

**WATER QUALITY TRADING PLAN  
LOGANVILLE WWTF  
LOGANVILLE, WI**



APRIL 2021

1388-001.014

**THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK**



# TABLE OF CONTENTS

## WQT PLAN

### LOGANVILLE, WISCONSIN

- 1 EXECUTIVE SUMMARY
- 2 BACKGROUND & PURPOSE OF WATER QUALITY TRADING PLAN
- 3 LOCATION OF CREDIT GENERATION SITES
- 4 DESCRIPTION & HISTORY OF EXISTING LAND USES IN VICINITY OF WQT PROJECTS
- 5 MANAGEMENT PRACTICES USED TO GENERATE CREDITS
- 6 AMOUNT & QUANTIFICATION OF CREDITS BEING GENERATED
- 7 DESCRIPTION OF APPLICABLE TRADE RATIOS
- 8 TIMELINE FOR CREDITS AND AGREEMENTS
- 9 WATER QUALITY TRADE TRACKING & DOCUMENTATION
- 10 OPERATION AND MAINTENANCE PLAN FOR EACH MANAGEMENT PRACTICE
- 11 WQT PROJECT SUMMARY
- 12 CERTIFICATION OF WATER QUALITY TRADING PLAN

# APPENDICES

APPENDIX 2-1	LOGANVILLE NOI
APPENDIX 2-2	WQT CHECKLIST FORM 3400-208
APPENDIX 3-1	PROJECT OVERVIEW LOCATION MAP
APPENDIX 4-1	SOIL MAP
APPENDIX 5-1	BARNYARD SITE PHOTOS
APPENDIX 5-2	SOIL SAMPLE LOCATIONS & STREAMBANK SITE PHOTOS
APPENDIX 5-3	NRCS RECESSION RATES
APPENDIX 6-1	APLE MODEL SOIL LOSS CALCULATIONS
APPENDIX 6-2	SOIL TEST DATA
APPENDIX 6-3	NRCS PHOSPHORUS SOIL LOSS CALCULATIONS
APPENDIX 7-1	HUC 12 WATERSHED BASIN MAP
APPENDIX 7-2	PRESTO-LITE WATERSHED DELINEATION REPORT
APPENDIX 7-3	PRESTO-LITE PHOSPHORUS LOAD ESTIMATES
APPENDIX 11-1	PRELIMINARY COST ESTIMATES

## 1 EXECUTIVE SUMMARY

This Water Quality Trading (WQT) Plan summarizes the Village of Loganville's (Village) plan to utilize a WQT for compliance with the final total phosphorus (TP) limit stated in the Village's wastewater treatment facility (WWTF) Wisconsin Pollutant Discharge Elimination System (WPDES) Permit #WI-0029114-09-0. The Permit proposes a future waste load allocation of 101 lbs./year phosphorus. The future limit concentration is based upon the flow and the site specific total max daily load (TMDL). The Wisconsin River Basin TMDL study was approved by EPA and the final approved report which applies to Loganville is dated on 4/26/2019. The full report can be found at the Wisconsin Department of Natural Resources (WDNR) website. The appendix which determines the site-specific allocations for Loganville can be seen in Appendix 1-1 of the TMDL Report.

From 2016 to 2020, the effluent discharge from the Loganville lagoon averaged 0.06 MGD. The average effluent phosphorus concentration during this time period was 1.95 mg/L. The effluent phosphorus mass loading at 1.95 mg/L is 356 lbs./year. Utilizing this flow and concentration, the TMDL limit will reduce the phosphorus mass loading to 101 lbs./year, a reduction of 255 lbs./year, the base trade amount. This is for current conditions.

The Village's Facility Plan proposes to comply with the permit by either adding chemical, **if needed**, to reduce phosphorus combined with a WQT to offset the phosphorus mass to the TMDL limit. This WQT Plan is assuming a full phosphorus mass offset utilizing streambank stabilization and barnyard containment projects without the need for chemical addition. The credits used will need to be adjusted each year depending on the flow of the plant and effluent phosphorus concentration. If the needed credits increase above the WQT credits generated from management practices, the WWTF can add chemical to lower the effluent phosphorus concentration and adjust for the increase in flow and/or increase phosphorus concentration.

NRCS Streambank Erosion modeling and UW Barnyard Tool APLE-LOTS WI modeling methods were used to calculate the TP credits that would be generated based on the installation of best management practices (BMPs). The credits will be utilized to establish compliance with the final TP limit as proposed in the WPDES Permit. The WWTF has the capability to register approximately **349** TP credits. The execution of this WQT Plan will result in compliance with the final TP limits. The Village intends to monitor TP credit usage and perform additional construction of management practices as needed for future conditions to comply with permit limits. An amended or new WQT Plan will be submitted if the management practices outlined in this Report are updated in anyway or if new managements practices are constructed for additional credit generation.

## 2 BACKGROUND & PURPOSE OF WATER QUALITY TRADING PLAN

The purpose of this WQT Plan is to describe how the Loganville WWTF will utilize water quality trading to comply with the phosphorus limits of WPDES Permit #WI-0029114-09-0, which expires on June 30, 2021. This WQT Plan will require a WQT Agreement with the landowners. The agreement will be developed pursuant to a Notice of Intent (form 3400-206) to conduct a WQT. The Notice of Intent (NOI) is included in **Appendix 2-1** of this plan. The Water Quality Trading Checklist Form 3400-208 is provided in **Appendix 2-2**.

The Village of Loganville is located in west-central Sauk County in [Wisconsin](#). The Loganville WWTF is located approximately 1 mile northeast of the Village, in the Township of Westfield, at latitude [43°27'16"N](#) and longitude [90°01'32"W](#). The elevation at the WWTP is approximately 906 feet. The WWTF is bordered to the west by Narrows Creek and is surrounded by agricultural fields. The WWTF is owned and operated by Village of Loganville.

The Village currently serves 154 Residential Equivalent Users (REUs). Of the 154 REU there are 123 residential, 13 commercial, 13 public authority and 5 multi-family residential. The Wisconsin Department of Administration (DOA) 2019 estimated population for the Village is 295.



The topography of the area contains mostly gentle, irregular, rolling hills with some steep slopes. Soils are silt loam. The dominant soils around the facility are primarily Curran silt loam, Jackson silt loam, and fluvaquents (adjacent to Narrows Creek). Bedrock is sandstone with some dolomite and shale, which is encountered at depths of 0 to 50 feet. The principal land use in the area is agriculture.

The Village of Loganville WWTP is a continuous flow lagoon system constructed in 1967 and consisting of two ponds. At the original design flow of 45,000 gpd and a 5-foot operating depth in each pond, the total volume of both ponds is 8.7 million gallons (MG), to provide a total detention time of 193 days. No chemicals are currently used at the WWTP for the removal for phosphorus. The Loganville WWTF has one (1) receiving water and effluent discharge location, Outfall 001: Narrows Creek (Narrows Creek/Baraboo River Watershed, LW22 – Lower Wisconsin River Basin).

The Average Flow from 2016 to 2020 was 0.06 MGD. The phosphorus mass loadings and the required WQT are summarized in the following table.

**TABLE 2.1: REQUIRED PHOSPHORUS MASS OFFSET**

Description	Units	Amount
Annual Average Daily Existing Flow	MGD	0.06
Effluent Phosphorus Concentration	mg/L	1.95
Target P Concentration	mg/L	0.554
Annual Mass of Phosphorus	lbs/year	356
WQT Target Mass of Phosphorus	lbs/year	101
<b>Baseline Mass (Existing - Target)</b>	<b>lbs/year</b>	<b>255</b>

The flow data used is the annual average collected from 2016 to 2020. There were several months of erroneous effluent flow readings during the end of 2019 and beginning of 2020 that were not utilized in calculating the annual average flow. When the limit comes into play after July 1, 2023, DNR will use a rolling 6-month average to do a mass calculation to determine compliance. This reinforces the importance of making progress on correcting inflow and infiltration sources in the collection system to reduce the flow.

To generate the required 255 annual TP credits, the Village intends to perform streambank stabilization and barnyard containment projects. Streambank stabilization will utilize grading, riprap, and turf establishment to prevent the erosion of sediment from the streambanks. Streambank stabilization will not only prevent sediment from entering the stream, but will also prevent phosphorus, nitrogen, and other pollutants from discharging to the Narrows Creek. The barnyard containment project will utilize a roofed and curbed concrete barnyard with onsite manure storage to eliminate any manure runoff from the farm site. Reducing pollutant discharge will restore stream habitat and generate water quality trading credits.

The annual TP credits will be generated by a combination of four (4) separate projects at three (3) separate locations. The first project will be a streambank stabilization project on Sauk County land located adjacent to State Highway 23 about 3-miles north of Loganville. Two (2) projects will be located less than a mile southeast of Loganville on a farm located at S6111 Peak Hill Rd. The projects at this location include streambank stabilization and barnyard containment. The final location is a farm located on the outskirts of the Loganville village limits at the address of 265 Peak Hill Rd. No project will occur at this farm, but the cattle currently located onsite will be moved to the S6111 Peak Hill Rd farm and this location will be a credit generator due to abandonment of the barnyard. The locations and projects are summarized below:

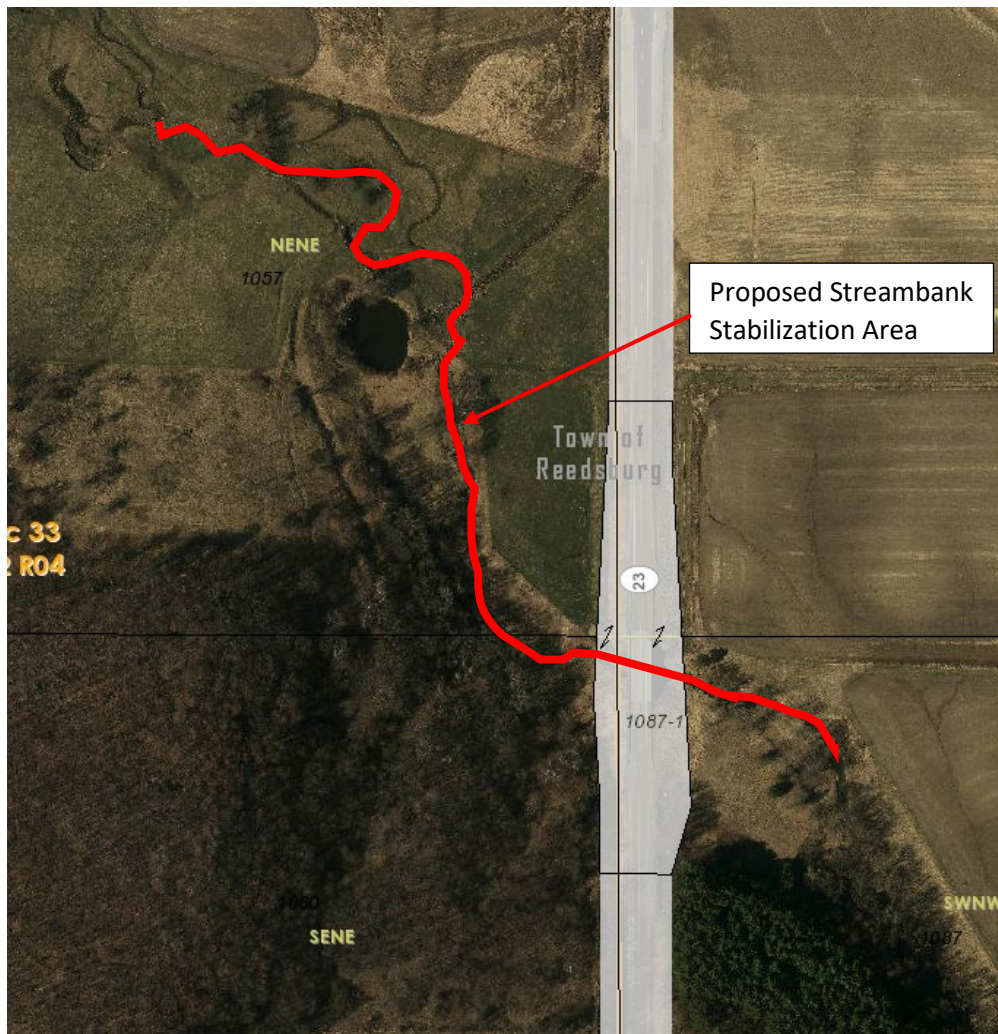
**TABLE 2.2: PROJECT/CREDIT GENERATOR SITE LOCATIONS**

Farm Name	Location Address	Owner	Project Type
County Farm	State Highway 23	Sauk County	Streambank Stabilization
S6111 Peak Hill Farm	S6111 Peak Hill Rd	Randy Roecker	Streambank Stabilization
S6111 Peak Hill Farm	S6111 Peak Hill Rd	Randy Roecker	Barnyard Containment
265 Peak Hill Farm	265 Peak Hill Rd	Randy Roecker	Barnyard Abandonment

