lunkers and root wads, were included in the Engine Creek/Brendon Clarke WQT project.

The Habitat Adjustment is one (1).

Table 6.1 below summarizes the calculated Trade Ratios for the Clarke WQT Project.

TABLE 6.1: WATER QUALITY TRADING FACTORS

	Project	Delivery Factor	Downstream Factor	Equivalency Factor	Uncertainty Factor	Habitat Adjustment	Trade Ratio
1	Engine Creek Section 1	0.105	0	0	3	-1	**2.105**
2	Engine Creek Section 2	0.105	0	0	3	-1	**2.105**
3	Engine Creek Section 3	0.105	0	0	3	-1	**2.105**
4	Engine Creek Section 4	0.105	0	0	3	-1	**2.105**

7 LOCATION WHERE CREDITS WILL BE GENERATED

Credits will be generated in a different HUC 12 than the Hub Rock WWTP HUC 12. The credits will be generated on the same body of water upstream. The Pine River will be used to generate credits in this plan.

Pine River. The Clarke project site is best described as both banks of the Pine River in Yuba, WI. The project has been broken into four sections. Site #1 was stabilized for approximately 520 feet along the stream and is located along Mill Street, approximately 800 feet west of the intersection with Dog Lane. Additional areas on the stream will also be restored are labeled as Sites #2, #3, and #4. Site #2 is immediately downstream of Site #1 and is approximately 580 feet. Sites #3 and #4 are further downstream and are approximately 400 feet and 350 feet in length, respectively. See the red lines along the map in Figure 3.

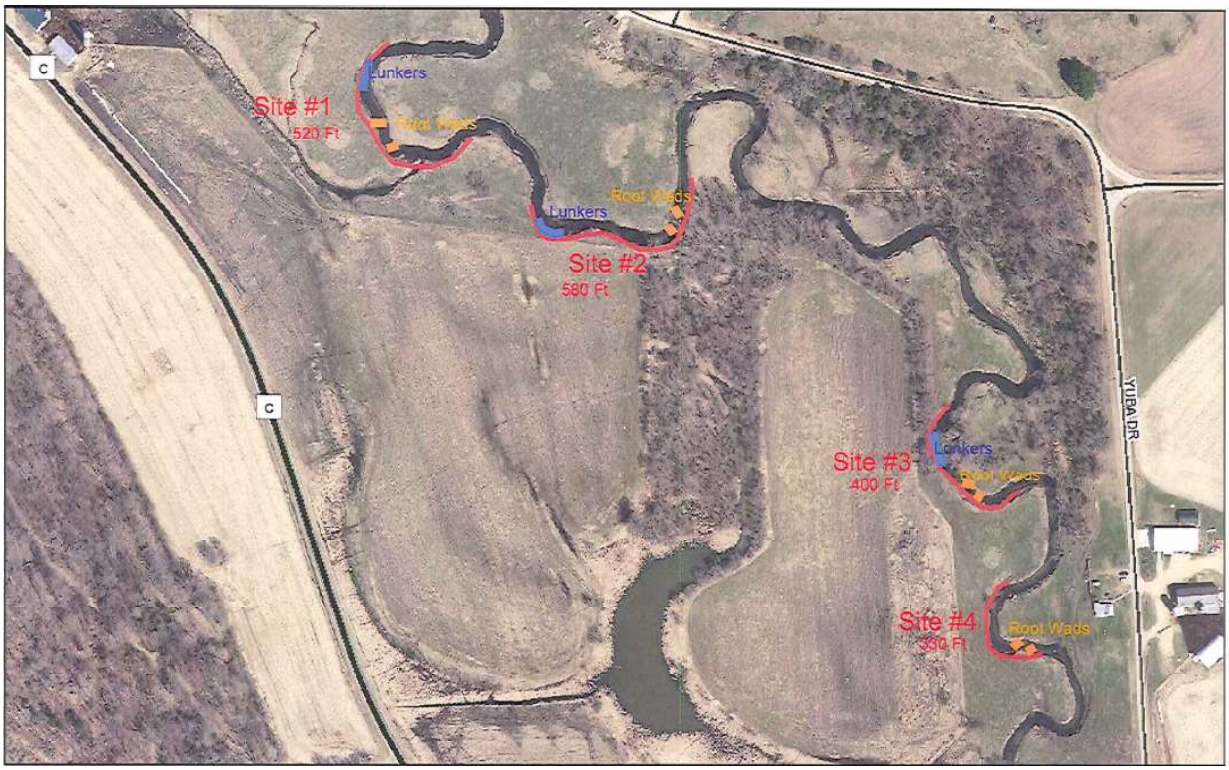


Figure 3: Engine Creek Streambank Stabilization Sites

8 TIMELINE FOR CREDITS AND AGREEMENTS

The credit generation occurred before the credit user claimed the credit, per the *Water Quality Trading How To Manual* (pg. 15). Construction occurred 2022; therefore, the available date for the credits was 2022.

Streambank Stabilization. While performing as designed, the project will continue to generate credit on an annual basis. Regular inspection and maintenance of the riprap is essential.

The WQT Agreement with Hub Rock, the County and the Clarke's is attached to this plan in **Appendix 8-1**. The Engine Creek / Brendon Clarke agreement expires July 12, 2041.

9 METHOD FOR QUANTIFYING CREDITS

Streambank Stabilization. Existing phosphorus loss for the streambank projects were produced using the NRCS Soil Loss Spreadsheet recommended by the DNR, which can be seen in **Appendix 5-1**. Richland County representatives collected data for the streambank project, including the linear feet and the average stream bank height in feet. A composite soil sample was collected for testing

for total soil phosphorus concentration (% P) (see **Appendix 9-1** for soil test lab report from the University of Wisconsin Soil Science Laboratory) to determine the phosphorus loss in pounds per year. Soil samples were collected on November 2, 2019 for the Engine Creek / Brendon Clarke project. Soil samples were gathered by taking a number of individual grab samples and combining them into one large composite soil sample for every 1,000 feet. The grab locations were documented with a GPS unit. The locations of the sample collections can be seen in **Appendix 9-2**. The average % P over the samples gathered was 0.04%. Thus, it was deemed that this project would withhold **261 pounds of phosphorus** from entering Pine River each year that the riprap is retained. The four (4) sections of the creek were calculated separately and added together to determine the total pounds of phosphorus reduction.

Note that it is not practical to obtain new soil samples that are representative as the stream banks that are the source of soil loss are now covered and stable.

10 TRACKING PROCEDURES

Richland County tracked the project with photography before, during, and after riprap installation. The landowner inspects the bank stabilization site after flood events and annually. The Richland County Department of Land Management annually inspects the site to document that the banks are stable, and phosphorus was prevented from entering the water each year. The Richland County Department of Land Management has reviewed the annual inspection reports as well to document that the banks are stable, and phosphorus was prevented from entering the water each year. See inspections in **Appendix 10-1.**

11 CONDITIONS UNDER WHICH THE MANAGEMENT PRACTICES MAY BE INSPECTED

The streambanks have been inspected at least once per year and immediately after flood events. The velocity of Pine River increases greatly during flood events, and these portions of the streambank had been eroding at alarming rates during heavy rains. The landowners have worked with the Richland County Department of Land Management to ensure that these sites are properly maintained and will involve the County for technical assistance if there are any concerns regarding the projects.

12 REPORTING REQUIREMENTS SHOULD THE MANAGEMENT PRACTICE FAIL

If the riprap were to fail at these sites, the landowners are expected to immediately report the situation to the Richland County Department of Land Management to develop a remediation action plan.

13 OPERATION AND MAINTENANCE PLAN FOR EACH MANAGEMENT PRACTICE

Maintenance of the riprap will be the responsibility of the landowner with technical assistance from the Richland County Department of Land Management. Maintenance consists of the following:

Inspect riprap annually and after heavy storms for any erosion or displacement of rocks. Repairs should be done immediately.

1. Debris will be removed to prevent clogging or rerouting of water in the channel. Channel clearing to remove stumps, fallen trees, debris, and sediment bars shall only be performed when they are causing or could cause unacceptable bank erosion, flow restriction, or damage to structures. Habitat forming elements that provide cover, food, pools, and water turbulence shall be retained or replaced to the extent possible.
2. Check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and re-vegetated as soon as possible.

3. Periodically cut grass to control weeds and invading brush.
4. Restore or add riprap as needed.
5. Eliminate burrowing animals and repair damage.
6. Ensure rotational grazing plan is implemented and followed to deter livestock from streambanks.
7. If fencing is installed, ensure that fencing is in place and undamaged to restrict livestock from entering stabilized streambank areas. Repair damaged fencing if applicable.

14 LOCATION OF CREDIT GENERATOR IN PROXIMITY TO RECEIVING WATER AND CREDIT USER

Pine River. The Engine Creek WQT project is located over seven miles northwest from the Hub Rock WWTP Discharge. See **Appendix 14-1** for a Location Map.

15 PRACTICE REGISTRATION DOCUMENTS, IF AVAILABLE

The project is complete. Registration documents were completed by the County and submitted to the DNR. The WQT Management Practice Registrations are included in **Appendix 15-1**.

16 HISTORY OF PROJECT SITE(S)

Pine River. This project site has been privately owned by the Brendon Clarke family for decades. Based upon aerial imagery through Google Earth, the project site appears to have been historically pastureland. The streambanks of Pine River had seen an exponential increase of erosion problems due to an increasing number of flood events and heavy rainfalls, which is evident in the before construction photographs seen in **Appendix A**.

17 REQUIRED PHOSPHORUS CREDITS

In 2020, the Average Flow from the WWTP was 10,000 GPD. From 2021-2024, the WWTP discharge averaged approximately 8,611 GPD which is more representative of the actual flow. Over that same period, the WWTP averaged an effluent phosphorus concentration of 2.0 mg/L. The phosphorus mass loadings and the required WQT are summarized in the following table:

TABLE 17.1: REQUIRED PHOSPHORUS MASS OFFSET

Description	Units	Quantity
Hub Rock Annual Average Daily Existing Flow	GPD	8,611
Estimated Effluent Phosphorus Concentration	mg/L	2.0
WQT Target Concentration	mg/L	0.075
Annual Mass of Phosphorus	lbs/year	52
WQT Target Mass of Phosphorus	lbs/year	2
Baseline Mass (Existing - Target)	**lbs/year**	**50**

The total credits generated from each site are summarized in the following table:

TABLE 17.2: REQUIRED PHOSPHORUS MASS OFFSET

Project Description	BMP Type	Trade Ratio TR	P lbs/year	TR x P lbs/year
Engine Creek - Section 1	Streambank Stabilization	2.105	74	35.2

Engine Creek - Section 2	Streambank Stabilization	2.105	83	39.4
Engine Creek - Section 3	Streambank Stabilization	2.105	57	27.1
Engine Creek - Section 4	Streambank Stabilization	2.105	47	22.3
Total			**261**	**124**

See Table 17.3 below for the WQT phosphorus mass credits generated and implemented in 2024.

TABLE 17.3: 2024 MASS CREDITS GENERATED & USED

Month (2024)	Credits Used	Credits Available	Remaining
	pounds per month		
Jan-24	5	131	*126*
Feb-24	4	126	*122*
Mar-24	4	122	*118*
Apr-24	4	118	*114*
May-24	9	114	*104*
Jun-24	1	104	*103*
Jul-24	4	103	*99*
Aug-24	6	99	*94*
Sep-24	5	131	*126*
Oct-24	12	126	*114*
Nov-24	4	114	*110*
Dec-24	0	110	*110*
TOTAL	**58**	**110**	***110***

17.1 Summary

Hub Rock Sanitary District #1 cannot meet the new phosphorus limits with the technology currently employed at the WWTP. WQT is the most economical solution to meeting compliance with the WPDES phosphorus limits. The projects constructed in 2022 will provide sufficient credits for Hub Rock to meet the final phosphorus limit of 0.075 mg/L. The WWTP is not anticipated to change operationally and the service area is anticipated to remain the same with no additional flow being contributed.

18 COMPLIANCE WITH WATER QUALITY TRADING CHECKLIST

This Water Quality Trading Plan was produced in accordance with the Wisconsin Department of Natural Resources, *Guidance for Implementing Water Quality Trading in WPDES Permits* based upon Table 8 (2013, p. 37). Table 8 contains several columns of checklist items, but this plan must adhere to column (e), which states "credits are obtained from a construction project or implementation of a plan undertaken by the credit user for sources other than that covered by the credit user's WPDES permit." The Hub Rock Sanitary District #1 has installed streambank stabilization at several locations to generate credits for the WWTP.

Below is a list of the requirements to be included in a WQT plan per column (e) of Table 8. This list includes a brief statement of where to find the information in this plan.

