WATER QUALITY TRADING PLAN

CITY OF GALESVILLE WWTP

GALESVILLE, WI



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1 EXECUTIVE SUMMARY

The WPDES Permit for the Galesville wastewater treatment facility (WWTP), **Appendix 1-1**, proposes a future phosphorus effluent limit of 0.075 mg/L. The existing interim limit is 1.0 mg/L. Within this Permit term, the City plans to offset the entire phosphorous mass with Water Quality Trading (WQT) projects.

Galesville submitted a Watershed Plan for the Multi-Discharger Variance (MDV) in 2019 (MDV-2019-001) which included multiple streambank stabilization projects and a cover crop conversion project to generate phosphorus credits and reduce phosphorus to an amount equal to the difference between the actual phosphorus discharged at the WWTP and the target MDV limit of 0.2 mg/L. The projects were constructed in 2020 and began generating credits immediately. The MDV projects collectively yield a total of 519 lbs. of phosphorus credits annually for the City. The following Table 1.1 is a list of the projects constructed for the MDV Watershed Plan, which will be used towards permanent WQT credits:

Table 1.1: MDV WATERSHED PLAN CREDIT SUMMARY

Project Description	BMP Type	P lbs/year
Within City Limits		
Town of Galesville Sand Pile Site	Streambank Stabilization	22
Old Swinging Bridge Site	Streambank Stabilization	56
Baseball Diamond Site	Streambank Stabilization	18
Spoil Site	Cover Conversion	36
Sub-Total		***132***
Outside City Limits		
Jokisch	Streambank Stabilization	107
Becker	Streambank Stabilization	284
Sub-Total		***391***
Total		**523**

The streambank projects and farmland conversion completed as part of the MDV Watershed Plan provide a phosphorus reduction of 523 lbs./year. When converted to full WQT and trade ratios are applied, these projects will generate 192 credits annually with a 3:1 trade ratio for the streambank projects, and a trade ratio of 1.2:1 for the Spoil Site cover crop conversion project. The projects are primarily upstream of the WWTP discharge and are located in the same HUC 12 watershed. The Becker Streambank Stabilization project is immediately downstream of the WWTP outfall. No habitat features were included in the construction of the MDV Watershed Plan projects, but are proposed to be added to the Becker and Jokisch projects to reduce the trade ratio to 2:1 for those projects. The projects all together will then generate 258 lbs/year of P credits.

The MDV Watershed Plan projects are being used for compliance while the City searches for more projects to reach compliance with the final 0.075 mg/L limit through WQT. Credits generated through the MDV Watershed Plan can be transferred to WQT credits once enough credits are identified. The purpose of this WQT plan is to transfer the completed MDV Watershed Projects to WQT and describe Additional WQT Projects which have been identified since 2020. The Additional WQT Projects are located on the Halama property along Dutch Creek which has been used historically as a cattle farm. Cattle activity has caused significant erosion and contributed to phosphorus entry into Dutch Creek through soil loss. The Halama's are planning to reduce the cattle on the property from 100 total cattle to three (3) which will greatly reduce erosion to Dutch Creek. A revised WQT agreement will be drafted to limit cattle on the property to three total heads for the Halama's or any future landowners. In addition to the Halama project, the new

WQT work will include adding fish habitat to the Becker and Jokisch bank stabilization projects to improve the Trade Ratio to 2:1 and increase the credits earned.

Galesville operates an aerated lagoon system and discharges continually. The City adds ferric chloride to reduce the lagoon effluent phosphorus and typically averages an effluent phosphorus of 0.85 mg/L. Apart from implementing an expensive treatment technology such as a tertiary filter to meet the final stringent limit, the WWTP is fully optimized for phosphorus treatment.

Using the actual effluent flows and the current level of phosphorus removal being provided, an estimated total of 154 lbs./year of additional Phosphorus Credits are needed in conjunction with the MDV credits after converting to WQT to fully offset the Phosphorus mass loadings during the higher 6-month average period.

The estimated mass calculations assume the current wastewater flow. The City spent the last couple years calibrating the WWTP influent and effluent flow meters due to discrepancies in measurements and inaccurate flow data. Flow data from 2022 – present is estimated to be more representative of actual conditions than earlier years. If flow from the WWTP increases, additional credits will be needed.

The WWTP is located at N15386 County Road K, south of the City. The effluent discharge is piped to Beaver Creek directly east of the WWTP.

2 BACKGROUND SUPPORTING THE WATER QUALITY TRADE PLAN

2.1 PURPOSE OF WATER QUALITY TRADING. The purpose of this Water Quality Trading Plan is to describe how the Galesville WWTP will utilize Water Quality Trading (WQT) to comply with the phosphorus limits of WPDES permit WI-0021725-10-1, which expires on June 30, 2025. This Water Quality Trading Plan will require Water Quality Trade Agreements with the landowners. This Plan will utilize the projects constructed under the MDV Watershed Plan, in which trade agreements were executed with the property owners, Trempealeau County, and the City of Galesville. The Additional WQT Project agreements will be developed pursuant to the Notice of Intent (form 3400-206) to conduct a WQT. The Notice of Intent (NOI) was filed in 2019 and is included in **Appendix 2-1** of this plan. The County is assisting in obtaining trade agreements, identifying projects, design, construction oversight, and annual inspections.

2.2 BACKGROUND OF THE TOTAL PHOSPHOROUS PERMIT REQUIREMENTS FOR THE WWTP OUTFALL. The outfall is located on Beaver Creek (Beaver Creek & Lake Marinuka Watershed of the Black River Basin in Trempealeau County) and is authorized to discharge through WPDES permit WI-0021725-10-1. The permit is effective from July 1, 2020 to June 30, 2025. The total phosphorus limits are summarized as follows:

- July 1, 2022 to June 30, 2025 1.0 mg/L
- July 1, 2025 to June 30, 2030 0.075 mg/L

In accordance with s. 283.15, Wis. Stats., the outfall for permit WI-0021725-10-1 operated under the Multi-Discharge Variance utilizing a Watershed Plan. The City will transfer credits generated from the MDV projects to WQT and implement new WQT projects to achieve final compliance with the stringent 0.075 mg/L limit.