**3 LOCATION OF CREDIT GENERATION SITES**

Credits will be generated in the same HUC 12 as the Loganville WWTF HUC 12 for the County Farm and S6111 Peak Hill Rd Farm; however, these credits will be generated on tributaries to Narrows Creek **downstream** of the WWTF. The 265 Peak Hill Rd Farm credits will be generated just outside of the same HUC 12 as the WWTF but will be generated on a tributary to Narrows Creek **upstream** of the WWTF. The Narrows Creek and its tributaries will be used to generate credits in this plan.

**County Farm.** The County Farm project site is best described as both banks of the stream along a tributary to Narrows Creek. Approximately 1,900-ft of streambank will be restored in this location. The project would be located off State Highway 23. See the red line along the map below.



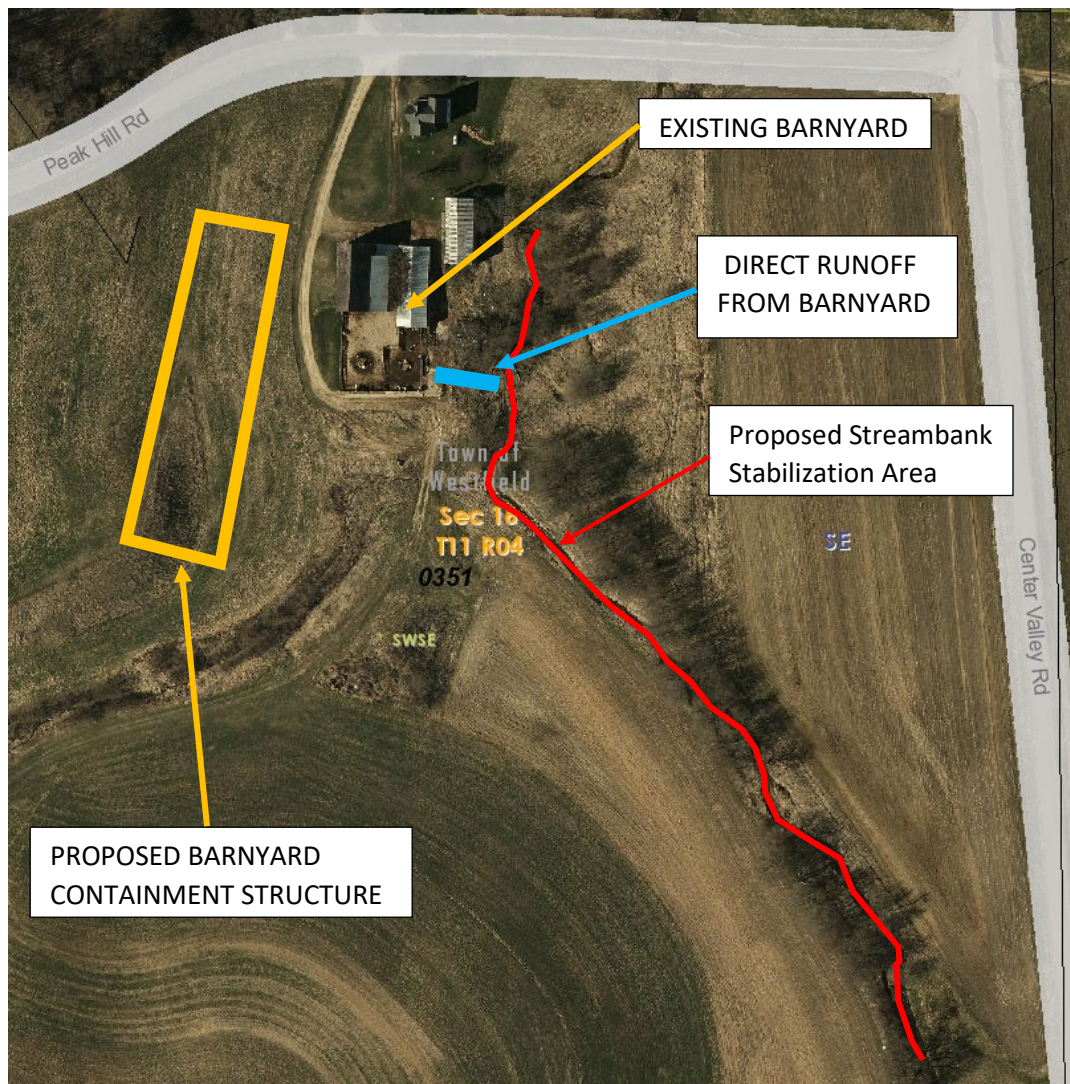
Source: Sauk County GIS. 43°28'45.07"N and 90° 0'54.65"



The confluence of the tributary where the streambank stabilization project is located the County Farm property and Narrows Creek is located approximately three (3) miles downstream from the Loganville WWTF discharge.

**S6111 Peak Hill Farm.** The S6111 Peak Hill Rd Farm barnyard containment project site is on a tributary to Narrows Creek and is best described as a site that is composed of 7,000 square feet of concrete barnyard, and 3,708 square feet of roofed area. The animal numbers average 100 dairy heifers at 750 pounds. This site currently has direct runoff to an unnamed tributary of Narrows Creek. See the orange box on the map below for the proposed location of the new structure, directly west of the existing barnyard.

The S6111 Peak Hill Farm streambank stabilization project site is best described as both banks of the stream along a tributary to Narrows Creek. Approximately 1,000-ft of streambank will be restored in this location. See the red lines along the following map.

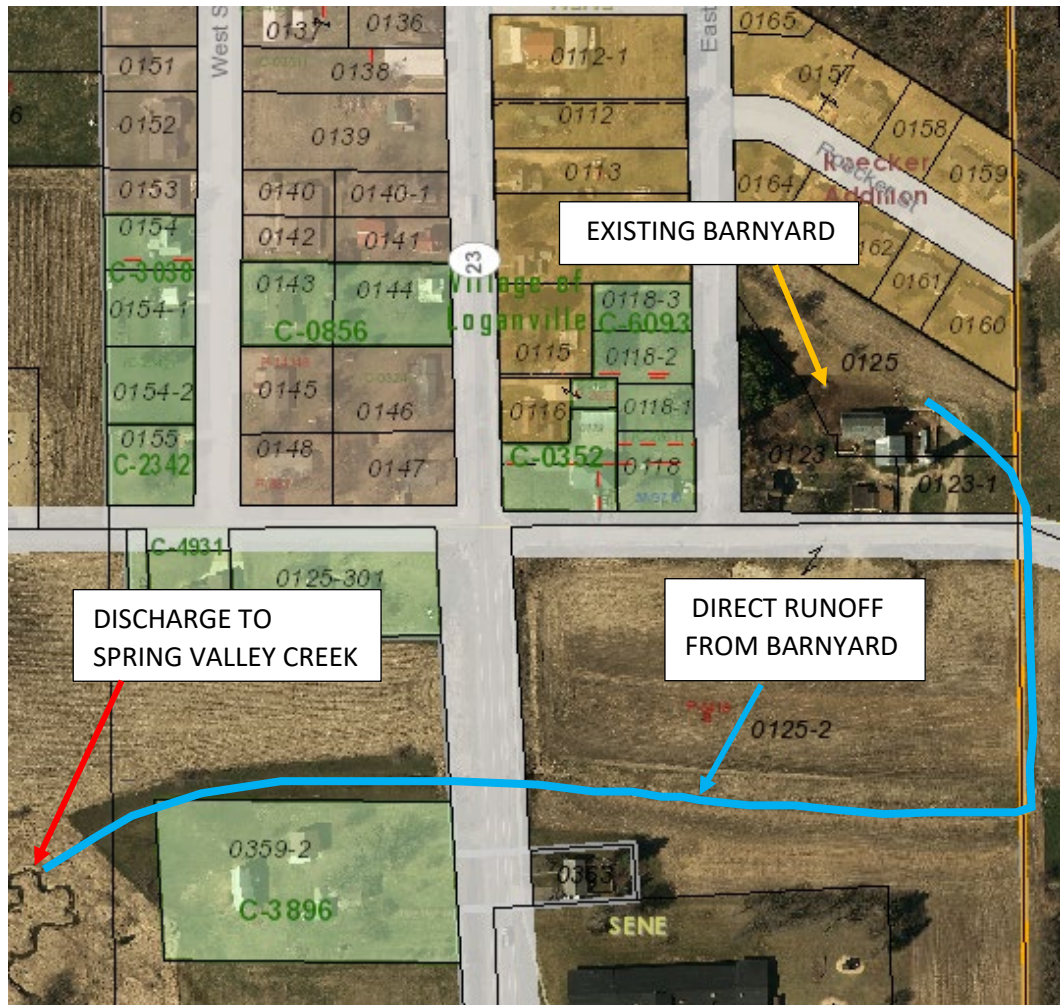


Source: Sauk County GIS. 43°25'35.49"N and 90° 1'16.70"W

The confluence of the tributary where the barnyard containment project and streambank stabilization project and Narrows Creek is located approximately one (1) mile downstream from the Loganville Wastewater Treatment Facility (WWTF) discharge.



**265 Peak Hill Farm.** The 265 Peakhill Rd Farm barnyard abandonment site is best described as a site that is composed of 21,361 square feet of earthen feed lot, 4,600 square feet of concrete barnyard, 1,671 square feet of roofed area and 0.75 acres of tributary area. The animal numbers average 70 dairy heifers at 400-600 pounds. The barnyard currently discharges runoff to an unnamed tributary to Spring Valley Creek. Spring Valley Creek then discharges to Narrows Creek 0.75 miles downstream. This barnyard would be abandoned, and the existing cattle would be moved to the S6111 Peak Hill Rd Farm.



The confluence of Spring Valley Creek and Narrows Creek is located approximately one and a half (1.5) mile upstream from the Loganville WWTF discharge.