- Permittee's / credit user's WPDES Permit number. The Hub Rock Sanitary District #1 WWTP WPDES permit number is WI-0049689-05-2 and is referenced in Section 2.
- Permittee's / credit user's contact information. The contact information is included in Section 19.
- Pollutants for which credits will be generated. Credits will be generated for total phosphorus, which is discussed in Section 5.
- Amounts of credits available from each location / management practice / local governmental unit when acting as a broker. The amount of credit available is discussed in Section 17.
- Certification that the content of the trading application is accurate and correct. The certification is included in Section 19.
- Signature and date of the permittee's / credit user's authorized representative. The signature of the authorized representative is included in Section 19.
- Location where credits will be generated (i.e. map of site where management practice will be applied including major drainage ways from the project). The location where credits are generated are discussed in Section 7 and 14. A map is located in both Section 7 and **Appendix 14-1**.
- Identification of method(s) including management practice(s) that will be used to generate credits at each location. Identifications of methods are discussed in Section 9.
- Duration of agreement (i.e. the design life of the management practice) with each credit generator. The duration of the agreement is discussed in Section 4.1.
- Schedule for installation / construction of each management practice. The schedule is discussed in Section 8.
- Operation and maintenance plan for each management practice used to generate credits. The operation and maintenance plan are discussed in Section 13.
- Date when credits become available for each management practice (i.e. when practice is established and effective). The credits became effective in 2022 but the permit was modified in September 2024, and this date is referenced in Section 8.
- Models used to derive the amount of credits. The model used to derive the amount of credits is a scientific equation for phosphorus loss and is the approved spreadsheet from WDNR. This is discussed in Section 9.
- The applicable trade ratio for each management practice including supporting technical basis (see Table 4 on p. 20 of the WQT Guidance). The applicable trade ratio is 2:1 and the technical basis and calculation of the trade ratio is discussed in Section 6.

19 CERTIFICATION OF WATER QUALITY TRADING PLAN

This plan was prepared by Davy Engineering Co., Inc. This Water Quality Trading Plan is complete, accurate and correct, to the best of our knowledge and belief.

Prepared By: Davy Engineering Co., Inc.

By: _____

Carson R. Hackett, P.E.
Project Engineer
Davy Engineering Co.
115 6th Street South
La Crosse, WI 54601
Telephone: 608-782-3130

Owner: Hub Rock Sanitary District #1

By: Dean Berry

Dean Berry
President
Hub Rock Sanitary District
25675 Rockbridge Cemetery Lane
Richland Center, WI 53581
Telephone: 608-647-4950

References

United States Department of Agriculture. (August 2011). *Stream Habitat Development, Companion Document 580-15.* Natural Resources Conservation Services. doi:EFH Notice 210-WI-122

Wisconsin Department of Natural Resources. (2013). *A Water Quality Trading How To Manual.* doi:Guidance Number: 3400-2013-03

Wisconsin Department of Natural Resources. (2013). *Guidance for Implementing Water Quality Trading in WPDES Permits.* doi:Guidance Number: 3800-2013-04

APPENDIX A

PHOTOGRAPHS

APPENDIX 2-1

HUB ROCK NOI

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
Hub Rock Sanitary District #1	WI- 0049689-04-0	

Facility Address	City	State	ZIP Code
CTH DD	Rockbridge	WI	53581

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Jolene Coy	25475 Schoonover Street	Richland Center	WI	53581

Project Name: Hub Rock Water Quality Trade

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Pine River	Phosphorus	070700051105, 070700051101

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: 070700051101
- ○ 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: Richland County
- ○ 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:

Streambank Stabilization
Land cover conversion (cropland to prairie grass)

Method for quantifying credits generated:
- ☐ Monitoring
- ☒ Modeling, Names: streambank P calcs., Snapplus
- ☐ Other: _____

Projected date credits will be available: 11/30/2020

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
Brice A. Nelson	11/25/19

Authorized Representative Signature

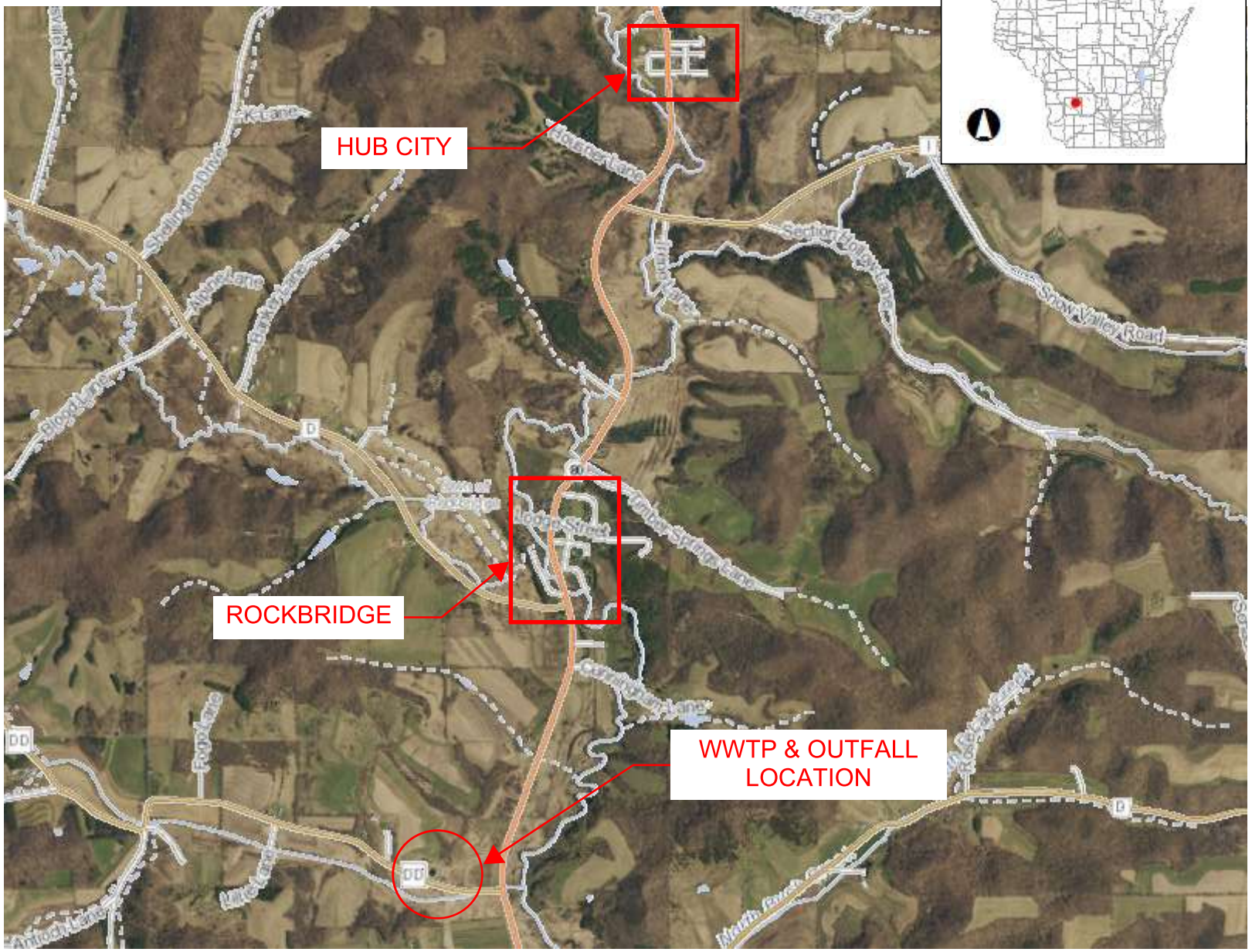
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete.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

APPENDIX 2-2

WWTP DISCHARGE LOCATION

Hub Rock WWTP Outfall Location



Legend

- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water
- Index to EN_Image_Basemap_Leaf_Off

Notes

Appendix 2-2

1.0 0 0.50 1.0 Miles

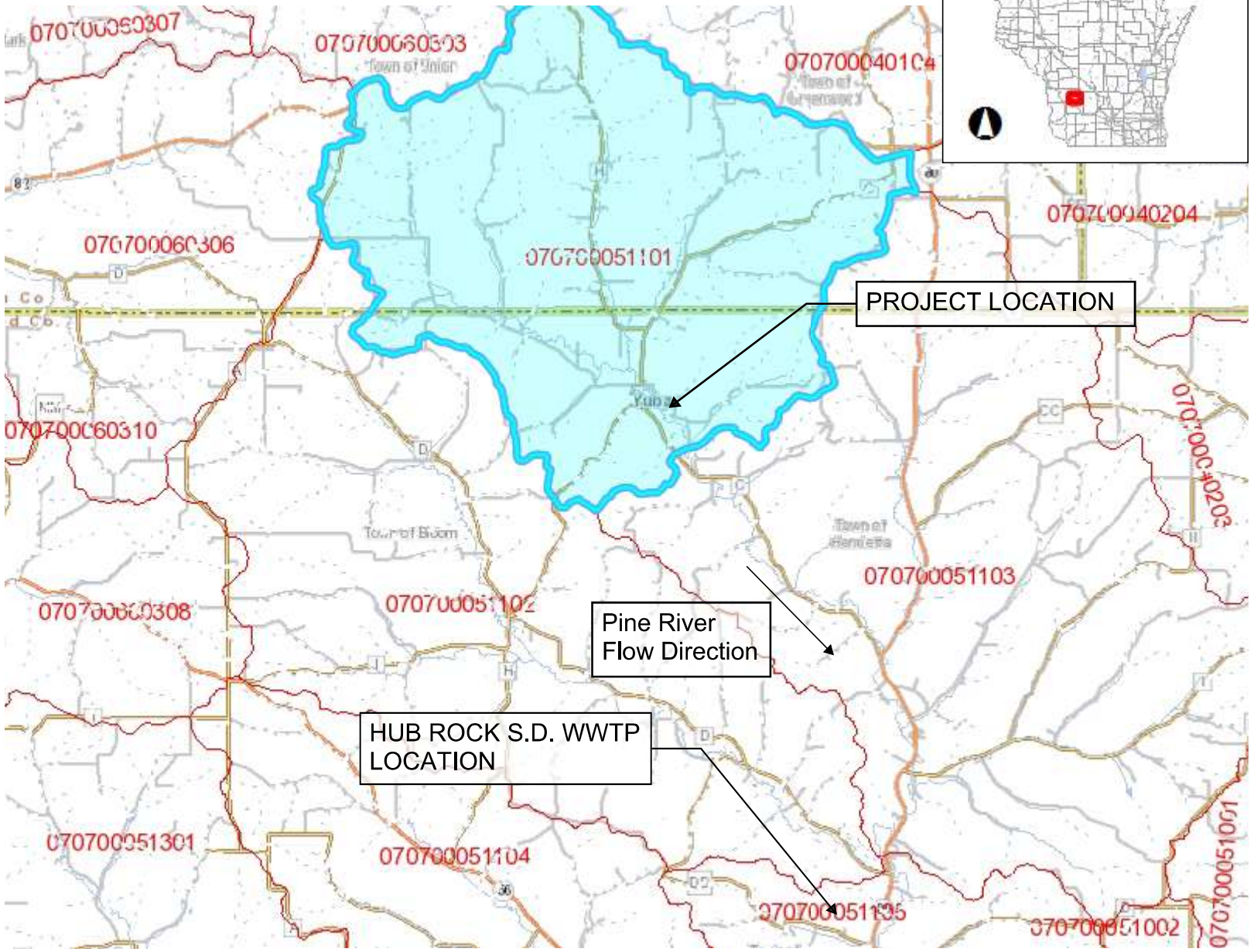
NAD_1983_HARN_Wisconsin_TM

1: 31,680

APPENDIX 2-3

LOCATION MAP – WWTP DISCHARGE AND PROJECT

Hub Rock HUC 12 Location Map



Legend

- 12-digit HUCs (Subwatersheds)
- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water