2.3 LOCATION OF WWTP OUTFALL. The outfall discharges to Beaver Creek, approximately 100 feet east of the WWTP. This location is in the Beaver Creek & Lake Marinuka Watershed of the Black River Basin in Trempealeau County. Beaver Creek flows to the south and discharges to the Black River. The outfall location is located north of the WWTP. See **Appendix 2-2** for the Galesville WWTP Outfall Location Map.

2.4 LOCATION OF WQT PROJECTS IN COMPARISON TO THE WWTP OUTFALL. The MDV Watershed Plan includes six (6) projects, including streambank stabilization and a cover crop conversion

that will be transitioned to WQT credits. The already constructed streambank projects are located along Beaver Creek upstream of the WWTP. The Becker streambank stabilization project is located immediately downstream of the WWTP discharge. The City cover crop conversion project is located upstream of the WWTP near the high school. The streambank projects are located on private property, City property and Town of Gale property. The crop conversion site is located on City of Galesville property. **Appendix 2-2** includes a location map of these projects relative to the City WWTP outfall.

For the Additional WQT Projects, Trempealeau County identified another WQT project on the Halama property along Dutch Creek which is a tributary to Beaver Creek and upstream of the WWTP. The project includes sections of streambank stabilization and grade stabilization areas that have deteriorated and eroded due to cattle and farm equipment activity. There is also an additional, potential Field Crop Conversion Site project on City property within the City limits.

3 DESCRIPTION OF EXISTING LAND USES IN VICINITY OF WQT PROJECTS

Existing land usage varies. The completed and additional bank stabilization projects include several City owned properties, two Town of Gale properties and private properties. The two land conversion projects are on City owned property

3.1 LAND CONVERSION PROJECT. The completed MDV Watershed Plan land conversion project involves City owned property, which was originally leased out for farming. The parcel is known in this report as the Spoil Site as it was used for dredged material from Lake Marinuka. The Additional WQT Project with land conversion involves City-owned land that is currently being farmed.

3.2 BEAVER CREEK IN GALESVILLE. Beaver Creek is a 6.17-mile-long creek designated as a Class II trout stream from Ettrick to Lake Marinuka above Galesville. It is considered an exceptional resource water. Beaver Creek is designated as an impaired water due to phosphorus.

Beaver Creek is located in the Beaver Creek and Lake Marinuka Watershed of the Black River Basin in Trempealeau County. Per the WI DNR Surface Water Data Viewer website, “This watershed is ranked High for runoff impacts on streams, High for runoff impacts on lakes and High for runoff impacts on groundwater and therefore has an overall rank of High. This value can be used in ranking the watershed or individual waterbodies for grant funding under state and county programs. However, all waters are affected by diffuse pollutant sources regardless of initial water quality.” Beaver Creek is considered a Cool-Warm Mainstem under the state's Natural Community Determinations.

The main soil types at the project sites on Beaver Creek are identified as Seaton Silt Loam and Impact sand. See **Appendix 3-1** for the Beaver Creek Soils Map, adjacent to the potential City Farm crop conversion site.

Per the DNR Surface Water Data Viewer website under Watershed Characteristics, “Beaver Creek is located in the Lower Black River watershed which is 189.82 mi². Land use in the watershed is primarily forest (42%), agricultural (20.30%) and a mix of wetland (13.80%) and other uses (23.70%). This watershed has 383.70 stream miles, 1,042.10 lake acres and 17,676.19 wetland acres.” Figure 1 shows the land use characteristics within the Beaver Creek watershed.

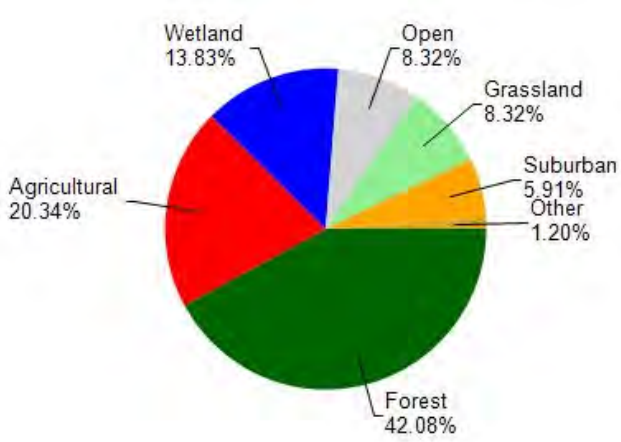


Figure 1: Beaver Creek Watershed Characteristics

3.3 DUTCH CREEK IN GALESVILLE. Dutch Creek is a 4.11-mile-long creek designated as a Class I trout stream and considered an exceptional resource water. Dutch Creek is a tributary to Beaver Creek. Dutch Creek is ranked as medium for nonpoint source pollution reduction and is listed as impaired due to phosphorus.

Dutch Creek is located in the Beaver Creek and Lake Marinuka Watershed of the Black River Basin in Trempealeau County. Per the WI DNR Surface Water Data Viewer website, "This watershed is ranked Medium for runoff impacts on streams, Medium for runoff impacts on lakes, and Medium for runoff impacts on groundwater and therefore has an overall rank of Medium. This value can be used in ranking the watershed or individual waterbodies for grant funding under state and county programs. However, all waters are affected by diffuse pollutant sources regardless of initial water quality." Dutch Creek is considered a Cool-Cold Headwater under the state's Natural Community Determinations.