See **Appendix 3-1** for a general location map displaying all project locations (credit generators) and their proximity to the receiving water and credit user (WWTF).

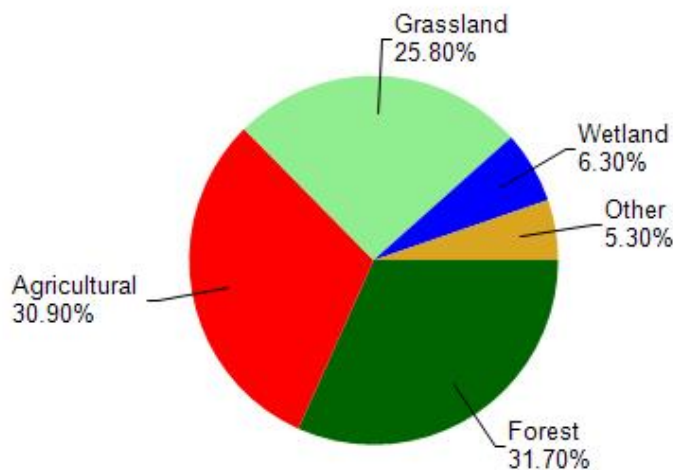
#### **4 DESCRIPTION & HISTORY OF EXISTING LAND USES IN VICINITY OF WQT PROJECTS**

Narrows Creek flows about 18 miles from its sources near Hillpoint and Lime Ridge, to its junction with the Baraboo River at Rock Springs. The creek has been heavily impacted by agriculture, particularly dairy farming practices, and experiences heavy bank erosion and siltation during periods of rapid rainfall. As late as the early 1970s it supported a respectable smallmouth bass fishery, which has since declined. Recently the watershed has received attention from a priority watershed project administered by the Sauk

County Land Conservation Department (LCD). As of the date of the WDNR website update (2002), 45% of the eligible landowners have signed up for improvement practices such as new barnyards, the stabilization of streambanks, and installation of grassed waterways, with about 50% of the jobs completed. Per the date of the WDNR website from 2002, 65% of the phosphorus removal goal has been met and 60% of the sediment removal goal has been achieved. In addition, a few watershed and stewardship easements have been purchased from landowners. This has allowed 160 acres of wetlands to be restored. Also, WDNR fish management has conducted smallmouth bass habitat improvement on approximately 2 miles of Narrows Creek. Early evaluation showed a 3-9 times increase in the bass population in one area compared to two control areas.

Per the DNR website under Watershed Characteristics, "Narrows Creek is located in the Narrows Creek and Baraboo River watershed which is 176.33 mi<sup>2</sup>. Land use in the watershed is primarily forest (31.70%), agricultural (30.90%) and a mix of grassland (25.80%) and other uses (11.60%). This watershed has 368.35 stream miles, 331.44 lake acres and 4,694.54 wetland acres."

The soil type at the project site is identified as Rowley Silt Loam, see **Appendix 4-1** for the Soils Map.



#### **4.1 County Farm**

The County farmland is outlined in red in Figure 4-1. This project site has been owned by the County for decades. Based upon aerial imagery through Google Earth, the project site appears to have been a mixture of pasture, crop, and forest land as long as Google Earth has maintained imagery (1992). The crop fields surrounding the proposed streambank stabilization area have been in row crops for several years. Up until 2015, fall tillage was allowed on fields 42, 9, 17, 19, 23, 24 and 40. Since 2015, all of the fields have been no tilled and the crop rotation has been corn, grain, and soybeans, with a year of winter wheat here and there. Prior to 2010, field 23 was a wastewater treatment lagoon for the former Sauk County Health Care center located on the property. In 2010-2011, the buildings along with the treatment lagoon were abandoned and the land reclaimed. The pasture area west of Highway 23 adjacent to the proposed streambank stabilization area has been continuously grazed up until 2018. In 2018, pasture improvements including interior fences and livestock pipeline were installed on the property and the paddocks have been rotationally grazed since.



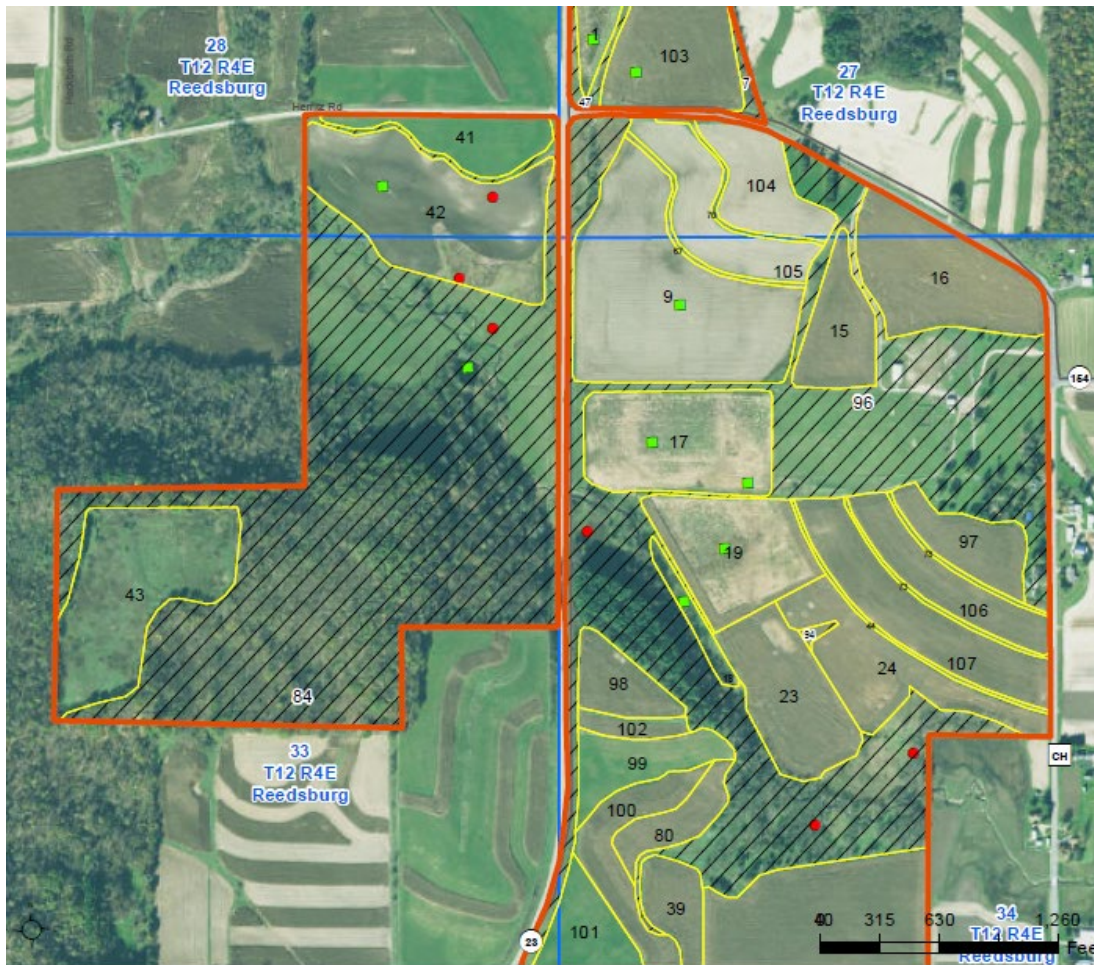


Figure 4-1: Aerial of County Farm - Sauk County, WI

#### 4.2 S6111 Peak Hill Farm

The project sites (streambank stabilization & barnyard containment) are currently on an existing cattle farm. The farm site is composed of 7,000 square feet of concrete barnyard, and 3,708 square feet of roof area. The remaining area on this 40-acre parcel is majority crop land that surrounds the barnyard and proposed streambank stabilization area. This project site has been privately owned for decades. Based upon aerial imagery through Google Earth, the project site appears to have been a barnyard as long as Google Earth has maintained imagery (1992).

The animal numbers in the barnyard average 100 dairy heifers at approximately 750 pounds. Cattle have always been present at this location. Animals are on the lot 365 days a year, with numbers remaining the same throughout the year due to continual replacement. The project site currently has direct runoff to an unnamed tributary that drains to Narrows Creek just downstream of the Loganville WWTF.

#### 4.3 265 Peak Hill Farm

This site in the Village of Loganville is composed of 21,361 sq. ft. of earthen feed lot, 4,600 sq. ft. of concrete barnyard, 1,671 square feet of roof area and 0.75 acres of tributary area. The animal numbers average 70 dairy heifers at 400-600 pounds. The concrete lot is cleaned out on average once per month. This site currently has direct runoff to an unnamed tributary of Spring Valley Creek. Spring Valley Creek discharges to Narrows Creek upstream of the Loganville WWTF.



This project site has been privately owned for decades. Based upon aerial imagery through Google Earth, the project site appears to have been a barnyard as long as Google Earth has maintained imagery (1992).

## **5 MANAGEMENT PRACTICES USED TO GENERATE CREDITS**

**Barnyard Containment & Abandonment.** A roofed concrete barnyard would be designed and built to be a no runoff system at the S6111 Peak Hill Rd Farm. A roofed manure storage tank will also be installed at the site. The current animals at the S6111 Peak Hill Rd Farm will be moved to this new facility following building completion. The current animals at the 265 Peak Rd Farm will be moved to the new barnyard containment facility at the S6111 Peak Hill Rd Farm as well. The existing facilities will have manure cleaned out and properly land applied according to a Nutrient Management Plan (NMP). The barnyards have been evaluated in the field by the Sauk County Land Resources and Environmental Department. Photos documenting the current state of the barnyards and displaying runoff conditions are provided in **Appendix 5-1**.

A professional barn/building structure designer will need to be hired to perform the roof, structural concrete and interior layout design of the livestock buildings and barnyard containment structures. The County can assist with other components such as structure sighting (soils investigation), management assessments, concrete floor design (Heavy Use Protection), concrete perimeter walls if no structure is placed on walls, and manure storage if no structure is placed on the walls.

**Streambank Stabilization.** The County Farm and S6111 Peak Hill Rd Farm project sites located on unnamed tributaries of Narrows Creek were chosen as good sites to generate WQT credits through streambank stabilization. The two sites together have a total length of 2,900-ft of streambank which is in need of stabilization. These sections of streambank are where very high-velocity waters rapidly erode the banks during flood events. Over the last few years these sites have lost many feet of streambank during flood events. The streambanks have been evaluated in the field by the Sauk County Land Resources and Environmental Department. Photos documenting the current state of the eroding streambanks and aerials outlining the locations of where soil samples were taken are provided in **Appendix 5-2**.

In agreement with the Sauk County Watershed Coordinator, an average recession rate of 0.5 feet/year was utilized for modeling purposes. The basis upon determining the recession rate was to use the definitions defined by NRCS, see **Appendix 5-3** for the NRCS recession rate reference material used. It was determined that riprapping the creek banks to permanently armor the banks was the best solution to the problem.

Standard Plans and Specifications for the streambank stabilization project sites will be provide by the County and the County will also acquire all required permits and authorizations for the streambank stabilization projects.

### **5.1 Duration of Management Practice**

The duration of the streambank restoration management practice can be essentially 100+ years if it is maintained properly. The construction will require shaping of the streambank and placement of properly sized rip rap.