4.0 0 2.00 4.0 Miles

NAD_1983_HARN_Wisconsin_TM

1: 126,720

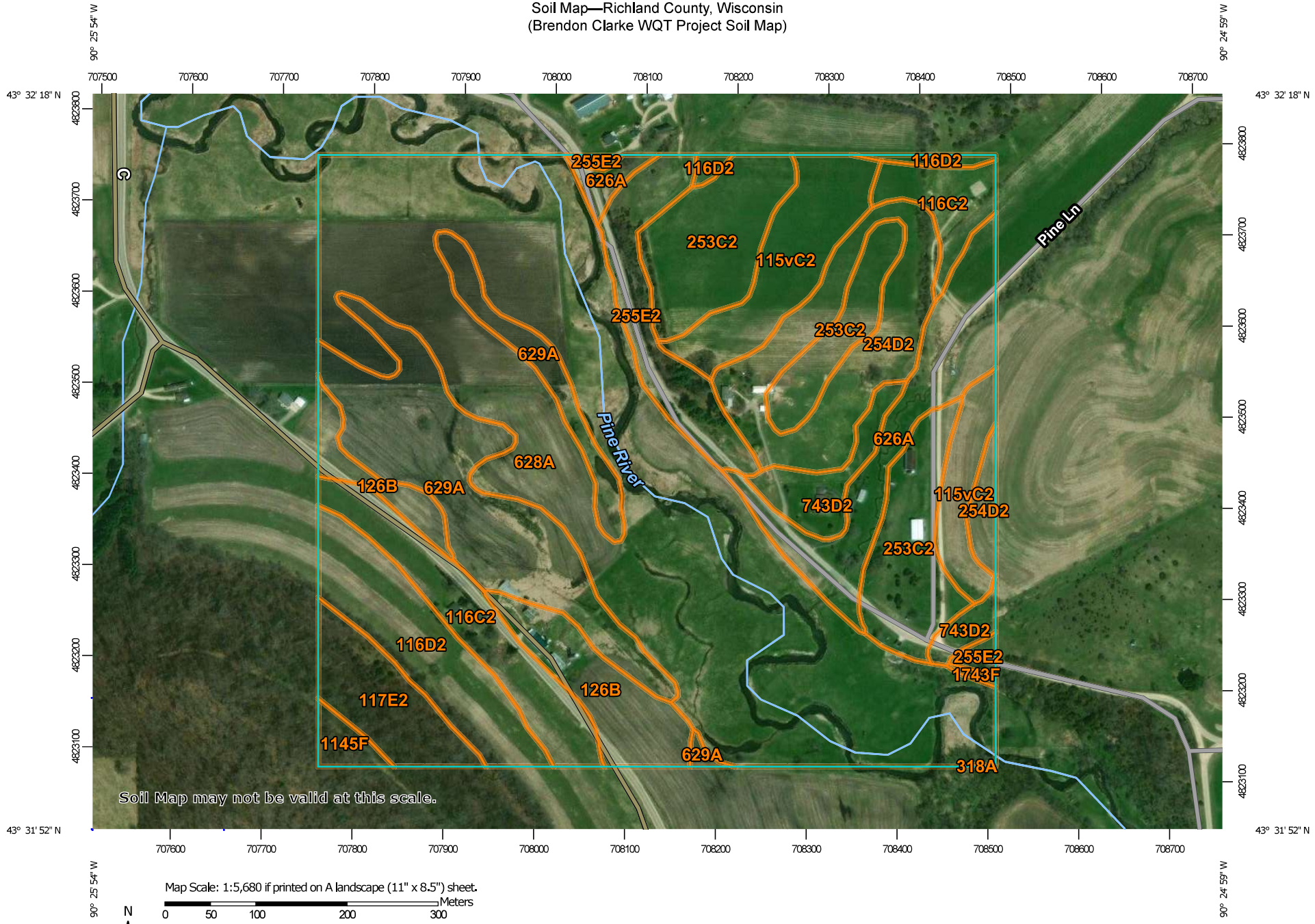
Notes

Appendix 2-3

APPENDIX 3-1

SOIL MAP

Soil Map—Richland County, Wisconsin
(Brendon Clarke WQT Project Soil Map)



Map Scale: 1:5,680 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Appendix 3-1

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 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Richland County, Wisconsin
Survey Area Data: Version 15, Sep 14, 2019

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

Date(s) aerial images were photographed: May 5, 2014—May 5, 2016

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
115vC2	Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	7.3	5.9%
116C2	Churchtown silt loam, 6 to 12 percent slopes, moderately eroded	7.4	6.0%
116D2	Churchtown silt loam, 12 to 20 percent slopes, moderately eroded	6.6	5.3%
117E2	Brownchurch sandy loam, 20 to 30 percent slopes, moderately eroded	3.8	3.1%
126B	Barremills silt loam, 1 to 6 percent slopes	5.5	4.5%
253C2	Greenridge silt loam, 4 to 12 percent slopes, moderately eroded	12.6	10.2%
254D2	Norden silt loam, 12 to 20 percent slopes, moderately eroded	8.3	6.7%
255E2	Urne fine sandy loam, 20 to 30 percent slopes, moderately eroded	5.1	4.1%
318A	Bearpen silt loam, 0 to 3 percent slopes, rarely flooded	0.0	0.0%
626A	Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded	7.1	5.7%
628A	Orion silt loam, 0 to 3 percent slopes, occasionally flooded	43.4	34.9%
629A	Ettrick silt loam, 0 to 2 percent slopes, frequently flooded	13.2	10.6%
743D2	Council fine sandy loam, 12 to 20 percent slopes, moderately eroded	2.9	2.3%
1145F	Gaphill-Rockbluff complex, 30 to 60 percent slopes	0.8	0.7%
1743F	Council-Elevasil-Norden complex, 30 to 60 percent slopes	0.1	0.1%
Totals for Area of Interest		**124.2**	**100.0%**

APPENDIX 4-1

NRCS RECESSION RATES

RAP-M

Rapid Assessment, Point Method

&

BATHMASTER

Bathymetric Depth Mapping

Erosion and Sediment
Inventory Procedures
Illinois
August 2002

NRCS Natural Resources Conservation Service

William J. Gradle, State Conservationist

Lateral Recession Rates

Streambank Erosion

Lateral Recession Rate (ft/yr)	Ave. (ft/yr)	Category	Description
0.01 - 0.05	0.03	Slight	Some bare bank but active erosion not readily apparent. No vegetative overhang. No exposed tree roots. Bank height minimal.
0.06 - 0.2	0.13	Moderate	Bank is predominantly bare with some vegetative overhang. Some exposed tree roots. No slumping evident.
0.3 - 0.5	0.40	Severe	Bank is bare with very noticeable vegetative overhang. Many tree roots exposed and some fallen trees. Slumping or rotational slips are present. Some changes in cultural features, such as missing fence posts and realignment of roads.
0.5 - 2.0	1.5	Very Severe	Bank is bare and vertical or nearly vertical. Soil material has accumulated at base of slope or in water. Many fallen trees and/or extensive vegetative overhang. Cultural features exposed or removed or extensively alterered. Numerous slumps or rotational slips present. Generally silty or sandy bank material, NOT glacial till or exposed shale bedrock.
2.0 - 5.0	3.5	Extremely Severe	Bank is bare and vertical. Soil material has accumulated at base of slope and oftentimes still contains living grass or other vegetative material. Extensive cracking of the earth parallel to the exposed face above the bank. Generally evidence of "block-size" material that has either recently fallen in or is about to fall in. Can be "pillars" of soil materials that have already been loosened by stream and indicate imminent failure into the stream. Trees have been undercut and lie in stream, often with root balls intact. Silty or sandy bank material, NOT glacial till or exposed shale bedrock. (These rates should be verified with several observations or with actual streambank monitoring.)

APPENDIX 4-2

RICHLAND COUNTY DESIGN PLANS

USDA United States Department of Agriculture
Natural Resources Conservation Service

WISCONSIN STANDARD
DRAWING NO. WI-001C 03/16

CONSTRUCTION PLAN

PRACTICE(S) 580 - Streambank Protection

LANDOWNER Brendon Clarke

ADDRESS 11678 Yuba Drive, Hillsboro, WI 54634

LANDOWNER PHONE NO. 608-462-7333 COUNTY Richland

TOWNSHIP Henrietta T 12 N, R 1 E/W, Sec. 7

FIELD OFFICE Richland County LCD TELEPHONE NO. 608-647-2100

DIGGERS HOTLINE

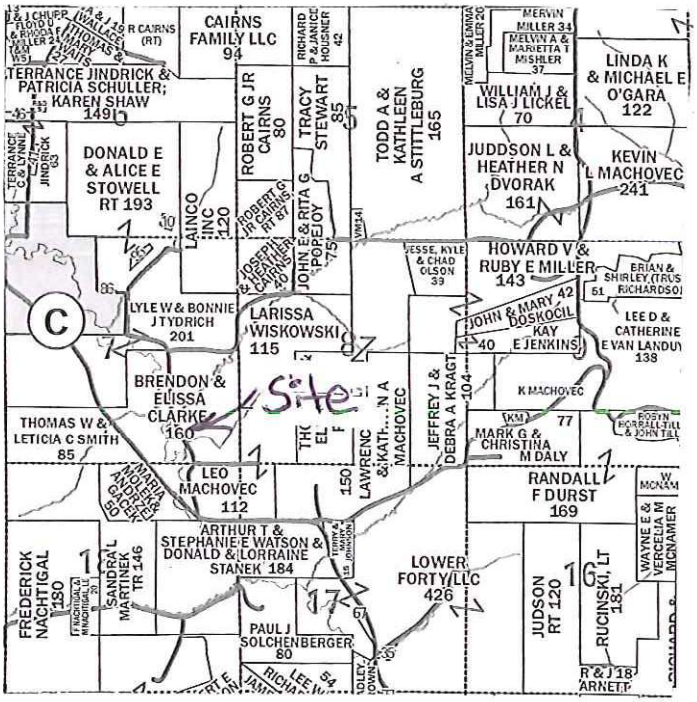
Call 3 Work Days
Before You Dig!

Nationwide
811

Toll Free
1-800-242-8511

TDD
1-800-542-2289

Website
www.diggershotline.com



Not to Scale

LOCATION MAP

NOTICE TO LANDOWNERS AND EXCAVATORS

Any representation made by the USDA, Natural Resources Conservation Service, or the Richland County LCD, as to the approximate location or nonexistence of above or under ground hazards does not relieve the owner of the property or the excavator that is hired to complete construction, from notifying Diggers Hotline of the pending construction. You will be liable for damages resulting from construction activities.
Call Diggers Hotline! Ticket Number _____

CONSTRUCTION DRAWINGS AND SPECIFICATIONS ACCEPTANCE

I have reviewed and understand the construction plans and specifications and agree to complete the work accordingly. Failure to meet these plans and specifications may jeopardize any continued NRCS technical assistance or program cost sharing applied for. I understand that it is my responsibility to secure all necessary permits and licenses, and to complete the work in accordance with all local, state, and federal laws. Modification of these construction plans or specifications must be approved by the NRCS before installation. I assume all responsibility for negotiations and contract agreements with the construction contractors.

Landowner Signature: _____ Date: _____

Designed by: Ken Anderson Date: 4/12/2021

Checked by: Ken Anderson Date: 4-13-21

Approved by: _____ Date: _____

The installed practices comply with applicable NRCS technical standards and specifications. The "redlined" construction plans (as-built drawings) reflect changes made during construction.

Construction Approved by: _____ Date: _____

Job Approval Class _____

Sheet 1 of 11

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	SHEET NUMBER	WI. CONSTRUCTION SPEC. OR JOB SHEET NUMBER
6" D50 Rock	CuYds	1866	5,6	WCS - #9
Sloping & Shaping	LinFt	1830	4-6	WCS - #2
Lunkers	No	6	7	-
Root Wads	No	8	8	-
Boulders	No	10	8	-
Seeding & Mulching	Ac	2	11	-

Quantities are estimated to the neat lines and grades of in-place materials shown on the construction plan unless otherwise stated. Truck yardage, loose fill, shrinkage, etc., must be calculated and compensated for by the contractor preparing a bid or constructing the project.

USDA United States Department of Agriculture
Natural Resources Conservation Service

ESTIMATED QUANTITIES

CLIENT: Brendon Clarke
COUNTY: Richland

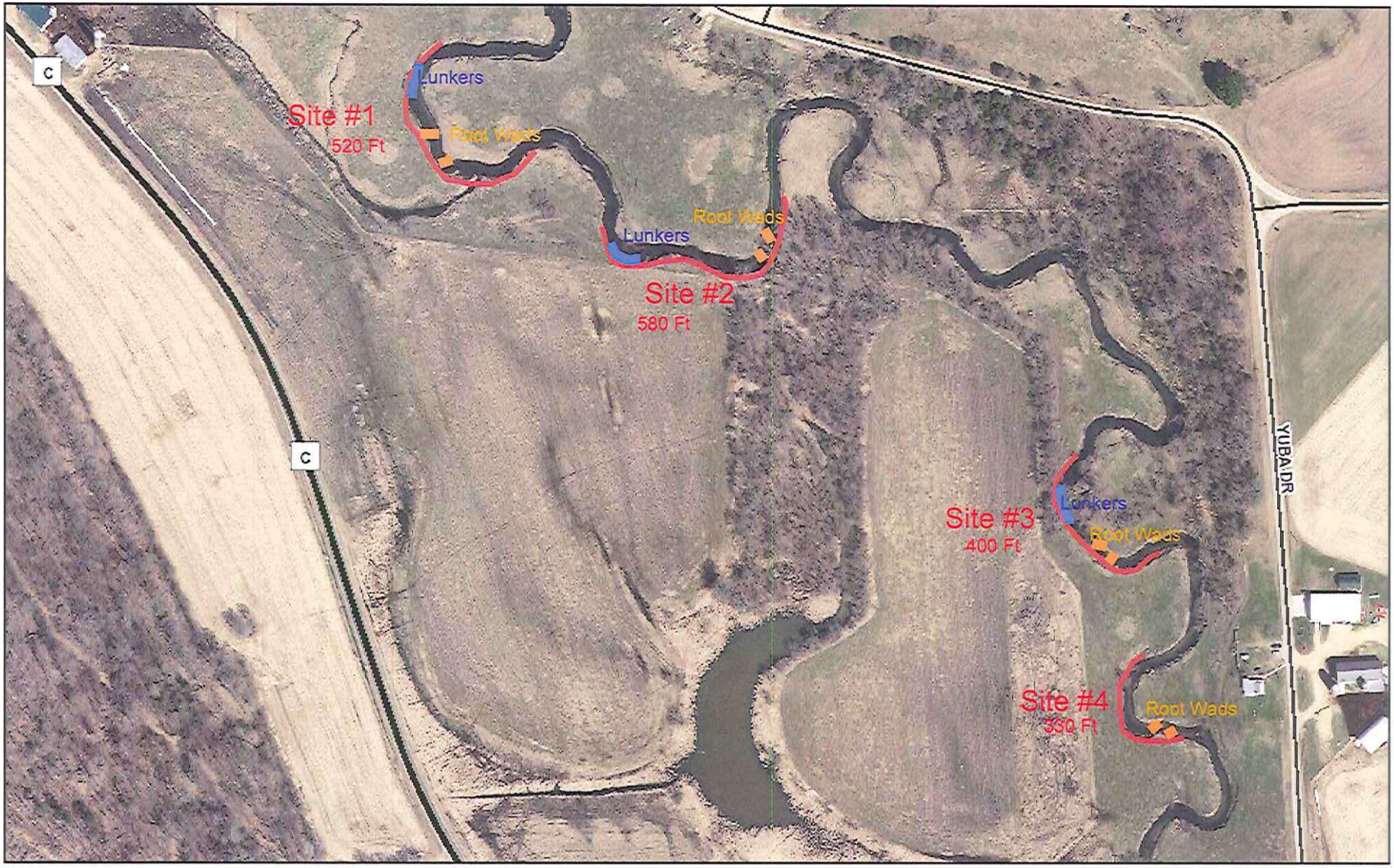
Date
Designed KAnderson
Drawn KAnderson
Checked
Approved

Drawing Name WI-005
Date 06/14
Sheet 2 of 11

Construction Notes

1. Construction is not to be started until all needed permits and approval have been received. Contact Jeff Schure, DNR Water Specialist, at (608) 275-3228 for a permit.
2. It is the Landowners responsibility to secure a Diggers Hotline (1-800-242-8511) ticket number. Diggers will notify the owners of any utility, such as buried cable or pipelines that may be present in the construction area, before the start of construction, so that they may locate and stake such utilities.
3. This project must be staked by a LCD technician prior to the start of any construction. Technician will be present to assist with the installation of trout structures.
4. Use only rock that is approved by NRCS and meets criteria in Wisconsin Construction Spec.9.
5. Place rock and distribute sizes to assure a tight fit. Do not dump rock over the bank.
6. Spread spoil out in a layer of less than 6" and seed down. Do not spread spoil in wetlands.
7. All disturbed areas and spoil must be seeded and mulched.