The main soil types at the project sites are identified as Huntsville Silt Loam and Seaton Silt Loam. See **Appendix 3-2** for the Dutch Creek Soils Map.

Per the DNR Surface Water Data Viewer website under Watershed Characteristics, "Dutch Creek is located in the Beaver Creek and Lake Marinuka watershed which is 160.31 mi². Land use in the watershed is primarily forest (54.90%), agricultural (23.20%) and a mix of grassland (14.30%) and other uses (7.60%). This watershed has 375.97 stream miles, 229.76 lake acres and 3,765.47 wetland acres." Figure 2 shows the land use characteristics within the Dutch Creek watershed.

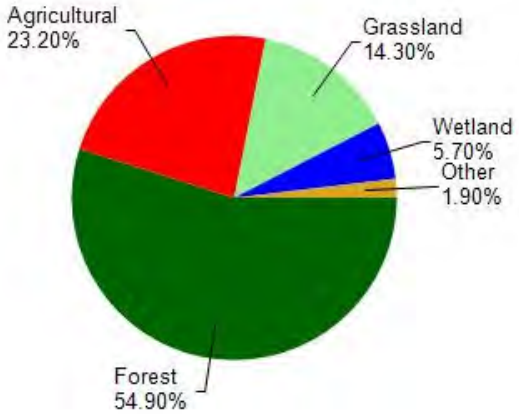


Figure 2: Dutch Creek Watershed Characteristics.

4 MANAGEMENT PRACTICES USED TO GENERATE CREDITS

The WQT project areas include streambank stabilization, grade stabilization, and land conversion. These areas were chosen as they benefit both the City of Galesville as well as generating credits for the WWTP.

The Additional WQT project is on the Halama property which has historically been used for cattle pasture causing high amounts of erosion along Dutch Creek which is a tributary to Beaver Creek. The Halama project was identified by Trempealeau County as an area of concern due to the property being degraded from constant cattle traffic. The Halama's do not currently plan a large cattle operation but to only maintain limited cattle for butchering.

The Halama project components include the following:

- Dutch Creek Streambank Stabilization
- Access Area/Stream Crossing
- Outlet/Spring Area Grade Stabilization
- Upstream Area Grade Stabilization

The MDV Watershed Project streambank stabilization projects are described in **Appendix 4-1**. Maps of the project locations are shown in **Appendix 4-2**. Photos of the MDV Watershed Plan project are included in **Appendix 4-3**. A definition of the Additional Halama WQT projects was prepared by the County and is included in **Appendix 4-4**.

4.1 FARMLAND CONVERSION. The farmland conversions both involve parcels of land owned by the City of Galesville. The conversion from cropland to native grassland is the intended BMP as that reduces the runoff containing phosphorus. The completed MDV Watershed Plan "Spoil Site" was analyzed using the program Snap Plus to estimate phosphorus reductions. The duration of the phosphorus reduction is based on the modelling program but should continue to generate credits each year the farmland is maintained as a grassland.

4.1.1 SPOIL SITE. The Spoil Site is a field owned by the City of Galesville, which was previously leased for farming. The entire site is approximately 30 acres; however, there are only about 23 acres that were farmed. The remaining acreage is either wetland or a gravel walking path around the site. The project site is the location where dredged material from Lake Marinuka was placed during the last dredging project. The site is adjacent to Lake Marinuka and Beaver Creek. Nonpoint source pollution in the form of agricultural runoff has been identified along the banks of the stream and lake from the spoil site. In general, per the WI DNR website description of Beaver Creek Beaver, "Animal wastes from barnyard runoff, intensive livestock pasturing, flooding and channelization have severely degraded stream habitat. This stream has moderate potential to improve its trout fishery if point and nonpoint sources of pollution are controlled."

The Spoil Site is located in the southern portion of the Beaver Creek and Lake Marinuka watershed which is 160 mi^2. Land use in the watershed is forest (40%), agriculture, and grassland with some wetlands in the river valleys. This watershed has 376 stream miles, 230 lake acres and 3,765 wetland acres.

The Spoil Site is surrounded by a gravel walking path. The land surrounding the spoil site is primarily residential, forest and a school. There are several storm water discharge outfalls from the spoil site under the walking path discharging into the forested areas which drain to Beaver Creek and Lake Marinuka. Areas of channelized flow leaving the fields and depositing high phosphorus loads into the creek due to the topography and erosion of ridges were evident. To reduce the phosphorus runoff, the agricultural field was converted into grassland. By establishing a land conversion to preserve this use the credits will continue to be generated into the future. A similar conversion of crop land to native grasses is proposed as an Additional WQT Project

4.1.2 W MILL ROAD FARMLAND CONVERSION. This potential Additional WQT farmland conversion project involves a parcel of land owned by the City of Galesville. This parcel is currently leased to a farmer and has been producing crops. The cropped area covers approximately 5.5 acres and is located adjacent to a ditch that is tributary to Beaver Creek north of STH 93, upstream of the WWTP. The conversion from cropland to native grassland is the intended BMP. By including a land conversion, the parcel will generate credits in future years. The City owned farm site will be analyzed using SnapPlus to estimate phosphorus reductions. The duration of the phosphorus reduction is based on the modeling program but should continue to generate credits each year the farmland is maintained as a grassland.

The site is bounded by W. Mill Road southwest of the site and STH 93 to the south. The land north of the site is primarily forest, including wetlands and a tributary stream to Beaver Creek. Areas of channelized flow leaving the fields and depositing high phosphorus loads into Beaver Creek due to the topography and erosion of ridges were evident. To reduce the phosphorus runoff, the agricultural field will be converted from production crops into grassland. By establishing a land conversion to preserve this use, the credits would continue to be generated. See **Appendix 3-1** & **Appendix 3-2** for the Soils Maps. The project is reserved for a future WQT, if needed.