The duration of the barnyard containment practice can also be 100+ years if it is maintained properly and runoff from the barnyard is always contained. Even if cattle numbers fluctuate during the years, the annual TP credits will remain the same as long as site conditions do not change to allow for manure runoff to the waters of the state.

The landowner will enter into a contract with the County and the Village, which requires the landowner to maintain the streambank protection and the barnyard containment system for a

minimum of 20 years. The operation and maintenance are discussed in more detail in Section 10 of this plan.

## 6 AMOUNT & QUANTIFICATION OF CREDITS BEING GENERATED

**Barnyard Containment & Abandonment.** The UW Barnyard Tool APLE-LOTS WI was utilized to calculate the total phosphorus credits that would be generated based on the new barnyard containment system and abandonment of the existing barnyards. The APLE modeling was performed by the Sauk County Land Conservation Department. By abandoning the current facilities, relocating livestock to a new, no runoff barnyard system, an APLE model reduction of 385.9 lbs/year of Phosphorus and 23.3 tons of sediment per year were calculated. See **Appendix 6-1** for the Phosphorus Loss Calculation.

**Streambank Stabilization.** NRCS Streambank Erosion modeling methods were used to calculate the total phosphorus credits that would be generated based on the installation of streambank stabilization best management practices (BMP). The Sauk County Watershed Coordinator collected data from the streambanks which included reach lengths in linear feet, the average stream bank height in feet, and also soil samples for testing of the total soil phosphorus concentration in units of % P to determine the phosphorus loss in pounds per year. See **Appendix 6-2** soil test data from the University of Wisconsin Soil Science Laboratory. Composite soil samples were gathered by taking a number of individual grab samples and combining them into one large composite soil sample for every 200 feet. The sample locations are shown in **Appendix 5-2**. The average % P over the samples gathered was 0.04%. Calculations show that an estimated 230 pounds of phosphorus per year would be prevented from entering the tributaries to Narrow Creek. See **Appendix 6-3** for the Phosphorus Loss Calculation.

These credits will be utilized to demonstrate compliance with the final total phosphorus limit as proposed in the WPDES Permit. Modeling results are summarized in **Table 6.1**.

**TABLE 6.1: PHOSPHORUS MODELING RESULTS**

BMP Type	Site	Current TP Loading (lbs/yr)	Future TP Loading (lbs/yr)	Proposed TP Reduction (lbs/yr)	Trade Ratio	Proposed TP Credits
Streambank Stabilization	County Farm	162	0	162	3.1	52
Streambank Stabilization	S6111 Peak Hill Farm	68	0	68	3.1	22
Barnyard Containment	S6111 Peak Hill Farm	386	0	386	2.1	184
Barnyard Abandonment	265 Peak Hill Farm	182	0	182	2	91
<b>Total:</b>						<b>349</b>

## 7 DESCRIPTION OF APPLICABLE TRADE RATIOS

The Wisconsin Department of Resources will make the ultimate decision on the Trade Ratio to be applied to the project. The estimated ratio is derived from the following formula:

$$\text{Trade Ratio} = \text{Delivery} + \text{Downstream} + \text{Equivalency} + \text{Uncertainty} - \text{Habitat Adjustment}:1$$

### 7.1 Delivery Factor

The delivery factor is determined by the following equation:

$$\text{Delivery Factor} = (1 / \text{SPARROW delivery fraction}) - 1$$

The SPARROW delivery fraction is determined by a model found on the USGS website. This model has now been implemented into the Wisconsin Department of Natural Resources Water Surface Data Viewer website. Upon review of the website the delivery factor was shown to be a 1:1 ratio (a zero in the trade ratio equation).

**Narrows Creek.** The credit user and credit generator are in the same HUC 12 basin for the County Farm and S6111 Peak Hill Farm project; however, the credit generators discharge to Narrows Creek downstream of the credit user (WWTF). The distance between the two on Narrows Creek is approximately 0.75 miles apart from the credit generator discharge point to the credit user discharge point on Narrows Creek, which was measured using DNR's Surface Water Data Viewer. Per the *Guidance for Implementing Water Quality Trading in WPDES Permits*, the Delivery Factor in section 2.11.1 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" (pg. 14). The delivery factor is often zero (0) when in the same HUC 12, see **Appendix 7-1** for the HUC 12 Watershed Basin Map.

### **7.2 Downstream Factor**

The Wisconsin Department of Natural Resources 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". 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 (0).

**Narrows Creek.** The County Farm and S6111 Peak Hill Rd Farm credit generators are downstream of the credit user (WWTF); therefore, the downstream factor needs to be considered. According to the Wisconsin Department of Natural Resources (2020), the downstream factor is based upon the credit user's load as a percentage of the Total in-stream load (pg. 27). The PRESTO LITE Report can be seen in **Appendix 7-2**, which evaluates the stream loading. The calculations of the percent of stream loading can be seen in **Appendix 7-3**. The calculations show that the loading from the credit user is approximately 1.14% of the Total In-Stream Load, therefore the Downstream Trading Factor is zero-point-one (0.1) for the County Farm and S6111 Peak Hill Rd projects. Because the 265 Peak Hill Rd project is upstream of the credit user, the Downstream Trading Factor is zero (0) for this credit generator.

### **7.3 Equivalency Factor**

The WQT for the credit user is based upon total phosphorus. According to the *Guidance for Implementing Water Quality Trading in WPDES Permits* from the Wisconsin Department of Natural Resources (2020), 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. 28). The equivalency factor is zero (0).

### **7.4 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 can be seen in Appendix H of the *Guidance for Implementing Water Quality Trading in WPDES Permits* on pages 148-152 (Wisconsin Department of Natural Resources, 2020).



#### **7.4.1 Barnyard Roof Runoff Structure**

For Barnyard Roof Runoff Structures, WDNR has assigned a value of a two (2) per the *Guidance for Implementing Water Quality Trading in WPDES Permits* (pg. 150). The roof runoff structure will follow NRCS Practice Code 558.

#### **7.4.2 Streambank Stabilization**

For streambank 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) because the habitat adjustment will not be implemented.

#### **7.5 Habitat Adjustment**

The habitat adjustment factor is the same as the habitat restoration discussed in section 7.4 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. The surface waters where the projects will be taking place are listed as Unnamed Tributaries of Narrows Creek and are not considered impaired. Therefore, the habitat adjustment factor for all projects has a value of zero (0).

The following table summarizes the list of projects and their corresponding trade ratios.

**TABLE 7.1: TRADE RATIO SUMMARY**

<b>BMP Type</b>	<b>Site</b>	<b>Delivery Factor</b>	<b>Downstream Factor</b>	<b>Equivalency Factor</b>	<b>Uncertainty Factor</b>	<b>Habitat Adjustment</b>	<b>Trade Ratio</b>
Streambank Stabilization	County Farm	0	0.1	0	3	0	<b>3.1</b>
Streambank Stabilization	S6111 Peak Hill Farm	0	0.1	0	3	0	<b>3.1</b>
Barnyard Containment	S6111 Peak Hill Farm	0	0.1	0	2	0	<b>2.1</b>
Barnyard Abandonment	265 Peak Hill Farm	0	0	0	2	0	<b>2</b>

### **8 TIMELINE FOR CREDITS AND AGREEMENTS**

The BMP construction (credit generation) must occur before the credit user can claim the credit. The Village of Loganville's WPDES permit expiration date is June 30, 2021. The construction of the BMPs must be completed within seven (7) years of the first permit discussing the future limit; therefore, the work should be completed by July 1, 2023.

<b>Phase</b>	<b>Completion Timeline</b>
Survey/Site Investigation	Summer 2021
Preliminary Design	Summer 2021
Final Design	Summer – Fall 2021
Construction Permits	Summer – Fall 2021
DNR Review of Final Design	Fall 2021
Construction of BMP's	Spring 2022 – Spring 2023
Project Completion	Spring 2023

Credits will be used by the Village beginning July 1, 2023 and credits will continue as long as the trading practices are maintained as outlined in this WQT Plan.

**Barnyard Containment Structure.** Since this site will continue to be a roofed system over a barnyard that contains all runoff and performing as designed, it will continue to generate credit on an annual basis as long as the structure is maintained.

**Streambank Stabilization.** Since this site will be armored and performing as designed, it will continue to generate credit on an annual basis as long as the riprap is maintained.

The Agreement with Loganville, the County and the Roecker's will be forwarded to be attached to this plan upon final execution.

## **9 WATER QUALITY TRADE TRACKING & DOCUMENTATION**

### **9.1 Tracking Procedures**

This project will be tracked with photography before, during, and after barnyard improvements and riprap installation. The projects will also be monitored with inspections and documented in a logbook to ensure the preservation of the project site and BMP installations. The landowner will inspect the barnyard improvement structures and bank stabilization site after large rain, storm, and flood events. The Sauk County Department of Land Resources and Environment will annually inspect the sites as well, to document that the barnyard improvements and banks are stable, and phosphorus was prevented from entering the water each year. At that time, the County will note debris that may have gathered in the stream and make assessments as to whether the debris is impeding flow or has become a fish habitat for the bank stabilization projects. The impeding debris will be removed, as discussed in Section 10. Any debris observed will be documented and noted as to whether it should remain or be removed.

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

### **9.2 Practice Registration**

Upon completion of the WQT projects, the Village will submit a Management Practice Registration Form (Form 3400-207) to WDNR to verify that the management practice has been properly installed in accordance with the WQT plan.

WDNR will review and track registration using docket numbering system and the information can be reviewed later for trade verification and auditing.

### **9.3 Inspection**

Inspection of the management practices shall occur during construction phases to ensure the practices are installed per the design and meet all applicable codes and permits. Once completed, the barnyard and riprap should be inspected at least once per year and immediately after flood events. The velocity of the tributaries to Narrows Creek increases greatly during flood events. The landowners should work with the Sauk County Department of Land Resources and Environment to ensure that these sites are properly maintained and should approach them for technical assistance if there are any concerns regarding the projects.

The inspection reports will include the following:

- Name and contact information of the Inspector
- Inspection Date
- Relevant standards set forth in the Plans/Specifications or Operations & Maintenance Plan
- Issues identified
- When and how issues identified were addressed
- When and how any issues identified will be addressed in the future

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

#### **9.4 Reporting Requirements Should Management Practices Fail**

If the roof structures or riprap were to fail at these sites, the landowners should immediately report the situation to the Sauk County Department of Land Resources and Environment to develop a remediation action plan.

#### **9.5 Annual WQT Report Submittal**

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

- Verification that site inspections occurred;
- Summary of site inspection findings;
- Identification of noncompliance or failure to implement any terms or conditions of the permit or trading;
- Plans that have not been reported in discharge monitoring reports;
- Any applicable notices of termination or practice registration;
- Amount of credit used each month over the calendar year; and
- Other requirements as stated in the WPDES permit.

#### **9.6 Notification of Failure to Generate Credits**

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

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

The written notice will contain a description of how and why the TP credits are not being generated as outlined in the WQT Plan, the steps taken or planned to prevent reoccurrence of the identified problems and the length of time anticipated it will take to address the issue. The Village will work to rectify the problem as laid out in the Operation and Maintenance Plans.

#### **9.7 Conditions under which Management Practices May Be Inspected**

Any WDNR authorized officer, employee, or representative has the right to access and inspect the credit generating practice so long as the Village's trade agreement with the property owner(s) and this WQT Plan remain in effect.