Brendon Clarke



Sheet 4 of 11

4/13/2021, 11:37:40 AM

Roads

City Streets

Town Roads

US Hwy

County Highway

State Highway

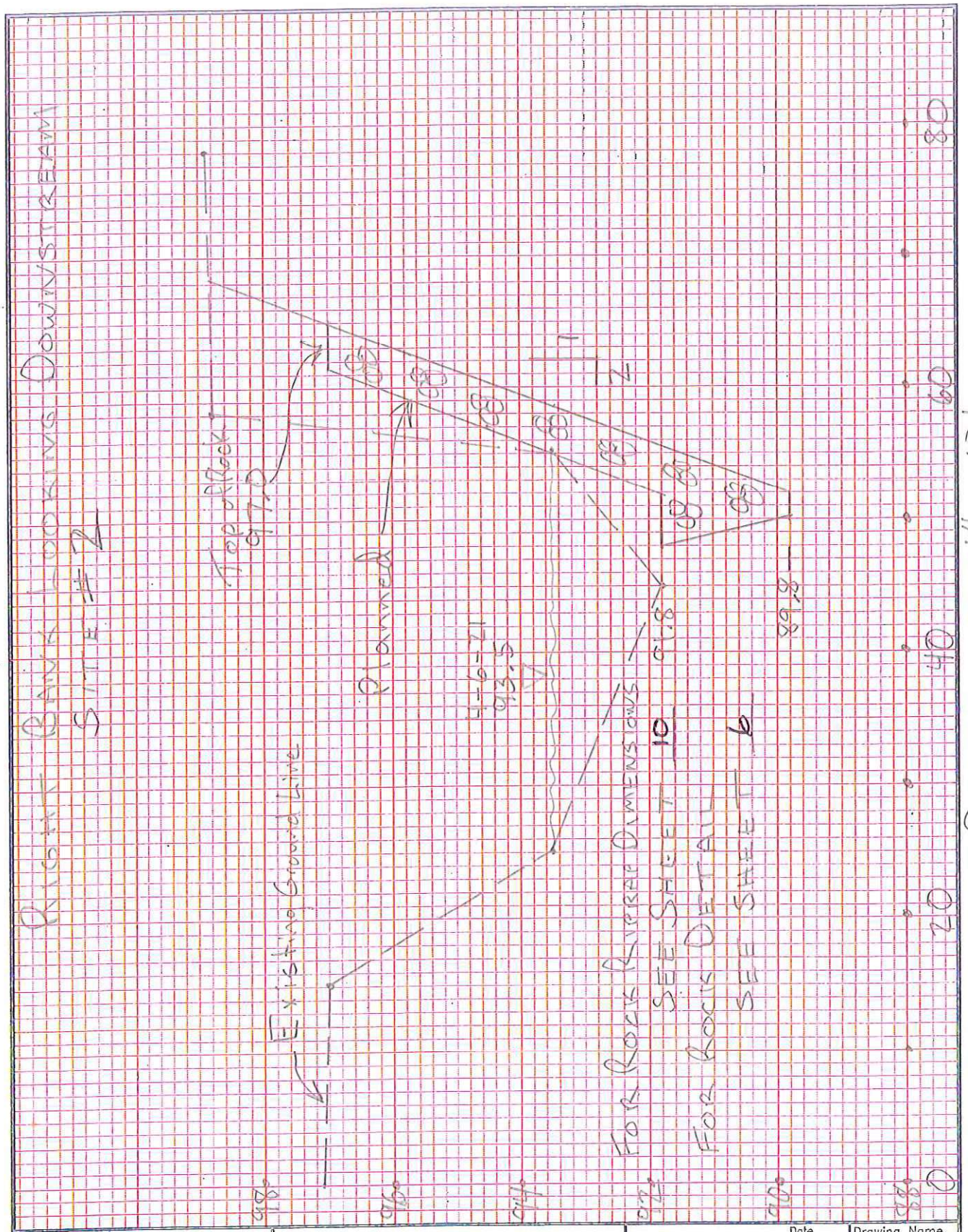
1:4,514

0 0.03 0.06 0.11 mi

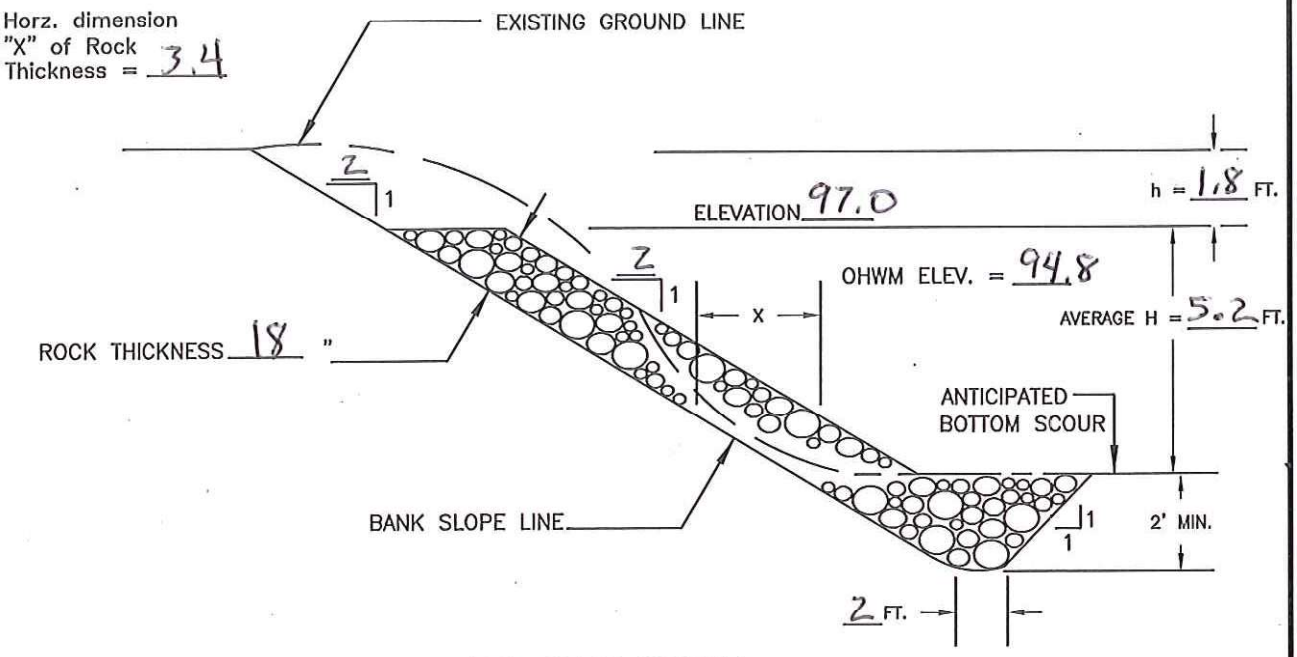
0 0.04 0.09 0.17 km

Richland County, WI

ArcGIS Web AppBuilder
Richland County, wi |



USDA United States Department of Agriculture Natural Resources Conservation Service	CROSS SECTION CLIENT: Brendon Clarke COUNTY: Richland	Date Designed K. Anderson 4-9-21 Drawn K. Anderson 4-9-21 Checked Approved	Drawing Name WI-008color Date 6/2014 Sheet 5 of 11



TYPICAL CROSS SECTION

GRADATION OF ROCK

PERCENT PASSING BY WEIGHT	SIZE (INCHES)
100	12
60–85	9
25–50	6
5–20	3
0–5	1

QUANTITY ESTIMATE*

BANK SLOPING FOR RIPRAP	580	LIN. FT.
BANK SLOPING (SEEDING ONLY)	580	LIN. FT.
ROCK FOR RIPRAP (WI CONST. SPEC. 9)	590	CU. YD.
SEEDING	0.8	ACRES

*ESTIMATED TO THE NEAT LINES AND GRADE

NOTES:

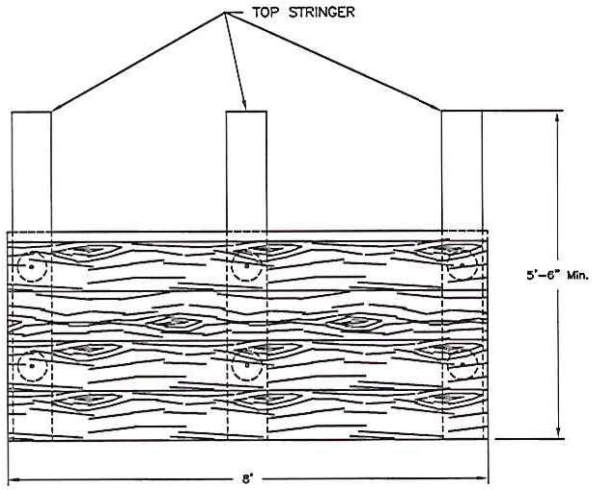
1. DOUBLE THE ROCK THICKNESS FOR A DISTANCE OF 5 FEET AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE RIPRAP. BLEND THE ROCK SURFACE TO MATCH THE EXISTING STABLE BANK SURFACE.

THIS STANDARDIZED DESIGN MUST BE ADAPTED TO THE SPECIFIC SITE.

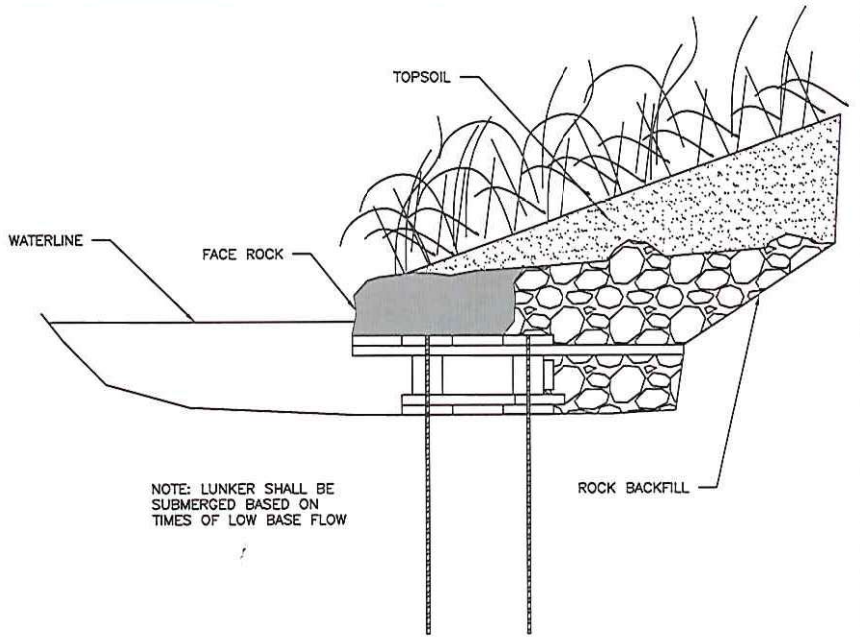
EXCAVATED KEYWAY

SITE 2

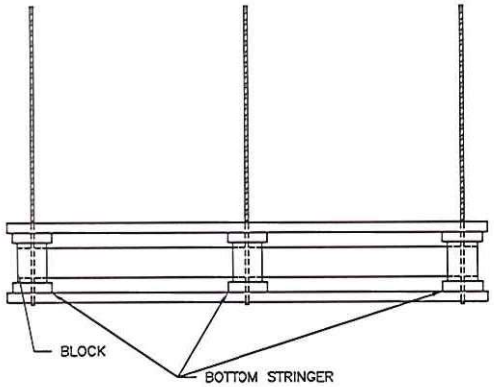
USDA United States Department of Agriculture Natural Resources Conservation Service	STREAMBANK PROTECTION NO FILTER OR GEOTEXTILE (PARTIAL BANK HEIGHT) CLIENT: Brendon Clarke COUNTY: Richland	Designed K. Anderson 4/12/21 Drawn K. Anderson 4/12/21 Checked Approved	File Name WI-404E Date 07/14 Sheet 6 of 11