4.2 STREAMBANK STABILIZATION. Several sites were chosen along Beaver Creek for streambank stabilization in the 2019 MDV Watershed Plan as summarized in Section 1. The sites are either on Beaver Creek or drain to Beaver Creek. These projects are located upstream of the WWTP, except for the Becker Streambank project which is immediately downstream of the WWTP discharge. A map of these project locations relative to the WWTP discharge is shown in **Appendix 2-2**. The narrative describing the 2019 MDV Watershed Plan projects prepared by Trempealeau County is included in **Appendix 4-1**.

For Additional WQT Projects, the Halama property was chosen by Trempealeau County for streambank and grade stabilization along Dutch Creek. Dutch Creek drains to Beaver Creek northeast of Galesville. The projects were chosen as good sites to generate WQT credits through bank stabilization BMPs, as these sections of streambank are where very high-velocity waters rapidly erode the banks during flood events. The annual recession rate varies and was determined for each individual streambank section using the NRCS Erosion Severity Chart, based on visual observation. **Appendix 4-5** shows the NRCS Erosion Severity Chart and categories. Photo documentation of the streambanks shows severely bare banks with noticeable vegetative overhang. See **Appendix 4-4** for site photos from Halama in the project definition narrative. **Appendix 4-6** shows a location map of each of the eroded sections on the Halama property for the Additional WQT projects. These sites also have high levels of nonpoint source pollutants entering from farm practices. Working with the farmer to install conservation practices would greatly reduce those pollutants. The County LCD determined that using riprap and vegetation on the creek banks to permanently armor the banks are the preferred BMPs for the bank erosion problems.

4.2.1 DURATION OF MANAGEMENT PRACTICE. The duration of the management practice can be essentially 100+ years if maintained properly, especially if cattle are not housed on the property. The practice can be constructed after winter thaw but is better to be constructed after the spring rains have subsided, with lower water levels in the creek. The construction will require shaping of the streambank and placement of properly sized rip rap. The landowners approved agreements with the County and the City, which require the landowner to maintain the BMP. The operation and maintenance are discussed in more detail in Section 13 of this plan.

4.2.2 DESCRIPTION OF BEST MANAGEMENT PRACTICES USED. The streambank stabilization BMPs will follow the NRCS 580 Code. At the bends where higher tractive forces are required to maintain vegetation, riprap armor will be implemented. The design will follow NRCS 580 standard and include geotextile fabric under the riprap. The BMPs will be designed such that the riprap should not migrate due to the flow of the stream. Vegetated cover will be used in low risk areas. Habitat enhancement features will be implemented into the design as the projects are located on a Class II trout stream.

Dutch Creek runs through the length of the Halama property. The total length of the creek on the property is 0.3 miles (1,590 feet). Along this stretch of stream, there are at least 8 areas that have erosion along the banks, with an estimated 500 feet needing repair with shaping and potentially rip rap. The average recession rate varies for each section and was determined using the NRCS erosion severity chart **(Appendix 4-5)** based on visual observation. Most of the banks along this stretch are bare soil with exposed roots. Heavy rains and high stream flows have caused increased flooding in recent years, leading to increased erosion along these bare banks. There is evidence of wildlife such as muskrats, ducks, and deer frequently using this stretch of stream for access to water. The streambank improvements will increase the quality of their environment and habitat. Figure 3 shows an example of the streambank erosion taking place along Dutch Creek on the Halama property.



Figure 3: Dutch Creek Streambank Erosion on Halama Property.

4.3 ACCESS AREA/STREAM CROSSING. The Halama access area or stream crossing has been used as an access for the cattle to cross Dutch Creek. Due to the cattle activity, there is significant erosion, making it a good candidate for an engineered stream crossing. This area is bare of vegetation with large gullies leading to the stream, some up to three feet deep, which makes it difficult for cattle and equipment to cross the creek. The crossing and approach area is approximately 75 feet across by 175 feet in length. The reconstructed crossing will continue to the other side of the stream to allow for access for people, equipment, vehicles, and livestock. If a remedy is not completed, snow melt and rainfall will continue to erode the soil and lead to increased phosphorous release into the watershed. In the past, the approaches and crossing were periodically graded by the farmer to maintain safe access for the cattle. That grading filled in the gullies, allowing new erosion to continue to the stream. Photos of the cattle access areas are below. Figures 4 and 5 show the active erosion at the stream crossing on the Halama property adjacent to Dutch Creek.



Figure 4: Dutch Creek Stream Crossing Erosion.



Figure 5: Dutch Creek Stream Crossing Erosion.

4.3.1 DURATION OF MANAGEMENT PRACTICE. The duration of the management practice is 20+ years if maintained properly. The practice can be constructed after winter thaw, but it is better to be constructed after the spring rains have subsided, with lower water levels in the creek. The construction will require shaping of the streambank and placement of properly sized riprap in some spots. The landowner has entered into a contract with the County and the City, which requires the landowner to maintain the crossing. The operation and maintenance are discussed in more detail in Section 13 of this plan.

4.3.2 DESCRIPTION OF BEST MANAGEMENT PRACTICES USED. The Halama property has historically been used for pasture, causing high amounts of erosion. The areas of concern were degraded by the presence of constant cattle traffic. There are multiple eroded areas on this property that will be addressed with this project.

The crossing will follow the NRCS 578 standard. The stream crossing is a stabilized and constructed area across the stream which farm equipment, people, and cattle can cross without disturbing the integrity of the stream. The access area will be revegetated and follow NRCS 327 standard for conservation cover.