## **10 OPERATION AND MAINTENANCE PLAN FOR EACH MANAGEMENT PRACTICE**

Maintenance of the barnyard containment system and riprap will be the responsibility of the landowner with technical assistance from the Sauk County Department of Land Resources and Environment. The maintenance will consist of the following:

**Barnyard Improvements.** Inspect barnyard project annually and after heavy storms for any BMP deficiencies. Repairs should be done immediately.

1. Inspect roof system for damage or signs of leakage.
2. Inspect gutter system for damage or separation from roof system.
3. Inspect concrete containment system for signs of fatigue or potential failure.

**Streambank Stabilization.** 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. Eliminate burrowing animals and repair damage.

## **11 WQT PROJECT SUMMARY**

Loganville cannot meet the new phosphorus limits with the technology currently employed at the WWTF, as discussed in the Facility Plan. Water quality trading is the most economical solution to meeting compliance with the new regulations. This plan has discussed the proposed projects along with the associated calculations to provide enough detail to show the compliance has been met by the Village.

In summary, Davy Engineering estimates that the County Farm streambank stabilization project, S6111 Peak Hill Farm barn yard containment and streambank stabilization projects, along with the abandonment of the 265 Peak Hill Farm barnyard, will cost approximately **\$1,020,150** for the total project costs including construction, contingency, engineering, and administrative type fees. The cost estimate is included in **Appendix 11-1**.

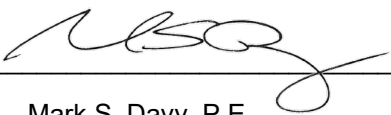
**END OF PAGE**

**12 CERTIFICATION OF WATER QUALITY TRADING PLAN**


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

Prepared By: Davy Engineering Co., Inc.

Owner: Village of Loganville

By: 

Mark S. Davy, P.E.  
President  
Davy Engineering Co.  
115 6<sup>th</sup> Street South  
La Crosse, WI 54601  
Telephone: 608.782.3130

By:  O.I.C. 29 APR 21

Mark Kruse  
Loganville Maintenance  
Village of Loganville  
130 West Street  
Loganville, WI 53943  
Telephone: 608-415-3511



**THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK**

**APPENDIX 2-1**  
**LOGANVILLE NOI**

**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 Village of Loganville		Permit Number WI- 0029114-09-0	Facility Site Number	
Facility Address SE 1/4, SW 1/4, Sec 4, T11N, R4E, Westfield, TWP			City Loganville	State WI
Project Contact Name (if applicable)			Address	City
			State	ZIP Code
			WI	

Project Name  
Loganville Water Quality Trade

Receiving Water Name Narrows Creek	Parameter(s) being traded Phosphorus	HUC 12(s) 070700040302,070700040301
---------------------------------------	---	--

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)  Urban nonpoint source discharge  
 Permitted MS4  Agricultural nonpoint source discharge  
 Permitted CAFO  Other - Specify: \_\_\_\_\_

Are any of the credit generators in a different HUC 12 than the applicant?  Yes; HUC 12: 070700040301  
 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: Sauk 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?
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure

Notice of Intent to Conduct Water Quality Trading

Form 3400-206 (1/14)

Page 2 of 2

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

List the practices that will be used to generate credits:

- Streambank Stabilization
- Barnyard Abandonment
- Barnyard Improvements (no runoff system)
- Cover conservation

Method for quantifying credits generated:  Monitoring  
 Modeling, Names: Streambank P Calc., APLE Software  
 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 <i>Bruce A. Nelson</i>	Date Signed <i>1/20/2021</i>
---	---------------------------------

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 <i>nsy DPW</i>	Date Signed <i>20 JAN 21</i>
--	---------------------------------

**APPENDIX 2-2**

**WQT CHECKLIST FORM 3400-208**



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

Applicant Information				
Permittee Name Village of Loganville		Permit Number WI- 0029114-09-0		Facility Site Number
Facility Address SE 1/4, SW 1/4, Sec 4, T11N, R4E, Westfield, TWP			City Loganville	State WI
			ZIP Code 53943	
Project Contact Name (if applicable) Mark Kruse		Address 130 West St PO Box 128		City Loganville
				State WI
				ZIP Code 53943
Project Name Loganville Water Quality Trade				
Receiving Water Name Narrows Creek		Parameter(s) being traded Phosphorus		HUC 12(s) 070700040302,070700040301

Credit Generator Information	
Credit generator type (select all that apply):	<input type="checkbox"/> Permitted Discharge (non-MS4CAFO) <input type="checkbox"/> Urban nonpoint source discharge <input type="checkbox"/> Permitted MS4 <input checked="" type="checkbox"/> Agricultural nonpoint source discharge <input type="checkbox"/> Permitted CAFO <input type="checkbox"/> Other - Specify: _____
Are any of the credit generators in a different HUC 12 than the applicant?	<input checked="" type="radio"/> Yes; HUC 12: 070700040301 <input type="radio"/> No
Are any of the credit generators downstream of the applicant?	<input checked="" type="radio"/> Yes <input type="radio"/> No
Will a broker/exchange be used to facilitate trade?	<input checked="" type="radio"/> Yes (include description and contact information in WQT plan) <input type="radio"/> No

Point to Point Trades (Traditional Municipal / Industrial, MS4, CAFO)
Are each of the point source credit generators identified in this section in compliance with their WPDES permit requirements? <input type="radio"/> Yes <input type="radio"/> No

Discharge Type	Permit Number	Name	Contact Information	Trade Agreement Number
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				
<input type="radio"/> Traditional <input type="radio"/> MS4 <input type="radio"/> CAFO				

# Water Quality Trading Checklist

Form 3400-208 (1/14)

Page 2 of 3

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

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

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

Discharge Type	Practices Used to Generate Credits	Method of Quantification	Trade Agreement Number	Have the practice(s) been formally registered?
<input type="radio"/> Urban NPS <input checked="" type="radio"/> Agricultural NPS <input type="radio"/> Other	Streambank Stabilization	NRCS Streambank Erosion Estimator	T.A. not yet finalized	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input checked="" type="radio"/> Agricultural NPS <input type="radio"/> Other	Barnyard Containment/Abandonment	UW Barnyard Tool APLE-LOTS WI	T.A. not yet finalized	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part
<input type="radio"/> Urban NPS <input type="radio"/> Agricultural NPS <input type="radio"/> Other				<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Only in part

Does plan have a narrative that describes:		Plan Section
--	--	--------------

a. Description of existing land uses	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 4
b. Management practices used to generate credits	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 5
c. Amount of credit being generated	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 6
d. Description of applicable trade ratio per agreement/management practice	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 7
e. Location where credits will be generated	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 3
f. Timeline for credits and agreements	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 8
g. Method for quantifying credits	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 6



# Water Quality Trading Checklist

Form 3400-208 (1/14)

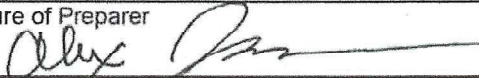
Page 3 of 3

Does plan have a narrative that describes:		Plan Section
h. Tracking procedures	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 9
i. Conditions under which the management practices may be inspected	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 9
j. Reporting requirements should the management practice fail	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 9
k. Operation and maintenance plan for each management practice	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 10
l. Location of credit generator in proximity to receiving water and credit user	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 3
m. Practice registration documents, if available	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 9
n. History of project site(s)	<input checked="" type="radio"/> Yes <input type="radio"/> No	Section 4
o. Other: _____	<input type="radio"/> Yes <input type="radio"/> No	