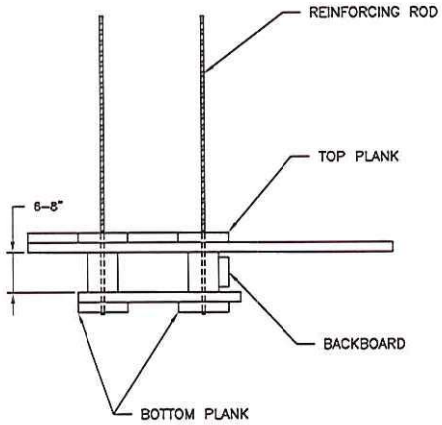
TOP VIEW



CONSTRUCTED SIDE VIEW



FRONT VIEW



SIDE VIEW

BILL OF MATERIALS
LUNKER STRUCTURE

ITEM	SIZE	QUANTITY
TOP PLANK	2" X 8" X 8' OAK BOARD	4
TOP STRINGER	2" X 8" X 5'-6" Min OAK BOARD	3
BLOCK	6" DIA. X 8" OAK BLOCK	6
BOTTOM STRINGER	2" X 8" X 30" BOARD	3
BOTTOM PLANK	2" X 8" X 8' OAK BOARD	2
BACKBOARD	2" X 8" X 8' OAK BOARD	1
#5 REINFORCING ROD	#5 X 5' DEFORMED STEEL	6
RINGSHANK NAILS	20D GALVANIZED	60

10 Total Boards 2" X 8" X 8 Feet Long

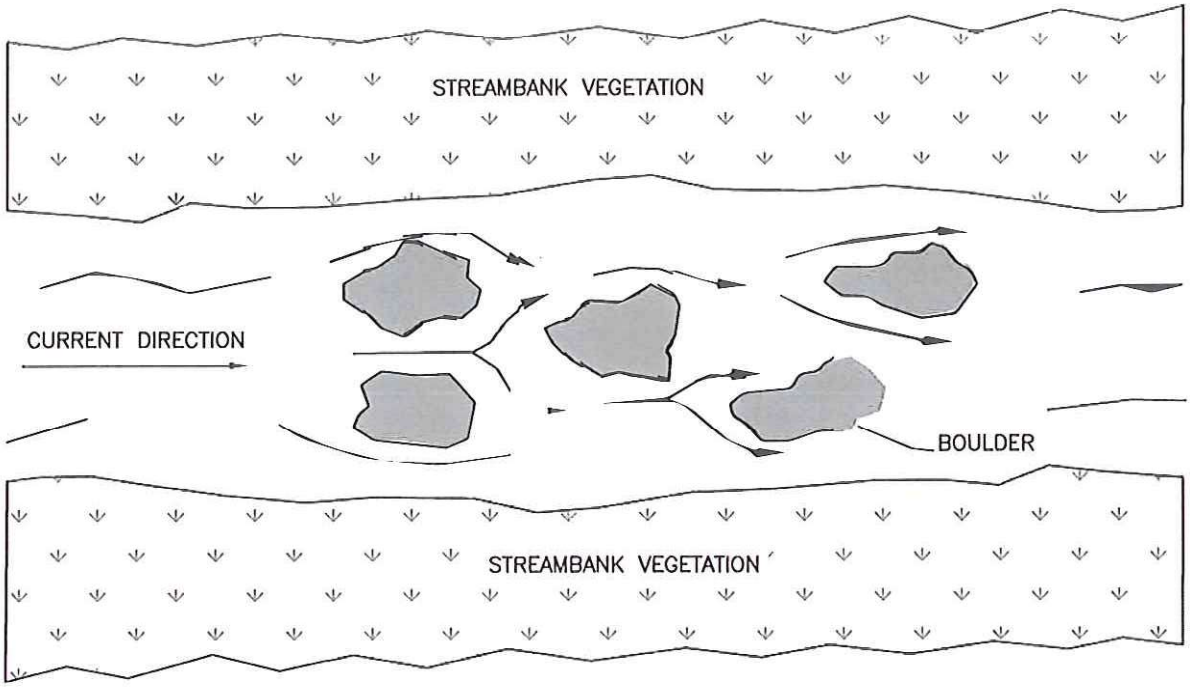
Designed K. Anderson 4-15-21
Drawn K. Anderson 4/15/21
Checked
Approved

LUNKER STRUCTURE DETAIL

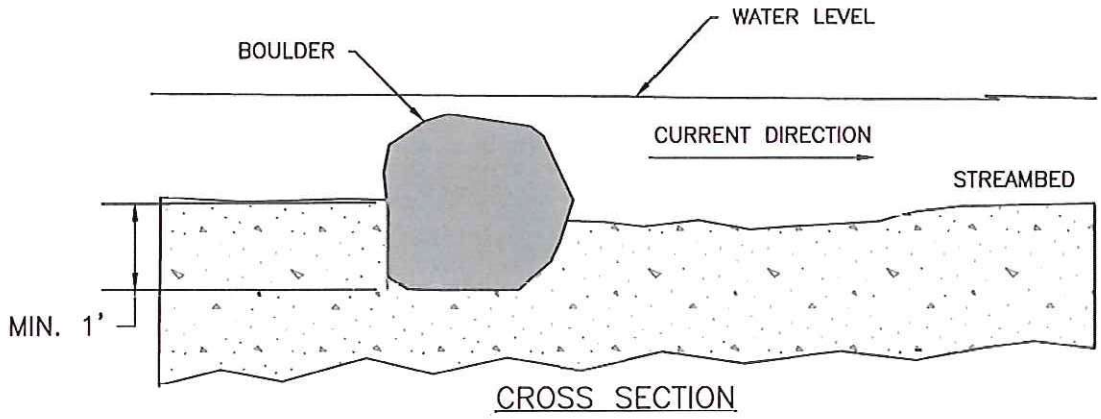
CLIENT: Brandon Clarke
COUNTY: Richland

United States Department of Agriculture
Natural Resources Conservation Service

File Name WI-930
Date 08/14
Sheet 7 of 11



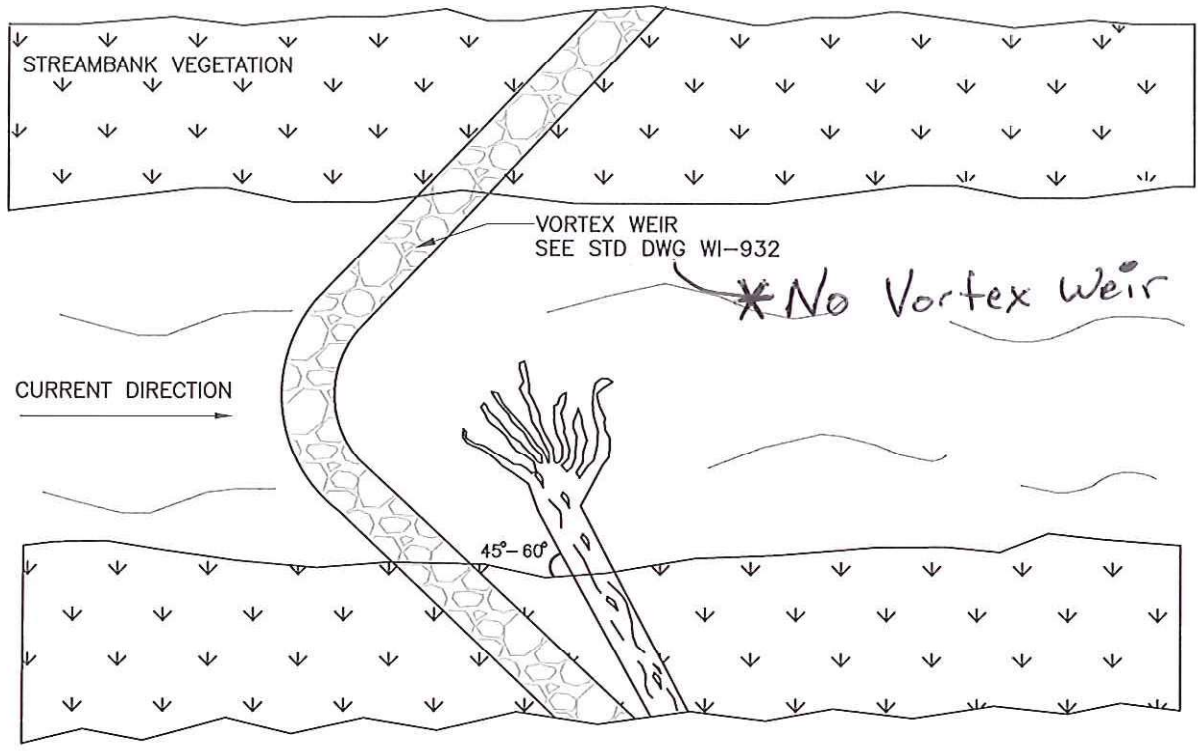
PLAN VIEW



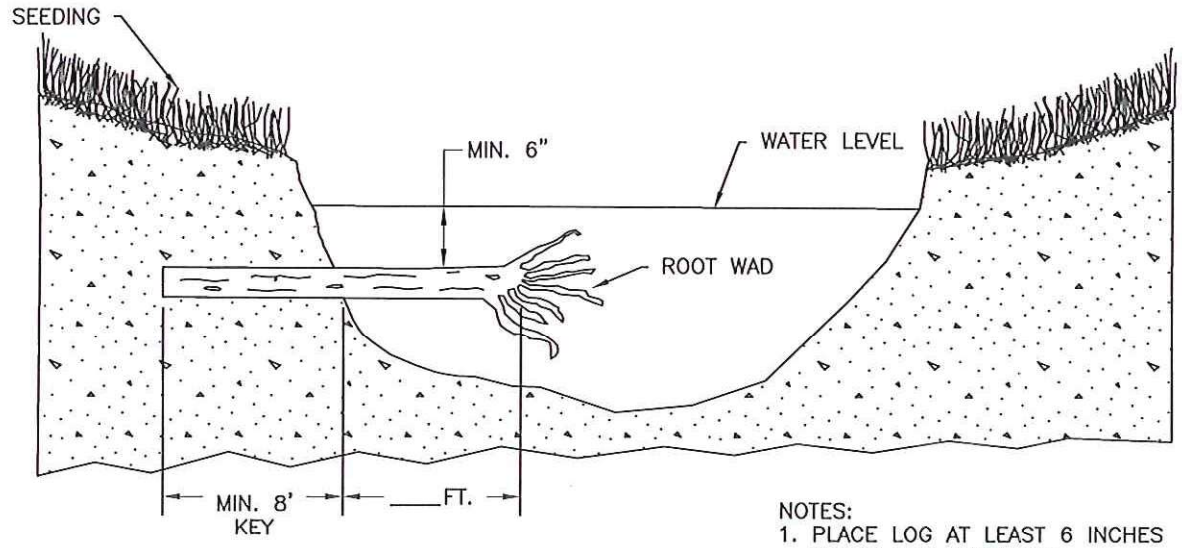
CROSS SECTION

- AVERAGE ROCK SIZE– 1.5'–3.5' DIA.–ROCK, SIZE IS SITE DEPENDENT.
- A MINIMUM OF ONE BOULDER PER SET OF BOULDERS SHOULD PROTRUDE FROM WATER SURFACE DURING TIMES OF ORDINARY FLOW TO ACT AS MID–STREAM PERCHING/LOAFING SITES.
- USE BOULDERS WITH IRREGULARITIES OR MULTIPLE BOULDERS TOGETHER TO PROVIDE SLIGHT OVERHANGING COVER.
- PLACE BOULDERS SO CURRENT WILL NOT BE DEFLECTED INTO UNPROTECTED STREAM BANKS.

USDA United States Department of Agriculture Natural Resources Conservation Service	RANDOM BOULDER PLACEMENT CLIENT: Brendon Clarke COUNTY: Richland	Date Designed K. Anderson 4/12/21 Drawn K. Anderson 4/12/21 Checked Approved	File Name WI–937 Date 08/14 Sheet 8 of 11



PLAN

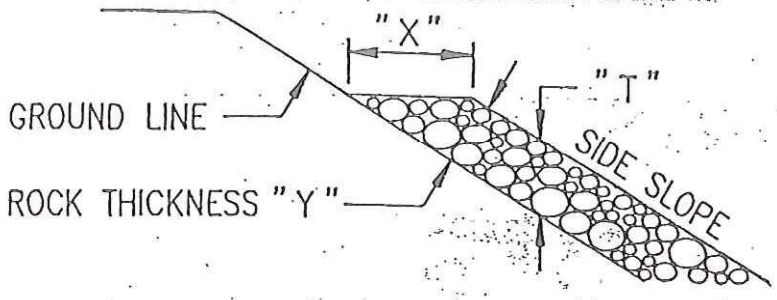


CROSS SECTION

NOTES:
1. PLACE LOG AT LEAST 6 INCHES BELOW THE WATERLINE.
2. PLACE LOG AT A 45-60 DEGREE ANGLE UPSTREAM FROM BANK.
3. REFERENCE WI STD DWG 932 FOR DETAILS ON VORTEX WEIR CONSTRUCTION.