4.4 OUTLET SPRING & UPSTREAM SPRING AREA GRADE STABILIZATION. Cattle activity on the property severely eroded areas adjacent to Dutch Creek. Due to the springs and continuous degradation by the cattle, this area is highly eroded. It is also adjacent to Dutch Creek. During floods the soil is eroded by fast moving waters. There are currently Black Walnut trees located here that are likely holding some of the soil from continuously eroding. This area will continue to degrade if action is not taken to stabilize and would be a good area for a rock outlet. A photo of the eroded outlet area is below in Figure 6.



Figure 6: Outlet Area Erosion.

There is an area upstream of the spring that has a large gully from heavy rains, cattle degradation of soil, and previous maintenance issues. This area appears to have been a grade stabilization area that has washed out. There are large areas of bare ground that are leading to increased erosion. The area of the exposed soil and gully is 75 ft. by 160 ft. The Halama family has indicated that even in the short time they have owned the property, this area has lost large amounts of soil due to heavy rain. If this area is not fixed, it will continue to degrade and form larger gullies. Figure 7 shows the erosion along the area upstream of the spring. The Outlet Spring Area will follow NRCS 327 standard for conservation cover and will be revegetated.



Figure 7: Upstream Spring Area Erosion.

5 AMOUNT OF CREDIT BEING GENERATED

5.1 MDV WATERSHED PLAN PROJECTS. Section 1 of this report illustrates the approved phosphorus credits from the 2019 MDV Watershed Plan, which yield a total of **523 lbs**./year of P credits. **Appendix 5-1** shows the credit calculations for the MDV Watershed Projects, including the streambank projects as well as the farmland conversion project (Spoil Site) north of the City.

5.2 ADDITIONAL WQT STREAMBANK STABILIZATION PROJECTS. The total footage of the Halama eroded streambank identified on Dutch Creek exceeds 500 feet. The sections were prioritized to yield the most phosphorus credits while remaining under the 500 foot threshold that would prompt further analysis and special hydrologic and hydraulic studies. Calculations for the Halama project show that an estimated 40 pounds of phosphorus per year over 500 feet of streambank would be prevented from entering Dutch Creek and Beaver Creek as a result of stabilizing the eroded streambank areas along Dutch Creek. An additional 5 pounds of phosphorus would be prevented from entering the creek from stabilizing the Upstream Spring area as a result of grade stabilization to reduce the gullies the form annually. See **Appendix 5-2** for the Streambank and Gully Phosphorus Loss Calculations for the Halama streambank stabilization sections and Upstream Gully grade stabilization showing that **40+5 = 45 lbs/year** in P credits are generated. These calculations correlate with the locations shown in **Appendix 4-6**. Additional credit can be generated with a "Habitat Adjustment" on the streambank restoration projects as further described in Section 6.5.

5.3 ACCESS AREA/STREAM CROSSING. Calculations show that an estimated 159 pounds of phosphorus per year would be prevented from entering Dutch Creek as a result of constructing a stream crossing on Dutch Creek and stabilizing the access area. See **Appendix 5-3** for the Phosphorus Loss Calculations for the crossing generated from APLE Lots showing that **133 lbs/year** of P credits are generated as a result of significantly reducing cattle from the property and constructing an engineered stream crossing.

5.4 OUTLET SPRING AREA. Calculations show that an estimated **24 lbs/year** of phosphorus per year would be prevented from entering Dutch Creek as a result of grade stabilization and constructing a rock outlet at the outlet spring. **Appendix 5-3** shows the Phosphorus Loss Calculations for the outlet as generated from APLE Lots. **The total P credits for all the Additional WQT Projects is 45+134+24 = 203 lbs. P/year.**

5.5 W. MILL ROAD FARMLAND CONVERSION. This is a potential future project if needed and SnapPlus calculations still need to be completed to estimate credit generation; however, the project has the potential to generate 10-15 lbs. of credits per acre annually.

6 DESCRIPTION OF APPLICABLE TRADE RATIO PER AGREEMENT/MANAGEMENT PRACTICE

The purpose of the MDV Watershed Plan was to allow the City to provide the minimum phosphorus credits to meet a Trade Ratio of 1:1. During the current permit term, the City has continued working with Trempealeau County to identify Additional WQT Projects to generate phosphorus credits to meet the final limit of 0.075 mg/L at the applicable Trade Ratio.

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 delivery factor is available on the DNR Surface Water Data Viewer. The credit user and credit generator are in the same HUC 12 basin, and the credit generator is upstream of the credit user. The distance between the two is approximately 2.16 miles apart or 3.76 miles if the meandering path of the creek from the credit generator project site to the credit user discharge point in Beaver Creek is measured. Per the *Guidance for Implementing Water Quality Trading in WPDES Permits*, the Delivery Factor in section 3.4 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. 26). The delivery factor is often zero when in the same HUC 12, see **Appendix 6-1** for the HUC 12 Watershed Basin Map. The delivery factor is based on the difference between both the fraction in the credit generator and credit user’s sub-basin. Both fractions are identical for the farmland conversion and the streambank stabilization projects, which results in the delivery factor equaling zero

The **Delivery Factor is zero (0)** for all project sites.

6.2 DOWNSTREAM FACTOR. The DNR WQT Guidance (updated 2023) 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. 27). 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.

Most of the credit generators, with the exception of the Becker streambank stabilization project, are upstream of the credit user (WWTP); therefore, the downstream factor is dropped from the trade equation. The Becker project is located immediately downstream of the WWTP and is not impacted by the downstream factor.

The **Downstream Factor is zero (0)** for all project sites.

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* (2023), 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)**.

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 149-152 in Appendix H of the *Guidance for Implementing Water Quality Trading in WPDES Permits.*

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 two (2). The habitat adjustment will be implemented in the following section.

The **Uncertainty Factor is two (2) or three (3)** for streambank stabilization projects, depending on the locations including habitat enhancement.