### The preparer certifies all of the following:

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

Signature of Preparer



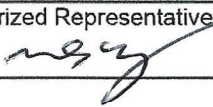
Date Signed

4-26-21

### Authorized Representative Signature

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

Signature of Authorized Representative



Date Signed

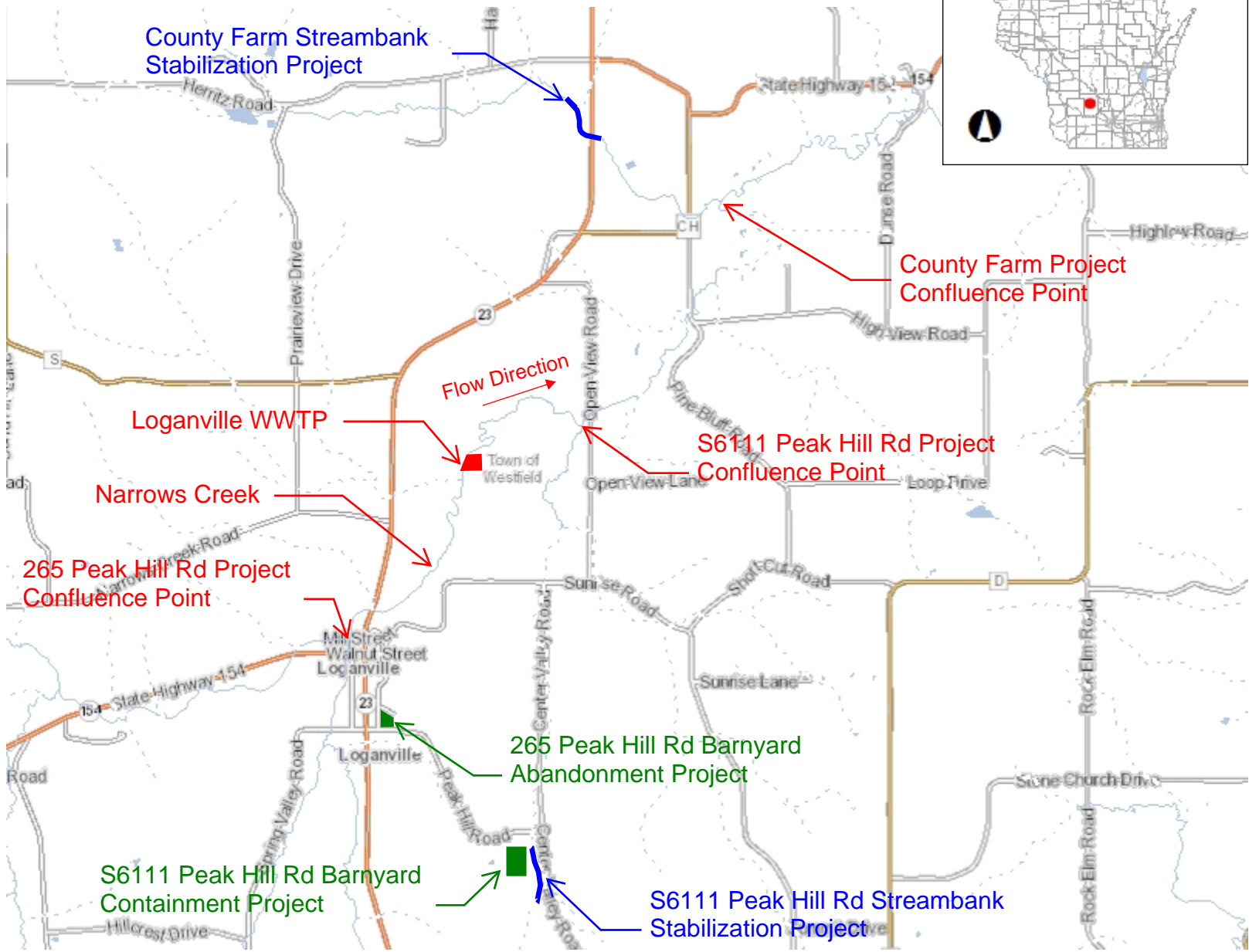
29 APR 21

## **APPENDIX 3-1**

### **PROJECT OVERVIEW LOCATION MAP**



# Project Overview Map



- 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



NAD\_1983\_HARN\_Wisconsin\_TM

1: 47,520

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/>

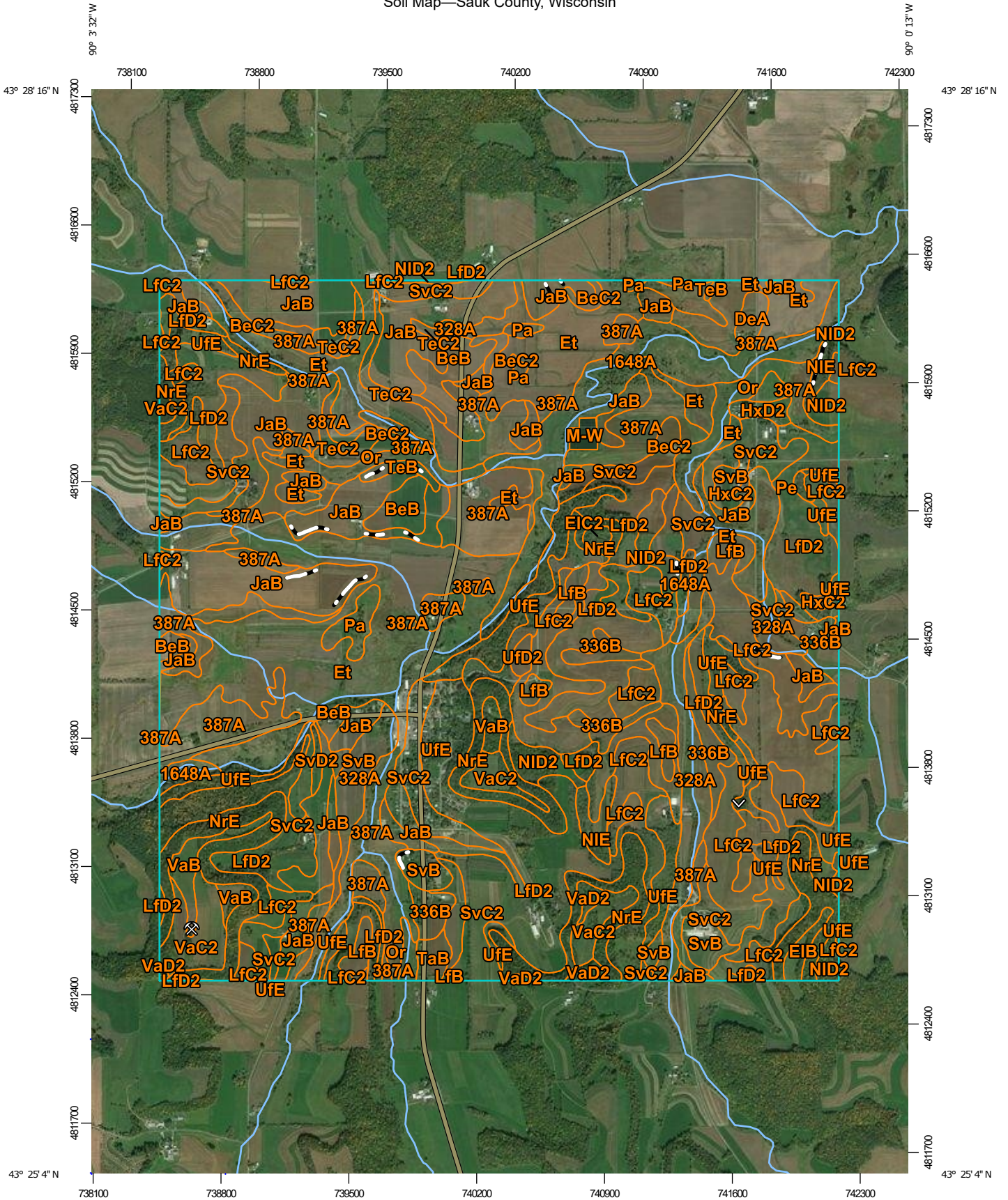
## Notes



# **APPENDIX 4-1**

## **SOIL MAP**

Soil Map—Sauk County, Wisconsin



Map Scale: 1:28,800 if printed on A portrait (8.5" x 11") sheet.



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



Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey

1/14/2021 Page 1 of 4

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)




















### Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

### Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


### Water Features

 Streams and Canals

### Transportation

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

### Background

 Aerial Photography

## MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Sauk County, Wisconsin  
 Survey Area Data: Version 18, Jun 8, 2020

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

Date(s) aerial images were photographed: Sep 15, 2012—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
328A	Rowley silt loam, 0 to 3 percent slopes	107.1	3.0%
336B	Toddville silt loam, 1 to 6 percent slopes	63.3	1.8%
387A	Curran silt loam, 0 to 3 percent slopes, rarely flooded	334.0	9.5%
1648A	Northbend-Ettrick silt loams, 0 to 3 percent slopes, frequently flooded	132.2	3.8%
BeB	Bertrand silt loam, 1 to 6 percent slopes	56.2	1.6%
BeC2	Bertrand silt loam, 6 to 12 percent slopes, moderately eroded	26.5	0.8%
DeA	Dells silt loam, 0 to 3 percent slopes	9.4	0.3%
EIB	Eleva sandy loam, 2 to 6 percent slopes	8.2	0.2%
EIC2	Eleva sandy loam, 6 to 12 percent slopes, eroded	3.2	0.1%
Et	Ettrick silt loam, 0 to 2 percent slopes, frequently flooded	575.5	16.3%
HxC2	Hixton silt loam, 6 to 12 percent slopes, moderately eroded	8.3	0.2%
HxD2	Hixton silt loam, 12 to 20 percent slopes, moderately eroded	8.4	0.2%
JaB	Jackson silt loam, 1 to 6 percent slopes	369.7	10.5%
LfB	La Farge silt loam, 2 to 6 percent slopes	38.1	1.1%
LfC2	La Farge silt loam, 6 to 12 percent slopes, eroded	279.5	7.9%
LfD2	La Farge silt loam, 12 to 20 percent slopes, eroded	622.2	17.7%
M-W	Miscellaneous water	5.8	0.2%
NID2	Norden loam, 12 to 20 percent slopes, eroded	80.0	2.3%
NIE	Norden loam, 20 to 30 percent slopes	21.2	0.6%
NrE	Norden and Eleva soils and rock outcrop, 12 to 60 percent slopes	177.6	5.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Or	Orion silt loam, 0 to 3 percent slopes, occasionally flooded	74.2	2.1%
Pa	Palms muck, 0 to 2 percent slopes	22.7	0.6%
Pe	Pits, quarries	2.3	0.1%
SvB	Seaton silt loam, driftless valley, 2 to 6 percent slopes	38.6	1.1%
SvC2	Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	168.1	4.8%
SvD2	Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded	3.9	0.1%
TaB	Tama silt loam, driftless, 2 to 6 percent slopes	9.9	0.3%
TeB	Tell silt loam, 2 to 6 percent slopes	8.0	0.2%
TeC2	Tell silt loam, 6 to 12 percent slopes, eroded	29.9	0.8%
UfD2	Urne fine sandy loam, 12 to 20 percent slopes, eroded	4.8	0.1%
UfE	Urne fine sandy loam, 20 to 30 percent slopes	132.2	3.8%
VaB	Valton silt loam, 2 to 6 percent slopes, moderately eroded	29.5	0.8%
VaC2	Valton silt loam, 6 to 12 percent slopes, moderately eroded	63.1	1.8%
VaD2	Valton silt loam, 12 to 20 percent slopes, moderately eroded	10.1	0.3%
<b>Totals for Area of Interest</b>		<b>3,523.8</b>	<b>100.0%</b>



## **APPENDIX 5-1**

### **BARNYARD SITE PHOTOS**

## S6111 Peak Hill Farm Site Photos



S6111 Peak Hill Farm site photo upslope, depicting topography of site and direct runoff to tributary of Narrows Creek.



S6111 Peak Hill Farm site photo depicting direct runoff to tributary of Narrows Creek.

## **APPENDIX 5-2**

### **SOIL SAMPLE LOCATIONS & STREAMBANK SITE PHOTOS**



# County Farm

Soil Sample and Site Photo Locations

Legend



Google Earth

© 2021 Google

600 ft





**County Farm Site Photos**

Sample 1.

Latitude: 43.478506  
Longitude: -90.014198



Sample 2.

Latitude: 43.478532  
Longitude: -90.015092





Sample 3.

Latitude: 43.478676  
Longitude: -90.015179



Sample 4.

Latitude: 43.479248  
Longitude: -90.015200





Sample 5.

Latitude: 43.480082  
Longitude: -90.015367



Sample 6.

Latitude: 43.480426  
Longitude: -90.015637





Sample 7.

Latitude: 43.480497  
Longitude: -90.016031



Sample 8.

Latitude: 43.480842  
Longitude: -90.015798





Sample 9.

Latitude: 43.481034  
Longitude: -90.016908



Sample 10.

Latitude: 43.481096  
Longitude: -90.017462






# S6111 Peak Hill Rd Farm

Soil Sample and Site Photo Locations

## Legend

 Roecker



Google Earth

© 2021 Google

500 ft



**S6111 Peak Hill Farm Site Photos**

Sample 4.

Latitude: 43.425413  
Longitude: -90.019926



Sample 5.

Latitude: 43.424699  
Longitude: -90.019291



## **APPENDIX 5-3**

### **NRCS RECESSION RATES**

# RAP-M

**Rapid Assessment, Point Method**

**&**

# BATHMASTER

**Bathymetric Depth Mapping**



**Erosion and Sediment  
Inventory Procedures  
Illinois**  
*August 2002*



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 altered. 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 6-1**

# **APPLE MODEL SOIL LOSS CALCULATIONS**



APLE-Lots Average Annual Runoff Report

7/27/2020 2:59:43 PM

Project Name **Roecker S6111 Peak Hill Rd**  
 Version Name Original  
 Lot Name Paved Lot 1  
 County Sauk  
 Location 11N 4E s16

Cover Type paved  
 Area(sq.ft.) 7000

Date 7/27/2020  
 Average Days Between Cleaning 28

Contributing Area

Name	Area	Type(CN)	Mitigation	Mitigation Text	Percent Diverted
Roof 1		3500 Roof(98)		FALSE	0
Roof 2		1400 Roof(98)		FALSE	0
Tributary 1		5000 Grass(69)		FALSE	0

Animals

Month	Animal type/hours a day	Number	Manure dry matter produced in month(ton)	
January	Dairy Heifer 750 lb/24 hrs		100	9.91
February	Dairy Heifer 750 lb/24 hrs		100	9.27
March	Dairy Heifer 750 lb/24 hrs		100	9.91
April	Dairy Heifer 750 lb/24 hrs		100	9.59
May	Dairy Heifer 750 lb/24 hrs		100	9.91
June	Dairy Heifer 750 lb/24 hrs		100	9.59
July	Dairy Heifer 750 lb/24 hrs		100	9.91
August	Dairy Heifer 750 lb/24 hrs		100	9.91
September	Dairy Heifer 750 lb/24 hrs		100	9.59
October	Dairy Heifer 750 lb/24 hrs		100	9.91
November	Dairy Heifer 750 lb/24 hrs		100	9.59
December	Dairy Heifer 750 lb/24 hrs		100	9.91