USDA United States Department of Agriculture Natural Resources Conservation Service	ROOT WAD CLIENT: Brendon Clarke COUNTY: Richland	Designed K Anderson 4/12/21 Drawn K. Anderson 4/12/21 Checked Approved	File Name WI-936 Date 08/14 Sheet 9 of 11

ROCK RIPRAP SECTION DIMENSIONS



VALUE OF ROCK TOP WIDTH "X" IN FEET

Rock Thickness "Y" inches	Side Slope 1–1/2:1	2:1	3:1
12	1.8	2.2	3.2
15	2.3	2.8	4.0
18	2.7	3.4	4.7
21	3.2	3.9	5.5
24	3.6	4.5	6.3
27	4.1	5.0	7.1
30	4.5	5.6	7.9
33	5.0	6.2	8.7
36	5.4	6.7	9.5
39	5.9	7.3	10.3
42	6.3	7.8	11.1
45	6.8	8.4	11.9
48	7.2	9.0	12.7

VERTICAL "T" VS NORMAL TO SLOPE "Y" THICKNESS DIMENSIONS

Rock Thickness "Y" inches	Side Slope 1–1/2:1	2:1	3:1
12	1.2	1.1	1.0
15	1.5	1.4	1.3
18	1.8	1.7	1.6
21	2.1	2.0	1.8
24	2.4	2.2	2.1
27	2.7	2.5	2.4
30	3.0	2.8	2.6
33	3.3	3.1	2.9
36	3.6	3.4	3.2
39	3.9	3.6	3.4
42	4.2	3.9	3.7
45	4.5	4.2	4.0
48	4.8	4.5	4.2

SEEDING DATES

TIME PERIOD	DATES			TYPE OF SEEDING
Spring	April 15	through	June 1	Permanent
Summer	June 2	through	July 31	Temporary *
Late Summer	August 1	through	August 21	Permanent
Fall	August 22	through	October 15	Temporary *
Late Fall	November 1	through	snow cover	Dormant
Winter	snow cover	through	Spring Seeding	Frost Seed Not Allowed

MATERIALS

If no soil test is available, apply a minimum of 150 pounds of 20–10–10 fertilizer per acre. This is equivalent to 30 pounds nitrogen (N), 15 pounds phosphate (P205), and 15 pounds potash (K20) per acre. Apply two tons/ac of 80–89 lime or equivalent. (see page 2 for equivalent)

* Seed a temporary cover crop of Annual Ryegrass at a rate of 20 pounds/acre. (0.8 Bushels/acre)
A permanent seeding shall be completed during the next acceptable time period following a temporary seeding.

MINIMUM PURE LIVE SEED (PLS)[1] RATE PER ACRE AND TOTAL POUNDS OF SEED NEEDED

SEEDING MIX _____ LOCATION Rip Rap ACRES 2.0			SEEDING MIX _____ LOCATION _____ ACRES _____		
SPECIES	RATE	POUNDS	SPECIES	RATE	POUNDS
Alsike Clover	1.2	2.4			
Timothy	4.8	9.6			
**					

1. PLS = (% Germination X % Purity)
** Companion Crop

Total % Germination may also be termed Total % Viable Seed on a tag. If a tag only shows % Germination, the user must include percentage of the seed that germinated during the lab test (% Germination) plus the percentage of hard and/or dormant seed. Hard seed and dormant seed are seeds that are still capable of germinating and producing a plant but did not germinate under the conditions of the test in the lab.

Additional native seeds may be required by permitting agencies. These additions are allowed.
Seed mixture shall meet all requirements of the WI weed laws.
Species identified as restricted or prohibited by law shall not be planted.
Certified seed shall be used, and the seeding rates will be based on pure live seed.
For dormant seedings, increase the seeds per square foot by 15%.

SEEDBED PREPARATION

Seedbed preparation shall immediately follow construction activities.
Prepare a fine, firm seedbed to a minimum depth of three inches. A seedbed is considered firm when a footprint penetrates 1/4 to 1/2 inch deep.

USDA United States Department of Agriculture
Natural Resources Conservation Service

INTRODUCED SPECIES SEEDING ESTABLISHMENT
CLIENT: Brandon Clarke
COUNTY: Richland

	Date	
Designed	K. Anderson 4-9-21	File Name WI–710
Drawn	K. Anderson 4-9-21	Date 12/2019
Checked		
Approved		Sheet 1 of 1

APPENDIX 5-1

NRCS SOIL PHOSPHORUS LOSS CALCULATIONS

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

Farmer / Cooperator Name:	Brendon Clarke	Evaluated By:	Carson Hackett
Tract Number:		Evaluation Date:	March 19, 2021

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)
	1	520.0	7.0	3,640	0.60	2,184.0	Silt Loam	85	92.8
	2	580.0	7.0	4,060	0.60	2,436.0	Silt Loam	85	103.5
	3	400.0	7.0	2,800	0.60	1,680.0	Silt Loam	85	71.4
	4	330.0	7.0	2,310	0.60	1,386.0	Silt Loam	85	58.9
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						326.7
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.04%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.131
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**261**

Total Phosphorus Loss for sum of reaches (lbs/yr):	**261**

* Eroding bank height is measured along the bank, not the vertical height of bank.

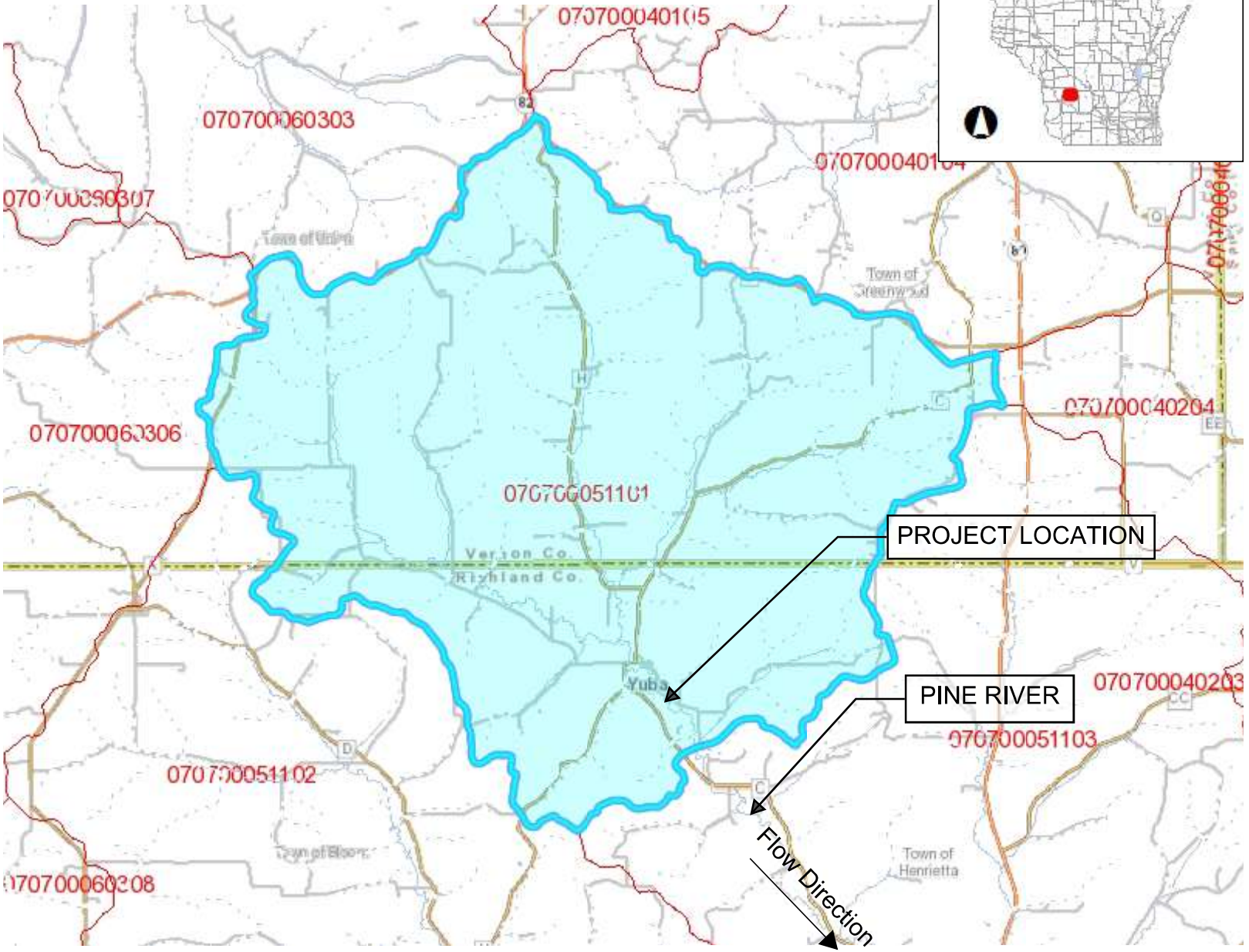
Streambank or Ditch Erosion Calculation Formula:

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

APPENDIX 6-1

HUC 12 WATERSHED BASIN MAP

Hub Rock WQT Clarke Property HUC 12



Legend

- 12-digit HUCs (Subwatersheds)
- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water

3.0 0 1.50 3.0 Miles

NAD_1983_HARN_Wisconsin_TM

1: 95,040

Notes

Appendix 6-1

APPENDIX 8-1

WATER QUALITY TRADE AGREEMENT

Water Quality Trading Agreement: Hub Rock Sanitary District #1 and Brendon Clarke

Permittee Information

Credit User Name (Permittee)	Permit Number
Hub Rock Sanitary District #1	WI-0049689-05-0

Credit User Address
16977 State Hwy 80 N, Richland Center, WI 53581

Broker Name	Trade Agreement Number
Richland County Land Conservation Division	WQT-0049689050-01

Broker Address

Street Address	City	State	ZIP Code
26136 Executive Ln, Suite C Rm 102	Richland Center	WI	53581

Project Name
Brendon Clarke Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Clarke, Brendon
Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Clarke, Brendon & Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

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

Parcel Identification Numbers (PIN): 19607231000, 01407231000, 01407310000, 01407130000

Parcel ID(s):
19607231000, 01407231000, 01407310000, 01407130000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Richland	12N	01E	07	NW ¼ of the NW 1/4
	N			
	N			
	N			

Agreement

The property described above is enrolled in a Water Quality Trading Agreement. Funding is provided by the credit user to pay for the installation of best management practices (BMPs) on the described property which are designed to reduce phosphorous, a nonpoint source of pollution. This agreement commits the landowner/operator, their heirs or successors and assigns to maintain the BMPs and fulfill the trade agreement in perpetuity or release is filed by the credit user, whichever occurs first

Plans which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement, are on file with the credit user and may be given to Wisconsin Department of Natural Resources (DNR) upon request by the DNR.

Landowner/Operator

Signed this 21 day of June, 20 21.

Phillip M. Connars P.O.A.
Signature of Operator

Signature of Landowner/Operator

Brendon Clarke, Operator
Typed Name of Operator

Engine Creek Farming LLC, Landowner
Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
Richland County) ss.
)

Personally came before me this 21 day of June, 20 21.

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

CLAIRE E. SHANNON
Notary Public
State of Wisconsin

Claire E. Shannon
Signature of Notary Public

Claire E. Shannon
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 7/15/2024).

Landowners (if not operator)

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

☐ Landowner is also operator

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

Signed this _____ day of _____, 20_____.

Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20 21.

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit User

Signed this 12th day of July, 20 21.

Dean Berry Pres, Hub-Rock
Signature of credit user

Hub Rock Sanitary District #1
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
)
Richland County) ss.
)

Personally came before me this 12th day of July, 2021.

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

Annette A Clark
Signature of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 11-13-24).

Other Signer- Specify title or relationship: Richland County – Broker

Signed this 24th day of November, 2020.

Cathy Cooper
Signature

Cathy Cooper, Richland County
Typed Name

Ken W. Anderson
Signature

Ken W. Anderson
Typed Name

STATE OF WISCONSIN)
Richland County) ss.
)

Personally came before me this 24th day of November, 2020.

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

Ken W. Anderson
Signature of Notary Public

Ken W. Anderson
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires Jan. 23, 2023).

Other Signer- Specify title or relationship:_____

Signed this_____day of_____, 20_____.

Signature

Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)

Personally came before me this_____day of_____, 20_____.

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public_____County, Wisconsin

My commission (is permanent) (expires_____).

Other Signer- Specify title or relationship:_____

Signed this_____day of_____, 20_____.

Signature

Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)

Personally came before me this_____day of_____, 20_____.

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public_____County, Wisconsin

My commission (is permanent) (expires _____).