In cases where management practices address pollutant loads through the full range of hydrologic conditions and effectively mitigate the main mechanisms of pollutant delivery, the uncertainty factor can be set to 1. These practices include farmland conversions, whole field management, companion crops, and conservation easements. For these projects, the overall trade ratio generally simplifies to 1.2:1, assuming the credit user is downstream of the credit generator in the same HUC 12 watershed (*pp. 29 2020 WQT Guidance*). This applies to the Spoils Site farmland conversion projects from the 2019 MDV Watershed Plan. The potential additional farmland conversion project proposed as part of the Additional WQT Projects would also utilize a 1.2:1 Trade Ratio.

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. Both Beaver Creek and Dutch Creek are listed as impaired due to phosphorus.

Per the WDNR Surface Water Data View website, Beaver Creek and Dutch Creek are both considered impaired systems due to phosphorus. The total phosphorus data exceeds the WisCALM listing criteria for the Fish and Aquatic Life use. 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 must be implemented and established as part of the project. Per Appendix H of the *Guidance for Implementing Water Quality Trading in WPDES Permits*, the uncertainty factor for Beaver Creek and Dutch Creek 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-119* (February 2009).

- **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 the 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 and stream bends 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 several 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.

The streambank projects listed in Section 1 which were part of the 2019 MDV Watershed Plan have already been constructed and are generating credit and **did not** include habitat structures in the design or construction. Stream habitat may be added to the Becker and Jokisch projects to reduce the trade ratio and generate additional credits.

Habitat structures will be included in the Additional WQT Halama project. **Appendix 6-2** shows the proposed habitat structure types and locations which were recommended by a DNR fish biologist. The DNR fish biologist recommended utilizing lunkers and cross channel logs to support brown trout. Brook trout are also known to naturally reproduce along this stretch of Dutch Creek.

Additional correspondence with the DNR fish biologist regarding fish habitat for the Becker and Jokisch projects included recommendations for in stream features to avoid disturbing the restored streambanks. Random boulder placements and rock weirs were approved by the fish biologist. A map of the approved fish habitat features and locations is shown in **Appendix 6-3**.

6.6 FARMLAND CONVERSION. Farmland conversion practices include whole field management, companion crops, and conservation easements. This project would include converting a farm field from production crop to a cover crop. In these cases, the overall trade ratio generally simplifies to 1.2:1, assuming the credit user is downstream of the credit generator in the same HUC 12 watershed (page 29 of WQT Guidance 2023).

Table 6.1 summarizes the calculated Trade Ratios for the Galesville WQT Projects.

TABLE 6.1: WATER QUALITY TRADING FACTORS

	Project	Delivery Factor	Downstream Factor	Equivalency Factor	Uncertainty Factor	Habitat Adjustment	Trade Ratio
2019 MDV Watershed Plan							
1	Town of Galesville Sand Pile Site	0	0	0	3	0	**3**
2	Old Swinging Bridge Site	0	0	0	3	0	**3**
3	Baseball Diamond Site	0	0	0	3	0	**3**
4	Spoil Site	0	0	0	1.2	0	**1.2**
5	Jokisch	0	0	0	3	-1	**2**
6	Becker	0	0	0	3	-1	**2**
Additional WQT Projects (Halama)							
7	**Streambanks**	0	0	0	3	-1	**2**
8	**Stream Crossing**	0	0	0	2	0	**2**
9	**Outlet Spring**	0	0	0	2	0	**2**

10	**Upstream Spring**	0	0	0	2	0	**2**
11	**City Farm Site**	0	0	0	1.2	0	**1.2**

7 LOCATIONS WHERE CREDITS WILL BE GENERATED

All of the credits will be generated in the same HUC 12 as the Galesville WWTP HUC 12. Beaver Creek is being used to generate credits for the projects installed in 2019 for the MDV Watershed Plan. Dutch Creek will be used to generate credits for the proposed Additional WQT Halama streambank stabilization projects, the stream crossing, and the grade stabilization areas.

8 TIMELINE FOR CREDITS AND AGREEMENTS

The City of Galesville was approved for credits on Sites 1-6 as shown in Table 6.1 as part of the City's 2019 MDV Watershed Plan. The Additional WQT Halama project is the only one to be constructed. For the proposed Halama WQT project, credit generation must occur before the credit user can claim the credit, per the *Water Quality Trading How To Manual* (pg. 32). Construction is planned for 2025.

The executed WQT agreements for the 2019 MDV Watershed Plan projects are included in **Appendix 8-1**. A draft WQT Agreement with Galesville, the County and the Halama's is also included in **Appendix 8-1**. The WQT Agreement with the Halama's will be amended to limit the total cattle on the property to three (3).

9 METHOD FOR QUANTIFYING CREDITS

STREAMBANK STABILIZATION. Existing phosphorus loss for the 2019 MDV Watershed Plan and the Additional WQT Halama streambank projects were produced using the NRCS Soil Loss Spreadsheet recommended by the DNR which can be seen in **Appendices 5-1 and 5-2**. Trempealeau County LCD representatives collected data for the streambank projects, including the linear feet and the average stream bank height in feet. Composite soil samples were collected for testing for total soil phosphorus concentration (% P) (see **Appendix 9-1** for the MDV Watershed Plan projects and **Appendix 9-2** for the Halama project soil test lab reports from the University of Wisconsin Soil Science Laboratory) to determine the phosphorus loss in pounds per year. Halama soil samples were collected throughout 2024. Soil samples were gathered by taking a number of individual grab samples and combining them into one large composite soil sample for each individual section. The 2019 MDV Watershed Plan projects prevent **523 pounds of phosphorus** per year from entering Beaver Creek. Of that, 36 pounds of phosphorus are generated from the Spoil Site which was estimated using SnapPlus. The Halama project would add an additional **45 pounds of phosphorus** from entering Dutch Creek and Beaver Creek each year through streambank stabilization and grade stabilization of the Upstream Spring Area. Streambank sites were estimated using the streambank calculator on the NRCS Soil Loss spreadsheet.