Manure dry matter produced in year(ton): 117

Model results for Paved Lot 1 annual output

Runoff (in) 47.4  
 Sediment loss (ton) 23.3  
 Total P loss (lb) **385.9**

APLE-Lots Average Annual Runoff Report

4/9/2021 8:58:28 AM

Project Name 265 Peak Hill Rd  
 Version Name Original  
 Lot Name Earth lot  
 County Sauk  
 Location 11N 4E s17

Cover Type dirt  
 Area(sq.ft.) 21361

Date 4/9/2021  
 % Vegetated 25  
 Average Days Between Cleaning 365

Contributing Area	Area	Type(CN) Type	Mitigation	Mitigation Text	Percent Diverted
Roof 2	721	Roof(98)	FALSE		0
Animals					
Month	Animal type/hours a day	Number	Manure dry matter produced in month(ton)		
January	Dairy Youngstock 500 lb/12 hrs		70		2.51
February	Dairy Youngstock 500 lb/12 hrs		70		2.27
March	Dairy Youngstock 500 lb/12 hrs		70		2.51
April	Dairy Youngstock 500 lb/12 hrs		70		2.43
May	Dairy Youngstock 500 lb/12 hrs		70		2.51
June	Dairy Youngstock 500 lb/12 hrs		70		2.43
July	Dairy Youngstock 500 lb/12 hrs		70		2.51
August	Dairy Youngstock 500 lb/12 hrs		70		2.51
September	Dairy Youngstock 500 lb/12 hrs		70		2.43
October	Dairy Youngstock 500 lb/12 hrs		70		2.51
November	Dairy Youngstock 500 lb/12 hrs		70		2.43
December	Dairy Youngstock 500 lb/12 hrs		70		2.51
			Manure dry matter produced in year(ton):		29.6

Model results for Earth lot annual output  
 Runoff (in) 12  
 Sediment loss (ton) 5.8  
 Total P loss (lb.) 56.6

APLE-Lots Average Annual Runoff Report

4/9/2021 8:57:06 AM

Project Name 265 Peak Hill Rd  
 Version Name Original  
 Lot Name Paved lot 1  
 County Sauk  
 Location 11N 4E s17

Cover Type paved  
 Area(sq.ft.) 4600

Date 4/9/2021  
 Average Days Between Cleaning 28

Contributing Area

Name	Area	Type(CN)	Mitigation	Mitigation Text	Percent Diverted
Roof 1	950	Roof(98)	FALSE		0

Month	Animal type/hours a day	Number	Manure dry matter produced in month(ton)	
January	Dairy Youngstock 500 lb/12 hrs	70	2.51	
February	Dairy Youngstock 500 lb/12 hrs	70	2.27	
March	Dairy Youngstock 500 lb/12 hrs	70	2.51	
April	Dairy Youngstock 500 lb/12 hrs	70	2.43	
May	Dairy Youngstock 500 lb/12 hrs	70	2.51	
June	Dairy Youngstock 500 lb/12 hrs	70	2.43	
July	Dairy Youngstock 500 lb/12 hrs	70	2.51	
August	Dairy Youngstock 500 lb/12 hrs	70	2.51	
September	Dairy Youngstock 500 lb/12 hrs	70	2.43	
October	Dairy Youngstock 500 lb/12 hrs	70	2.51	
November	Dairy Youngstock 500 lb/12 hrs	70	2.43	
December	Dairy Youngstock 500 lb/12 hrs	70	2.51	
			Manure dry matter produced in year(ton): 29.6	

Model results for Paved lot 1 annual output

Runoff (in) 33.8  
 Sediment loss (ton) 8.9  
 Total P loss (lb.) 124.8

**APPENDIX 6-2**  
**SOIL TEST DATA**





**Melissa Schlupp**  
**Sauk County LRE**  
**505 Broadway**  
**Baraboo WI 53913**

**Date** 3/26/2021  
**Account #** 558967  
**Report #** 1541

## Soil Total Mineral Analysis

Sample ID	P %	
SB1	0.04	County Farm
SB2	0.07	
SB3	0.03	
SB4	0.03	
SB5	0.03	
SB6	0.03	
SB7	0.04	
SB8	0.03	
SB9	0.04	
SB10	0.04	
Roeker 4	0.05	S6111 Peak Hill Farm
Roeker 5	0.05	



**Sauk County LRE**  
**505 Broadway**  
**Baraboo WI 53913**

**Date** 5/29/2020  
**Account #** 558967  
**Report #** 1689

## Soil Total Mineral Analysis

Sample ID	P %
-----------	--------

Roeker streambank 0.04

Sample location 1, 2 and 3 were  
combined into one composite sample.

S6111 Peak Hill Farm



**Soil and Forage Analysis Lab**  
COLLEGE OF AGRICULTURAL & LIFE SCIENCES  
UNIVERSITY OF WISCONSIN-MADISON

2611 Yellowstone Drive

Marshfield WI 54449

715-387-2523

<http://uwlab.soils.wisc.edu>

**Sauk County LRE**  
**505 Broadway**  
**Baraboo WI 53913**

**Date** 5/29/2020  
**Account #** 558967  
**Report #** 1690

## **Soil Total Mineral Analysis**

<b>Sample ID</b>	<b>P</b> <b>%</b>
County Farm waterway outlet	0.04

## **APPENDIX 6-3**

# **NRCS PHOSPHORUS SOIL LOSS CALCULATIONS**



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

Farmer / Cooperator Name:   
 Tract Number:

Evaluated By:   
 Evaluation Date:

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 <sup>2</sup> )	Lateral or Ditch Bottom Recession Rate (Estimated) (FT / Year)	Estimated Volume (FT <sup>3</sup> ) Eroded Annually	Soil Texture	Approximate Pounds of Soil per FT <sup>3</sup>	Estimated Soil Loss (Tons/Year)
	S6111 Peak Hill Farm	1,000.0	4.0	4,000	0.50	2,000.0	Silt Loam	85	85.0
	County Farm	1,900.0	5.0	9,500	0.50	4,750.0	Silt Loam	85	201.9

<b>Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):</b>	<b>286.9</b>
<b>Percent Leachable Phosphorus in the Soil (nitric/peroxide):</b>	<b>0.04%</b>
<b>Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):</b>	<b>0.115</b>
<b>Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):</b>	<b>230</b>

<b>Total Phosphorus Loss for sum of reaches (lbs/yr):</b>	<b>230</b>
---	------------

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

*Streambank or Ditch Erosion Calculation Formula:*

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

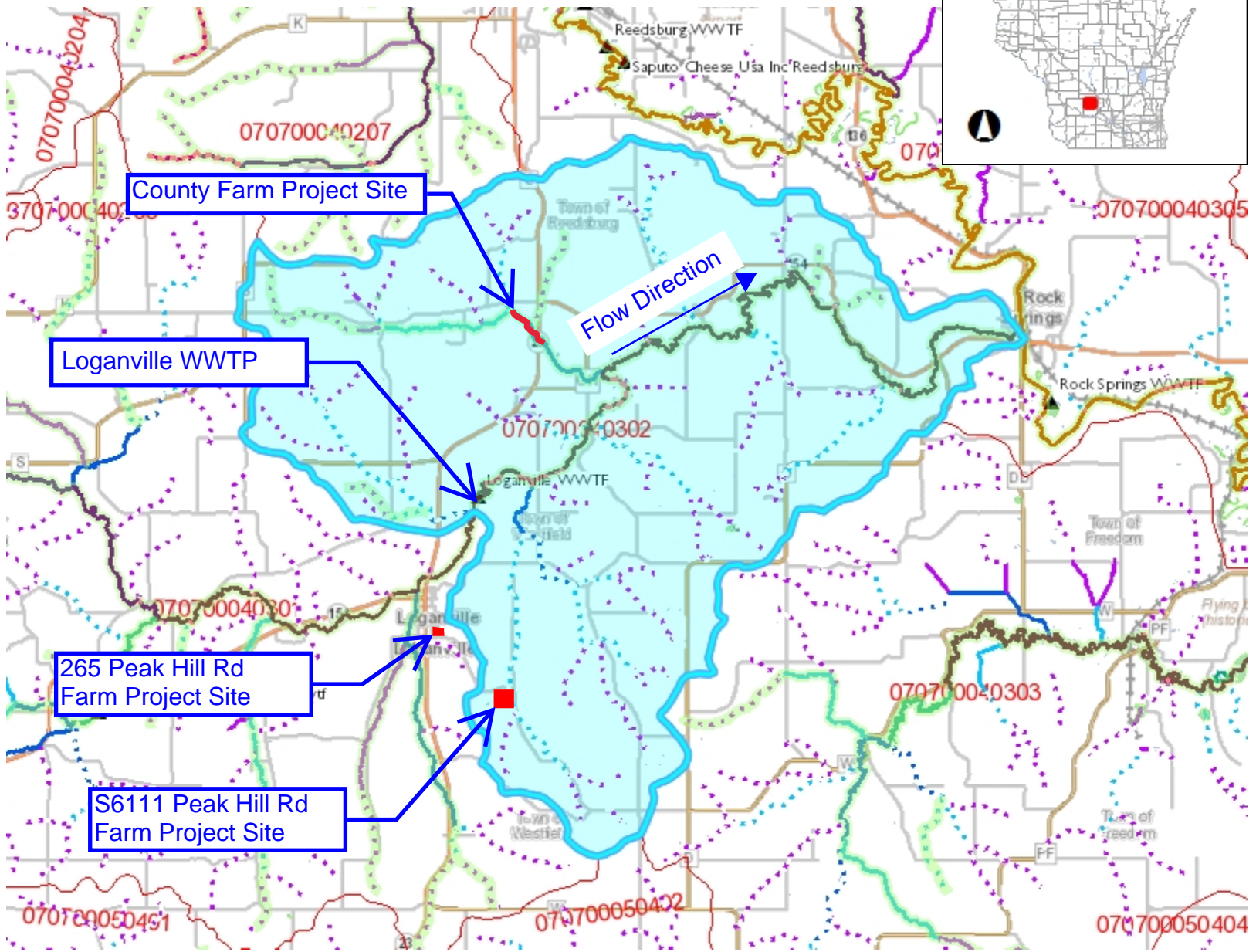
2000

## **APPENDIX 7-1**

### **HUC 12 WATERSHED BASIN MAP**



# Loganville HUC 12



- Legend**
- Impaired Rivers and Streams
  - Impaired Lakes
  - Stream Assessments
  - Lake Assessments
  - Navigability Determinations**
  - Yes
  - Yes with Agricultural Exemption
  - No
  - ▲ Surface Water Outfalls
  - Stream Order**
  - 1st Order
  - 2nd Order
  - 3rd Order
  - 4th Order
  - 5th Order
  - 6th Order
  - 7th Order
  - 8th Order
  - 9th Order
  - 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