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

Section A – General Requirements

1. The following relationship has been established for this Water Quality Trading Agreement:
   - Hub Rock Sanitary District #1 will hereby be known as the Credit User.
   - The Richland County Land Conservation Division will be known as the Broker.
   - Brendon Clarke will be known as the Landowners, and Brendon Clarke will also be known as the Operator.
2. This contract may be amended, by written mutual agreement of the parties, during the installation or maintenance period, if the proposed changes will provide equal or greater control of water pollution. For any changes in practice components or costs, the broker will determine eligibility and whether to approve such changes. Any increases to the project cost shall be approved in advance in writing by the Credit User.
3. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the Wisconsin Department of Natural Resources (DNR) does NOT approve the Water Quality Trading Plan (WQT). The WQT identifies this project for phosphorus credits to help the Hub Rock Sanitary District #1 wastewater treatment facility (WWTF). These credits are established in the WQT and has been analyzed as a cost-effective project. Should the DNR either deny or reduce the project credits which results in a higher cost per pound of phosphorus credit, then the Hub Rock Sanitary District #1 may terminate the agreement.
4. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the District is unable to procure funding to cover the cost of the project, which would provide reasonable terms to the District and their users.
5. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
6. Any duly authorized officer, employee or representative of WDNR shall have the right to access and inspect the practices pursuant to Wis. Stat. 283.55(2) so long as this Agreement remains in effect.
7. **Hold Harmless.** The Credit User shall defend, indemnify and hold the Broker, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the negligence of the Broker.

Section B – Credit User

1. The Credit User is responsible for all monetary costs incurred with the BMP practice installation, which includes but is not limited to site preparation, clearing, ensuring planned grades; stream shaping; rock riprap and installation; liming, fertilizing, seeding and mulching.
2. The Credit User shall have the right to access the property for inspection or maintenance. If a natural disaster impacts the BMPs and causes damage that reduces phosphorus credits, the credit user has the option of paying the cost of repairs or releasing this agreement.

Section C – Landowner/Operator Shall:

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land in perpetuity and the new owners will be obligated to comply with this agreement. Landowners are obligated to notify any prospective buyers of this agreement and their responsibilities under this agreement and applicable law.
2. The Landowners agree to repay all project costs to the credit user, upon demand by the Broker, if the Landowner fails to comply with the terms of this agreement. Repayment shall not be required if a practice(s) is rendered ineffective due to circumstances which are beyond the control of the Landowner.
3. The Landowner/Operator shall inspect riprap and streambank at least annually and after heavy storms. Any erosion or displacement of rocks shall be repaired at the cost of the landowner. The Broker should be contacted immediately and directly if any damage has occurred.
4. Fencing will be constructed to control livestock access to the stream and the livestock will not have access to the stream except for any designated watering ramp. Livestock will be allowed access to the stream for intermittent periods as agreed upon between the landowner and broker, and following a grazing plan prepared by the Broker. Landowner shall inspect fencing annually and make necessary repairs to prevent animals from accessing project site.
5. Ensure that debris is removed from the channel and that vegetation is controlled around the channel only when the vegetation or obstructions are threatening stream function. Invasive vegetation should be controlled, and channel obstructions deemed harmful may be removed. Channel clearing to remove stumps, fallen trees, debris, and sediment bars shall only be performed when they are causing or could cause unacceptable bank erosion, flow restriction, or damage to structures. Habitat forming elements that provide cover, food, pools, and water turbulence shall be retained or replaced to the extent possible.
6. Check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and replanted by Landowner as soon as possible with a seed mix pre-approved by the broker.
7. Periodically mow the vegetative buffer to control weeds and invading brush. All farm equipment and row crops must remain outside of the agreed upon 20-foot buffer from the top of the bank.
8. Eliminate all burrowing rodents and repair damage caused by them.

9. Maintain the project consistent with NRCS technical standard 580 and grazing plan prepared by the Broker
10. Installation of these practices brings the Landowner into compliance with the applicable state and local performance standards listed below. Compliance with these performance standards shall be in perpetuity. These practices must be maintained or replaced with a practice which ensures continued compliance with the following N.R. 151 performance standards:
    - N.R. 151.03 Tillage Setback
    - N.R. 151.06 Clean Water Diversion
    - N.R. 151.08 Manure Management Prohibitions

Section D. Broker

1. The Broker will be responsible for the oversight of BMP practice design, project bidding, contractor construction agreements, inspection of site preparation, project design, BMP installation oversight, regulation of applicable performance standards, annual inspections and monitoring of landowners' obligations in the form of performing on-site checks as needed. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
2. The Broker will ensure the contract is recorded in the Richland County Register of Deeds office.
3. The Broker agrees to complete annual inspections.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
WQT-0049689050-01	Brendon Clarke	BMC Manager	10/27/20

Ashley L. Harrison
2.24.2024

The cost-share recipient shall implement and maintain all best management practices listed in this Addendum, unless otherwise amended in accordance with this agreement.							Installation Period From (MM/YY) 04/22		To (MM/YY) 10/22	
Field #	DNR BMP Code	Practice Name	Quantity	Unit	Unit Cost	Estimated Total Cost	Reimbursement Rate (%)	Estimated Cost-Share Amount	Cost-Share Amt. From Other Programs*	Estimated Year to be Installed
	NRCS 580	Mobilization	1	L.S.	$ 7,500.00	$ 7,500.00				2022
	NRCS 580	Site Preparation, clearing, and grading	1	L.S.	$ 2,250.00	$ 2,250.00				2022
	NRCS 580	Limestone rock riprap D50 size 8" Diameter	750	cu. yd.	$ 50.00	$ 37,500.00				2022
	NRCS 580	Geotexile Fabric, Type SAS	1630	sq. yd.	$ 3.00	$ 4,890.00				2022
	NRCS 580	Liming, fertilizing, seeding and mulching	1025	sq. yd.	$ 5.00	$ 5,130.00				2022
	NRCS 580	Erosion Control	1	L.S.	$ 6,000.00	$ 6,000.00				2022
	NRCS 580	Tracking Pad	1	L.S.	$ 1,500.00	$ 1,500.00				2022
		Sub-Total				**$ 64,770.00**				
		Contingencies (10%)				$ 6,480.00				
Note: These estimates are based on an overall project of three parcels of land. The estimated values were broken up through an assumed percentage of land. The exact values in the field may differ from above.										
* Identify Program Names:					**TOTALS**	**$ 71,250.00**	**$ -**	**$ -**	**$ -**	

CSA Number	Typed Name of Landowner / Operator	Initials of Landowner/Operator	Date
	Brendon Clarke	BMC Morgan	10/22/20

Keep.

Phil

POWER OF ATTORNEY

KNOW ALL BY THESE PRESENTS, that WE, Brendon Ronald Clarke and Elissa Anne Clarke, Joint Buyers, Purchasers and Landlords, have made, constituted and appointed and by these presents make, constitute and appoint Phillip M. Connors our true and lawful attorney, for us and in our name, place and stead; to negotiate purchases, execute offers to purchase, amendments, land contracts or land contract amendments, residential leases, agricultural leases any and all documents of conveyance and any documents related thereto for the purpose of purchase, transfer, lease, or other conveyance of real estate described as follows:

11678 Yuba Drive, Hillsboro, WI 54634. This 160 acre farm consists of at least five tax roll parcels with PIN of: 014-0744-1000, 014-0743-2000, 014-072-0000, 014-0734-2000, 014-0741-0000. Legal description: see attached.

and giving and granting unto our said attorney full power and authority to do and perform all and every act and thing whatsoever requisite and necessary to be done in and about the premises, as full to all intents and purposes as we might or could do if personally present, with full power or substitution and revocation, hereby ratifying all that our said attorney, or his substitute shall lawfully do or cause to be done by virtue thereof.

THIS POWER OF ATTORNEY SHALL NOT BE AFFECTED BY SUBSEQUENT DISABILITY OR IN CAPACITY OF THE PRINCIPALS.

This will certify that a true and correct signature of our attorney herein above appointed is as follows to-wit:

B Clark (SEAL)

Brendon Ronald Clarke, Joint Buyer, Purchaser, Landlord.

A Clarke (SEAL)

Elissa Anne Clarke, Joint Buyer, Purchaser, Landlord

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 7th day of August, 2012.

STATE OF WISCONSIN)
)SS
COUNTY Of DANE)

Personally came before me this 7th day of August, 2012, the above named Brendon Ronald Clarke and Elissa Anne Clarke, to me known to be the persons who executed the foregoing instrument and acknowledged the same.

Dale R. Gregory SBN: 01012711
Notary Public, Dane County, WI.
My Commission is permanent.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 7th day of August, 2012.

CONSENT TO POWER OF ATTORNEY

Phillip M. Connors

STATE OF WISCONSIN)
)SS
COUNTY OF DANE)

Personally came before me this 7th day of August, 2012, the above named Phillip M. Connors, to me known to be the person who executed the foregoing instrument and acknowledged the same.

Dale R. Gregory SBN: 01012711
Notary Public, Dane County, WI.
My Commission is permanent.

Document Drafted By:
Attorney Dale R. Gregory
2009 West Beltline Highway
Madison, WI 53713
608-327-4203

Water Quality Trading Agreement: Hub Rock Sanitary District #1 and Engine Creek Farming LLC

Permittee Information

Credit User Name (Permittee)	Permit Number
Hub Rock Sanitary District #1	WI-0049689-05-0

Credit User Address
16977 State Hwy 80 N, Richland Center, WI 53581

Broker Name	Trade Agreement Number
Richland County Land Conservation Division	WQT-0049689050-02

Broker Address

Street Address	City	State	ZIP Code
26136 Executive Ln, Suite C Rm 102	Richland Center	WI	53581

Project Name
Brendon Clarke Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.)
Engine Creek Farming LLC / Clarke, Brendon & Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Clarke, Brendon & Clarke, Elissa

Street Address	City	State	ZIP Code
11678 Yuba Drive	Hillsboro	WI	54634

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

Parcel Identification Numbers (PIN): 01407420000

Parcel ID(s):
01407420000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Richland	12N	01E	07	NW ¼ of the SE ¼
	N			
	N			
	N			

Agreement

The property described above is enrolled in a Water Quality Trading Agreement. Funding is provided by the credit user to pay for the installation of best management practices (BMPs) on the described property which are designed to reduce phosphorous, a nonpoint source of pollution. This agreement commits the landowner/operator, their heirs or successors and assigns to maintain the BMPs and fulfill the trade agreement in perpetuity or release is filed by the credit user, whichever occurs first.

Plans which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement, are on file with the credit user and may be given to Wisconsin Department of Natural Resources (DNR) upon request by the DNR.

Landowner/Operator

Signed this 21 day of June, 20 21.

Phillip M. Connars P.O.A.
Signature of Operator

Signature of Landowner/Operator

Brendon Clarke, Operator
Typed Name of Operator

Engine Creek Farming LLC, Landowner
Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
Richland County) ss.
)

Personally came before me this 21 day of June, 20 21.

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

CLAIRE E. SHANNON
Notary Public
State of Wisconsin

Claire E. Shannon
Signature of Notary Public

Claire E. Shannon
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 7/15/2024).

Landowners (if not operator)

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

☐ Landowner is also operator

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

Signed this _____ day of _____, 20_____.

Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20 21.

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit User

Signed this 12th day of July, 20 21.

Dean Berry Pres, Hub-Rock
Signature of credit user

Hub Rock Sanitary District #1
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
)
Richland County) ss.
)

Personally came before me this 12th day of July, 2021.

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

Annette A Clark
Signature of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires 11-13-24).

Other Signer- Specify title or relationship: Richland County – Broker

Signed this 28th day of June, 20 21.

Cathy Cooper
Signature

Cathy Cooper, Richland County
Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
Richland County) ss.
)

Personally came before me this 28th day of June, 20 21.

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

Ken W. Anderson
Signature of Notary Public

Ken W. Anderson
Typed Name of Notary Public

Notary Public Richland County, Wisconsin

My commission (is permanent) (expires Jan. 23). 2023

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)

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

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
_____ County) ss.
)

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

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

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

Section A – General Requirements

1. The following relationship has been established for this Water Quality Trading Agreement:
   - Hub Rock Sanitary District #1 will hereby be known as the Credit User.
   - The Richland County Land Conservation Division will be known as the Broker.
   - Engine Creek Farming LLC will be known as the Landowner, and Brendon Clarke will be known as the Operator.
2. This contract may be amended, by written mutual agreement of the parties, during the installation or maintenance period, if the proposed changes will provide equal or greater control of water pollution. For any changes in practice components or costs, the broker will determine eligibility and whether to approve such changes. Any increases to the project cost shall be approved in advance in writing by the Credit User.
3. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the Wisconsin Department of Natural Resources (DNR) does NOT approve the Water Quality Trading Plan (WQT). The WQT identifies this project for phosphorus credits to help the Hub Rock Sanitary District #1 wastewater treatment facility (WWTF). These credits are established in the WQT and has been analyzed as a cost-effective project. Should the DNR either deny or reduce the project credits which results in a higher cost per pound of phosphorus credit, then the Hub Rock Sanitary District #1 may terminate the agreement.
4. Hub Rock Sanitary District #1 reserves the right to terminate this agreement if the District is unable to procure funding to cover the cost of the project, which would provide reasonable terms to the District and their users.
5. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
6. Any duly authorized officer, employee or representative of WDNR shall have the right to access and inspect the practices pursuant to Wis. Stat. 283.55(2) so long as this Agreement remains in effect.
7. **Hold Harmless**. The Credit User shall defend, indemnify and hold the Broker, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with the performance of this Agreement, except for injuries and damages caused by the negligence of the Broker.