The recession rate was determined for each individual streambank section using the NRCS Erosion Severity Chart based on visual and photographic observations. Each site had bare banks with noticeable vegetation or tree roots overhanging and exposed soils. Some locations are also nearly vertical due to the high erosion.

STREAM CROSSING AND OUTLET SPRING AREA. Modeling for the Access Area/Stream Crossing and the Outlet Spring was conducted using both APLE Lots and SnapPlus software. APLE Lots allows a user to identify specific lots, input the number of animals present on the site, and indicate the number of hours per day that animals are present on the lots. According to the Trempealeau County Land Conservation Department, the Halama property historically has around 100 dry dairy cows in the pastures for about 12 hours per day from March thru November. Approximately 75 head of cattle were assigned to the Stream Crossing area, and the remaining 25 were assigned to the Outlet Spring Area. Following the

cattle reduction, a total of three (3) cattle will remain on the property. Two (2) were assigned to the Stream Crossing and one (1) was assigned to the Outlet Spring Area. Table 9.1 shows the annual phosphorus loss generated from APLE Lots for the Stream Crossing and Outlet Spring Area and the reduction after reducing cattle from the property:

TABLE 9.1: APLE LOTS PHOSPHORUS LOSS ESTIMATES

	100 Cattle	3 Cattle	Difference
Stream Crossing	136	2.6	133
Outlet Spring	24	0.5	24
Total lbs. P/year	160	3.1	157

SnapPlus allows a user to identify fields and use generic manure application settings to estimate the annual phosphorus loss from erosion. Table 9.2 shows the annual phosphorus loss generated by SnapPlus:

TABLE 9.2: SNAP PLUS PHOSPHORUS LOSS ESTIMATES

Stream Crossing	16
Outlet Spring	66
Total lbs. P/year	82

In this case, APLE Lots is considered more accurate for the Stream Crossing and Outlet Spring Area as it accounts for the number of animal units present in the project areas directly adjacent to Dutch Creek. APLE Lots estimates the erosion for the areas where cattle actively pasture, and accounts for the areas contributing runoff to the pastures and ultimately to Dutch Creek. Approximately 157 lbs. of phosphorus per year will be prevented from entering Dutch Creek as a result of reducing cattle on the property, stabilizing the access area and Outlet Spring Area, and constructing an engineered stream crossing. The summary of phosphorus reduction generated from APLE is shown in **Appendix 5-3**. A map of the areas modeling in APLE Lots is shown in **Appendix 9-3**.

FARMLAND CONVERSION. SnapPlus was utilized to estimate phosphorus credits from converting the City owned Spoils Site which was part of the 2019 MDV Watershed Plan from a production crop to a cover crop. SnapPlus will also be utilized for the Additional WQT Farmland Conversion project if that site is proposed for WQT.

10 TRACKING PROCEDURES

These projects will be tracked with photography before, during, and after installation. The project will also be monitored with inspections and documented in a logbook, to ensure the preservation of the project site and BMP installations. The landowners will inspect the sites after flood events and will certify the annual inspection reports. The Trempealeau County Land Conservation Department will annually inspect the site to document that the habitat features are present, BMPs functional, and phosphorus was prevented from entering the water each year. An annual report will be completed and submitted to DNR documenting the inspections. The following items will be inspected by the landowner or County during the annual inspection:

1. Inspect for trash and unwanted debris
2. Inspect for soil erosion and accumulation, especially at the top and bottom of the slope
3. Inspect for invasive weeds
4. Inspect for animal burrows, holes and mounds
5. Inspect for dislodged or unstable rock which could pose a safety hazard
6. Inspect site for unusual or unsafe conditions (structural damage, dumping, tree establishment, etc.)

7. Inspect habitat features including boulder, tree lunkers, and root wads.

The above inspections will be evaluated in the annual report. The report will discuss the evaluation as well as any action taken and will include photo documentation. If a more serious maintenance is required, such as requiring a contractor to repair the damage, the report will identify this and the date the contractor repaired the site. The annual report will be submitted to DNR, with a copy sent to the City of Galesville and the landowner(s).

11 CONDITIONS UNDER WHICH THE MANAGEMENT PRACTICES MAY BE INSPECTED

11.1 BANK STABILIZATION. The BMPs should be inspected at least once per year and immediately after flood events. The flow velocity of Dutch Creek and its' tributaries increases greatly during flood events. These portions of the streambank have been eroding at alarming rates during heavy rains. The landowners should work with the Trempealeau County Department of Land Management to ensure that the sites are properly maintained and should approach them for technical assistance if there is a concern regarding the projects.

11.2 STREAM CROSSING. The crossing should be inspected at least once per year and immediately after flooding events. This area has been eroding due to equipment and animal activity and during heavy rains.

11.3 OUTLET SPRING & UPSTREAM SPRING GRADE STABILIZATION. The grade stabilizations should be inspected at least once per year and immediately after flood events. These areas have been eroding at alarming rates due to cattle activity and increases during heavy rains.

11.4 FARMLAND CONVERSION. The conservation cover conversion, once established, should be inspected at least once per year and immediately after flood events. The field will have natural drainage, which can erode in heavy storm events. These areas need to be inspected to ensure no erosion is occurring. The Spoil Site may be used for dredged material again and that will require restoration of the native grasses.

WDNR has the right to inspect the management practice at any time upon giving reasonable notice to the landowner(s) to ensure practices are in compliance with technical standards and the terms of this plan.