NAD\_1983\_HARN\_Wisconsin\_TM

1: 95,040

**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**

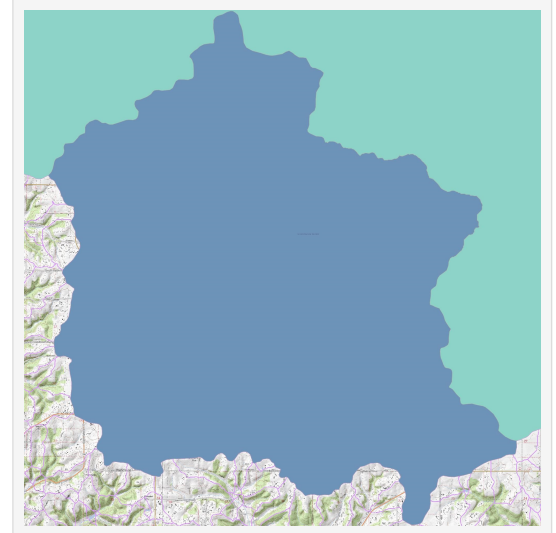
**APPENDIX 7-2**

**PRESTO-LITE WATERSHED DELINEATION  
REPORT**

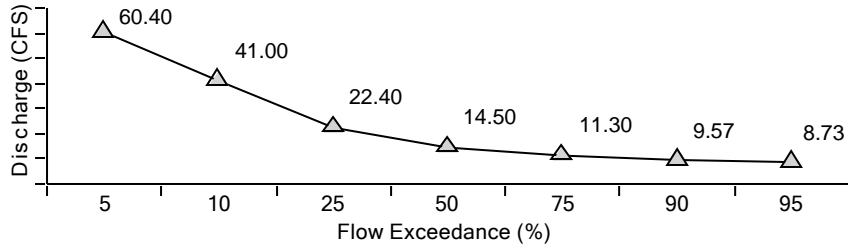


# PRESTO-Lite Watershed Delineation Report

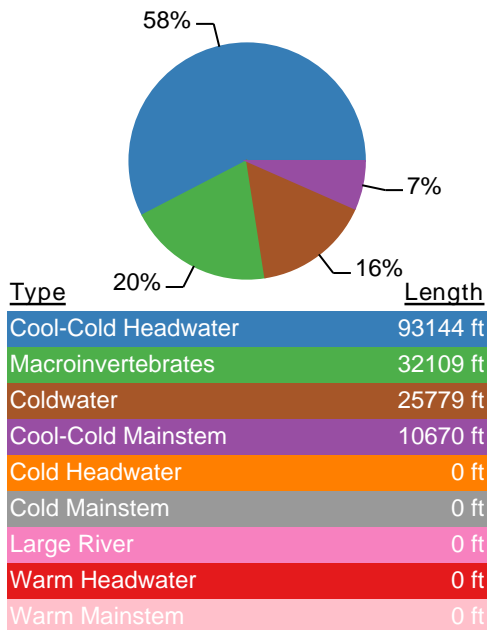
Reach ID: 200041526  
 Watershed Name: Narrows Creek  
 Waterbody Name: Narrows Creek  
 HUC08: Baraboo  
 Watershed Area: 43.98 mi<sup>2</sup>  
 Average Annual Precipitation: 33.86in



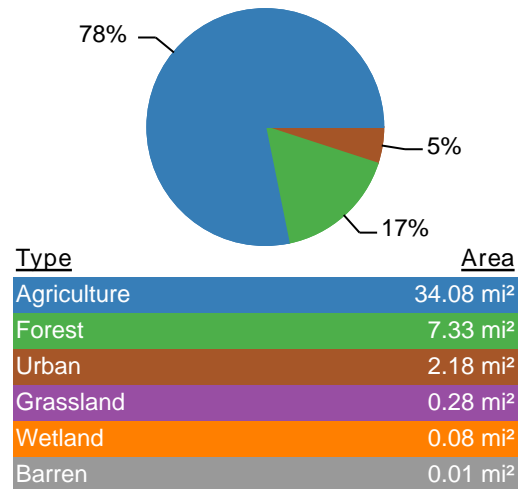
## Stream Flow



## Tributary Stream Type



## Landcover



## PRESTO Phosphorus Load Estimate

Avg. Annual Nonpoint Phosphorous Load (80% Confidence Interval)	44,031 (18,755 - 103,372) lbs
Number of Facilities (Individual Facility Information below)	3
Avg. Annual Point-source Phosphorous Load (2010 - 2012 total of all facilities)	702lbs
Most Likely Point : Nonpoint Phosphorous Ratio	2% : 98%
Low Estimate Point : Nonpoint Phosphorous Ratio (Adaptive Management)	1% : 99%

## Adaptive Management Results

Facilities Discharging to the Narrows Creek Watershed:

Facility Name	Permit #	Outfall #	Waste Type	Receiving Water	Avg. Phosphorus Load (lbs.) (2010 - 2012)
LOGANVILLE WASTEWATER TREATMENT FACILITY	0029114	001	Municipal	Narrows Creek	509
HILL POINT SANITARY DISTRICT WWTF	0035483	001	Municipal	Hill Point Creek	130
LIME RIDGE WASTEWATER TREATMENT FACILITY	0036447	001	Municipal	Narrows Creek	63

## Watershed Analysis Limitations

- This analysis relies on pre-defined catchments from the Wisconsin Hydrography Data-Plus and may not delineate from the exact location required. When assessing phosphorus loads for specific facility in support of efforts such as adaptive management, care should be taken to ensure that additional downstream point sources do not exist. For adaptive management information related to specific facilities please reference the PRESTO website <http://dnr.wi.gov/topic/surfacewater/presto.html>
- Delineation of watersheds is based on a topographic assessment and therefore do not account for modified drainage networks such as stormwater sewer systems and ditched agriculture.
- If a watershed requires delineation from an exact location the user may use the desktop version of PRESTO that requires ESRI ArcGIS. The PRESTO tool and default datasets can be downloaded at <http://dnr.wi.gov/topic/surfacewater/presto.html>
- Data sources for this report originate from the WDNR's Wisconsin Hydrography Data-Plus value-added dataset and the point and non-point source loading information including in the WDNR's PRESTO model.
- If you have questions about the report generated from the PRESTO-Lite application please contact: [DNRWATERQUALITYMODELING@wisconsin.gov](mailto:DNRWATERQUALITYMODELING@wisconsin.gov)

## **APPENDIX 7-3**

# **PRESTO-LITE PHOSPHORUS LOAD ESTIMATES**



## PRESTO LITE Phosphorus Load Estimates

Description	Quantity	Units
Average Annual Nonpoint Phosphorus Load	44,031	lbs
Average Annual Point Source Phosphorus Load	702	lbs
Average Total Phosphorus Load	44,733	lbs
Estimated Annual Load from Loganville WWTF	509	lbs
<b>Calculated percentage of Loganville of Total</b>	<b>1.14%</b>	

**Table 2. Downstream Trading Factor (WQT Guidance 2020, pg. 27)**

Credit User's Load as a Percentage of Total In-Stream Load	Downstream Trading Factor
<25%	0.1
<50%	0.2
<75%	0.4
>=75%	0.8

**The percentage of the credit User's Load as Total In-Stream Load is 1.14%.**

**The Downstream Trading Factor is 0.1**

## **APPENDIX 11-1**

# **PRELIMINARY COST ESTIMATES**

**PRELIMINARY COST ESTIMATE  
WATER QUALITY TRADE PROJECT  
VILLAGE OF LOGANVILLE  
LOGANVILLE, WISCONSIN**

**Rolling Acres Farm - S6111 Peak Hill Rd  
Barnyard Containment - Sized for Existing Cattle at S6111 AND 265 Peak Hill Rd**

<b>Quantity</b>	<b>Unit</b>	<b>Item</b>	<b>Unit Price</b>	<b>Total</b>
1	L.S.	Mobilization	\$ 5,000.00	\$ 5,000.00
1	L.S.	Site Preparation, clearing, and grading	\$ 2,000.00	\$ 2,000.00
17,200	sq. ft.	5-in Flatwork with #4 Rebar @ 18-in OC	\$ 8.00	\$ 137,600.00
500	lin. ft.	2-ft vertical wall	\$ 35.00	\$ 17,500.00
600	lin. ft.	6-ft vertical wall	\$ 90.00	\$ 54,000.00
17,200	sq. ft.	Roof	\$ 20.00	\$ 344,000.00
2,000	sq. yd.	Liming, fertilizing, seeding and mulching	\$ 6.00	\$ 12,000.00
1	L.S.	Erosion Control	\$ 3,000.00	\$ 3,000.00
1	L.S.	Tracking Pad	\$ 750.00	\$ 750.00
			<b>Subtotal:</b>	<b>\$ 575,850.00</b>
			Contingency (10%)	\$ 57,600.00
			Total Estimated Construction Cost	\$ 633,450.00
			Engineering	\$ 95,000.00
			Sauk County Admin/Labor	\$ 15,000.00
			Funding Application & Administration	\$ 8,000.00
			Bonding/Closing Cost	\$ 5,000.00
			<b>Total Project Cost:</b>	<b>\$ 756,450.00</b>

**Rolling Acres Farm - S6111 Peak Hill Rd  
Streambank Stabilization**

Quantity	Unit	Item	Unit Price	Total
1	L.S.	Mobilization	\$ 3,000.00	\$ 3,000.00
1	L.S.	Site Preparation, clearing, and grading	\$ 1,000.00	\$ 1,000.00
600	cu. yd.	Limestone rock riprap D50 size 8" Diameter	\$ 65.00	\$ 39,000.00
1,300	sq. yd.	Geotextile Fabric, Type SAS	\$ 3.00	\$ 3,900.00
1,200	sq. yd.	Liming, fertilizing, seeding and mulching	\$ 6.00	\$ 7,200.00
1	L.S.	Erosion Control	\$ 2,000.00	\$ 2,000.00
1	L.S.	Tracking Pad	\$ 500.00	\$ 500.00
		<b>Subtotal</b>		<b>\$ 56,600.00</b>
		Contingency (10%)	\$ 5,700.00	
		Total Estimated Construction Cost		\$ 62,300.00
		Engineering		\$ 9,300.00
		Sauk County Admin/Labor		\$ 15,000.00
		Funding Application & Administration		\$ 4,000.00
		Bonding/Closing Cost		\$ 1,000.00
		<b>Total Project Cost:</b>		<b>\$ 91,600.00</b>

**County Farm  
Streambank Stabilization**

Quantity	Unit	Item	Unit Price	Total
1	L.S.	Mobilization	\$ 3,000.00	\$ 3,000.00
1	L.S.	Site Preparation, clearing, and grading	\$ 1,000.00	\$ 1,000.00
1,400	cu. yd.	Limestone rock riprap D50 size 8" Diameter	\$ 65.00	\$ 91,000.00
3,000	sq. yd.	Geotextile Fabric, Type SAS	\$ 3.00	\$ 9,000.00
2,300	sq. yd.	Liming, fertilizing, seeding and mulching	\$ 6.00	\$ 13,800.00
1	L.S.	Erosion Control	\$ 2,000.00	\$ 2,000.00
1	L.S.	Tracking Pad	\$ 500.00	\$ 500.00
		<b>Subtotal</b>		<b>\$ 120,300.00</b>
		Contingency (10%)	\$ 12,000.00	
		Total Estimated Construction Cost		\$ 132,300.00
		Engineering		\$ 19,800.00
		Sauk County Admin/Labor		\$ 15,000.00
		Funding Application & Administration		\$ 4,000.00
		Bonding/Closing Cost		\$ 1,000.00
		<b>Total Project Cost:</b>		<b>\$ 172,100.00</b>

<b>TOTAL COST FOR TP REDUCTION COMPLIANCE:</b>	<b>\$ 1,020,150.00</b>
--	------------------------