Section B – Credit User

1. The Credit User is responsible for all monetary costs incurred with the BMP practice installation, which includes but is not limited to site preparation, clearing, ensuring planned grades; stream shaping; rock riprap and installation; liming, fertilizing, seeding and mulching.
2. The Credit User shall have the right to access the property for inspection or maintenance. If a natural disaster impacts the BMPs and causes damage that reduces phosphorus credits, the credit user has the option of paying the cost of repairs or releasing this agreement.

Section C – Landowner/Operator Shall:

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land in perpetuity and the new owners will be obligated to comply with this agreement. Landowners are obligated to notify any prospective buyers of this agreement and their responsibilities under this agreement and applicable law.
2. The Landowners agree to repay all project costs to the credit user, upon demand by the Broker, if the Landowner fails to comply with the terms of this agreement. Repayment shall not be required if a practice(s) is rendered ineffective due to circumstances which are beyond the control of the Landowner.
3. The Landowner/Operator shall inspect riprap and streambank at least annually and after heavy storms. Any erosion or displacement of rocks shall be repaired at the cost of the landowner. The Broker should be contacted immediately and directly if any damage has occurred.
4. Ensure that debris is removed from the channel and that vegetation is controlled around the channel only when the vegetation or obstructions are threatening stream function. Invasive vegetation should be controlled, and channel obstructions deemed harmful may be removed. Channel clearing to remove stumps, fallen trees, debris, and sediment bars shall only be performed when they are causing or could cause unacceptable bank erosion, flow restriction, or damage to structures. Habitat forming elements that provide cover, food, pools, and water turbulence shall be retained or replaced to the extent possible.
5. Check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and replanted by Landowner as soon as possible with a seed mix pre-approved by the broker.
6. Periodically mow the vegetative buffer to control weeds and invading brush. All farm equipment and row crops must remain outside of the agreed upon 20-foot buffer from the top of the bank.
7. Eliminate all burrowing rodents and repair damage caused by them.
8. Maintain the project consistent with NRCS technical standard 580.
9. Installation of these practices brings the Landowner into compliance with the applicable state and local performance standards listed below. Compliance with these performance standards shall be in perpetuity. These practices must be maintained or replaced with a practice which ensures continued compliance with the following N.R. 151 performance standards:

- N.R. 151.03 Tillage Setback
- N.R. 151.06 Clean Water Diversion
- N.R. 151.08 Manure Management Prohibitions

Section D. Broker

1. The Broker will be responsible for the oversight of BMP practice design, project bidding, contractor construction agreements, inspection of site preparation, project design, BMP installation oversight, regulation of applicable performance standards, annual inspections and monitoring of landowners' obligations in the form of performing on-site checks as needed. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
2. The Broker will ensure the contract is recorded in the Richland County Register of Deeds office.
3. The Broker agrees to complete annual inspections.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
WQT-0049689050-02	Engine Creek Farming / Brendon Clarke		

APPENDIX 9-1

PHOSPHORUS SOIL TEST RESULTS

Soil and Forage Analysis Laboratory
2611 Yellowstone Dr, Marshfield, WI 54449
Phone 715-387-2523

University of Wisconsin
Madison/Extension

Brice Nelson
Davy Engineering Co.
115 6th Street S
LaCrosse WI 54601

Date 11/13/19
Acct # 558654
Lab # **5421**

RE: Hub Rock WQT, Yuba, WI

Soil Nutrient Analysis

Sample	Total Leachable P nitric/peroxide %	
1	0.04	Brendon Clarke Property

APPENDIX 9-2

SOIL SAMPLE LOCATION MAP


Soil Sample Location Map
Legend
Feature 1
Yuba
HR0311
HR011
HR02111
Mill St
Dog Ln
Yuba Dr
C
Google Earth
©2018 Google
N

Appendix 9-2

APPENDIX 10-1

2024 INSPECTION REPORT

Water Quality Trading

Annual Conservation Best Management Practice (BMP) Compliance Certification

Wisconsin Pollutant Discharge Elimination System (WPDES) Permittees need to submit annual reports as part of their permit requirements. The purpose of the annual report is to inform WDNR of the status of management practices, provide Wisconsin Department of Natural Resources (WDNR) with an update of the trading project overall, and submit any needed changes to the plan to WDNR.

The following should be included in the annual report that is submitted by the landowner to the WPDES Permittee:

- Verification that site inspections occurred
- Brief summary of site inspection findings
- Photos from the site inspection

Location(s) of land for which Water Quality Trading credit is claimed:

LOCATION	*IN COMPLIANCE*	*NOT COMPLIANT*
HUB-ROCK SITE 1		***X***
HUB-ROCK SITE 2		***X***
HUB-ROCK SITE 3		***X***
HUB-ROCK SITE 4		***X***

Certification and Signatures

The landowner(s) certify that the Best Management Practices used in Water Quality Trading efforts with a WPDES permit holder are in compliance with the applicable conservation standards.

Village of Yuba Hub-Rock
Landowner: Brandon Clarke

Derrick Warner — 10/11/2024
Representative — Date

Best Management Practice (BMP) Conservation Compliance Checklist

Conservation Standards	In Compliance	Not Compliant
There is no trash and unwanted debris.	☒	☐
There is no grazing of animals will occur within 30 feet of the stream channel.	☐	☒
There is no soil erosion and accumulation, especially at the top and bottom of the slope.	☒	☐
There are no invasive weeds.	☒	☐
There are no animal burrows, holes or mounds.	☒	☐
Facilities have no visible signs of leakage or failure.	☒	☐
There are no dislodged or unstable rocks which could pose a safety hazard.	☐	☒
There are no unusual or unsafe conditions structural damage, dumping, tree establishment, etc.	☒	☐
Project has been monitored with inspections and documented with dates in a log book, to ensure the preservation of the site.	☒	☐
Project has been inspected after flood events.	☒	☐
20 foot vegetative buffer has been periodically mowed to control weeds and invading brush.	☐	☒
Farm equipment and row crops have remained outside of the agreed upon 20 foot vegetated buffer from the top of the bank.	☒	☐

Summary

Site 1 had good vegetation on the majority of the bank but toward the lower end of the riprap there were some rock showing and rock seemed to be loose and some moved from floods that occurred earlier this year. Site 2, 3 and 4 all looked good. They had good vegetation on the banks however, all of the sites have cattle grazing on rocked banks as well as on the top of banks as well. There doesn't seem to be any buffer that is being maintained through mowing and there are some weeds that you typically see in pastures popping up along the stream banks in places. There were cattle prints on the sides of the banks where the rock was placed and there are cattle trails at the tops of the banks especially along site 1 and 2.

Site 1

Site 1

Site 1-Trash

Site 1 – Loose Rock

Site 2

Site 2

Site 2

Site 2

Site 2

Site 3

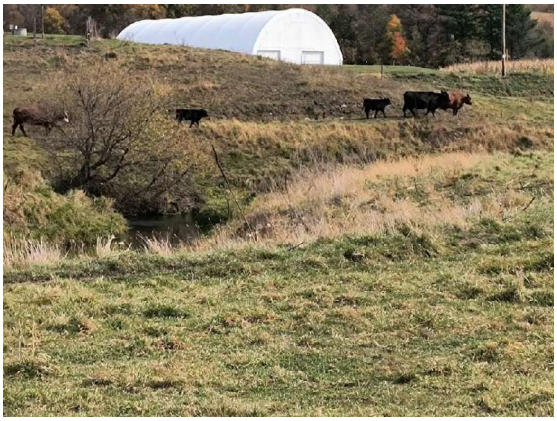
Site 3

Site 3

Site 3

Site 4

Site 4

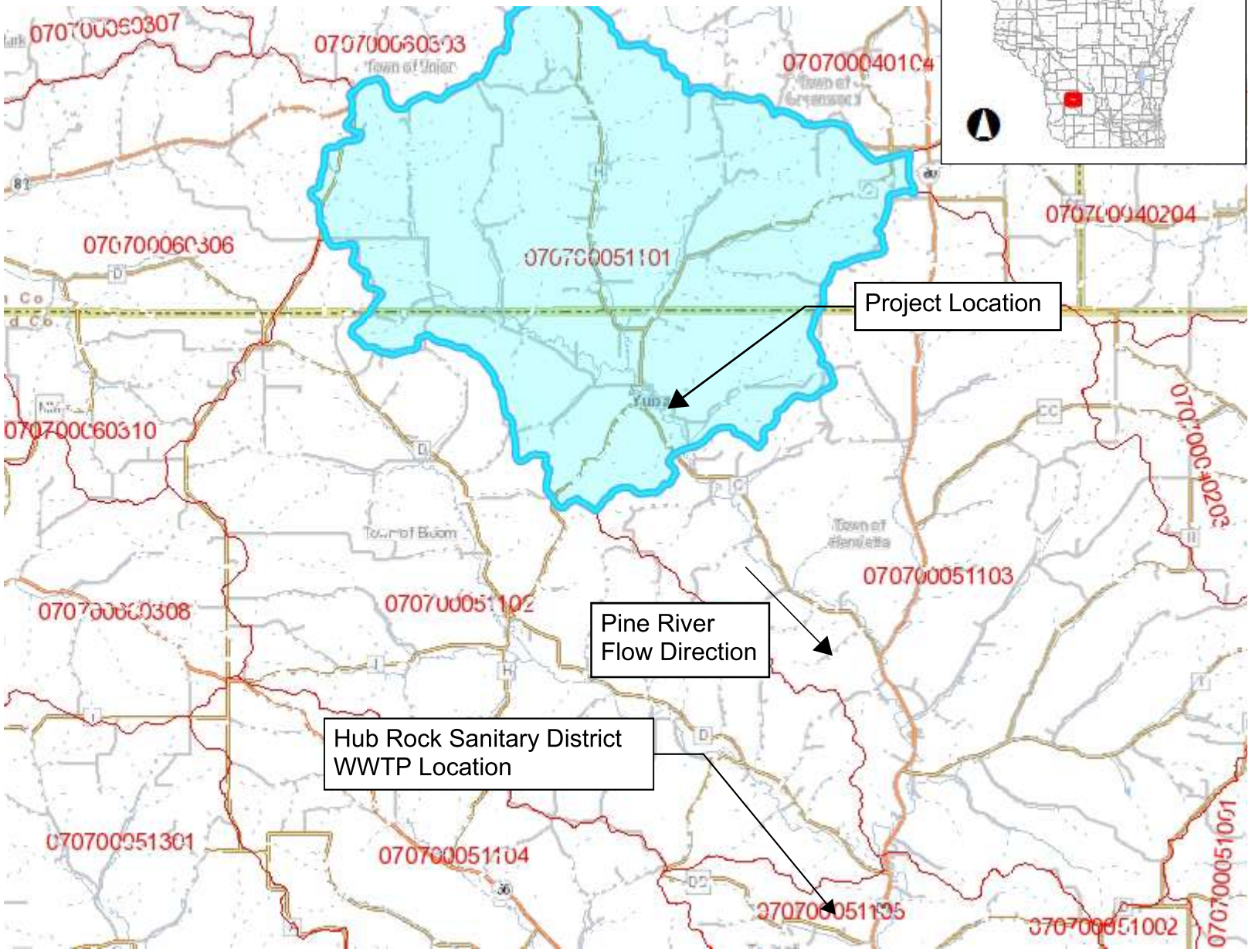


Site 4

APPENDIX 14-1

HUC 12 OVERVIEW LOCATION MAP

Hub Rock HUC 12 Location Map



Legend

- 12-digit HUCs (Subwatersheds)
- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water

4.0 0 2.00 4.0 Miles

NAD_1983_HARN_Wisconsin_TM

1: 126,720

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal land ownership or public access. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information depicted on this map. For more information, see the DNR Legal Notices web page: http://dnr.wi.gov/legal/

Notes

Appendix 14-1

APPENDIX 15-1

BMP REGISTRATION FORM

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

Water Quality Trading Management Practice Registration

Form 3400-207 (R 1/14)

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

Applicant Information

Permittee Name	Permit Number	Facility Site Number
Hub Rock Sanitary District #1	WI- 0049689-05-0	

Facility Address	City	State	ZIP Code
CTH DD	Rockbridge	WI	53581

Project Contact Name (if applicable)	Address	City	State	ZIP Code
Sue Jones	16977 STH 80 N	Richland Center	WI	53581

Project Name
Hub Rock SD #1 / Brendon Clarke WQT Project

Broker/Exchange Information (if applicable)

Was a broker/exchange be used to facilitate trade? (●) Yes ( ) No

Broker/Exchange Organization Name	Contact Name
Richland County Land Conservation Department	Cathy Cooper

Address	Phone Number	Email
181 W Seminary St., Richland Center, WI 53581	(608) 647-2100	cathy.cooper@co.richland.wi.us

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	0049689050-02	Streambank Stablization	131	2.0	NRCS Streambank Erosion Estimator Spreadsheet

County	Closest Receiving Water Name	Land Parcel ID(s)	Parameter(s) being traded
Richland	Pine River	0140742000	Phosphorus

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
Cathy Cooper	12-14-22

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