12 REPORTING REQUIREMENTS SHOULD THE MANAGEMENT PRACTICE FAIL

If the management practice were to fail at any of the sites, the BMP would stop generating credits. The Operation and Maintenance Plan discussed in Section 13 should help minimize potential failures. In the event a failure does occur, the following procedure should be followed to remedy the situation.

1. The perspective landowner should immediately report the situation to the Trempealeau County Department of Land Management. Provide photos of the BMP failure(s).
2. The County will inform the City of the BMP failure within 5 days from when the County was informed.
3. The City will inform DNR of the BMP failure within 5 days from when the City was informed.
4. The County will assess the failed BMP.
5. The County will develop a remediation action plan.
6. The City will be contacted and informed of both the problem and the proposed solution(s).
7. A cost estimate will be developed along with an action plan. The City will determine if restoration is cost-effective.
8. The County will coordinate with contractors to make the repairs.
9. The financially responsible party will pay for the repairs.

13 OPERATION AND MAINTENANCE PLAN FOR EACH MANAGEMENT PRACTICE

13.1 BANK STABILIZATION. The NRCS standards will be followed for construction as well as operation and management of the proposed projects. The bank stabilization projects will follow NRCS 580, which is streambank and shoreline protection. A copy of the NRCS 580 standard can be seen in **Appendix 13-1**. Maintenance of the riprap will be the responsibility of the landowner with technical assistance from the Trempealeau County Department of Land Management. The operation & maintenance will consist of the following:

1. Inspect riprap annually and after heavy storms for any erosion or displacement of rocks. Repairs should be done immediately.
2. 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.
3. Check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and re-vegetated as soon as possible.
4. Periodically cut grass to control weeds and invading brush.
5. Eliminate burrowing animals and repair damage.
6. Document BMPs with photos.

13.2 STREAM CROSSING/ACCESS AREA. The NRCS standards will be followed for construction as well as operation and management of the stream crossing. The crossing will follow NRCS 578, which is for stream crossings to provide controlled access for people, livestock, equipment, or vehicles. A copy of the NRCS 578 standard can be seen in **Appendix 13-2**. The access area and Outlet Spring will be revegetated to NRCS 327 for conservation cover. A copy of NRCS 327 standard is shown in **Appendix 13-3**. Maintenance of the stream crossing will be the responsibility of the landowner with technical assistance from the Trempealeau County Department of Land Management. The operation & maintenance will consist of the following:

1. Inspect crossing annually and after heavy storms for any erosion. Repairs should be done immediately.
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.
5. Document BMPs with photos.

13.3 FARMLAND CONVERSION. The NRCS standards will need to be followed for construction as well as operation and management of the proposed projects. The cover conversion projects will follow the NRCS 327, which is conservation cover. Perpetual operation & maintenance of the cover conversion will be the responsibility of the landowner with technical assistance from the Trempealeau County Department of Land Management. The operation & maintenance will consist of the following:

1. Inspect the conservation easement field annually and after heavy storms for any erosion. Repairs should be done immediately.
2. Check for sloughing, erosion, or damage to vegetative cover. Damaged areas shall be graded, shaped, and re-vegetated as soon as possible.
3. The property owner, the City of Galesville, is responsible for maintenance.

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

The Additional WQT Halama project and potential City cropland conversion project are located upstream of the Galesville WWTP Discharge. See **Appendix 2-2** for a Location Map.

15 PRACTICE REGISTRATION DOCUMENTS, IF AVAILABLE

The projects included in the City's 2019 MDV Watershed Plan were constructed in 2020 following DNR approval of the credits. Registration forms (DNR Form 3400-207) for the 2019 MDV Watershed Plan projects have been submitted to DNR.

The construction of the Halama project on Dutch Creek projects has not yet begun. Registration documents will be submitted to the DNR for the Additional WQT Projects upon completion of construction in 2025.

16 HISTORY OF PROJECT SITE(S) AND EXISTING LAND USES

This Additional WQT Project site is privately owned by the Halama family and was operated as a cattle farm prior to their ownership. The streambanks of Dutch Creek have seen an exponential increase of erosion problems due to an increasing number of flood events, heavy rainfalls, and damage from cattle which is evident in the photographs seen in **Appendix 4-4**. The Halama's plan to reduce cattle on the property from 100 cattle to three (3). The WQT agreement will be revised to limit the total allowed cattle on the property to three.

W. MILL ROAD FARM SITE. The City has owned the farm site for decades and currently leases the property for farming. Most of the parcel is undeveloped and includes wetland areas and indicator soils. Conversion of the site is a future project

17 REQUIRED PHOSPHORUS CREDITS

The Galesville Aerated Lagoon is operated with a seasonal fill and draw. To maintain compliance with the ammonia nitrogen limit, the wastewater is retained in the lagoon during spring turnover, about a 30-day period in April-May each year. Discharge is increased for a few weeks before and about a month after the no-discharge time to create storage and then release the stored flow to get back to normal flow-through operation. The draw period to create storage, the fill storage time and the increased draw after discharge is resumed are all intended to balance out, but the period when the stream receives the discharge will vary from a flow-through operation. The future Phosphorus limit is expected to have both a 0.75 mg/L concentration limit and equivalent Annual Average and 6-Month Average mass limits. To determine the necessary WQT credits, both the annual average and 6-month flows need to be considered.

Effluent Flow	2020	2021	2022	2023	WQT
Total Annual, MG	73.010	63.595	42.898	47.086	50.000
Annual Average, MGD	0.217	0.137	0.118	0.120	0.137
6-Month Ave J-J, MGD	0.249	0.208	0.119	0.137	0.147
6-Month Ave J-D, MGD	0.192	0.169	0.116	0.121	0.131

The Flow meters were recalibrated and the 2022 – 2023 results are expected to be more representative. The 6-Month Averages are higher in the January – June period when spring flows are naturally higher with runoff and I/I and the flow is also held/discharged. The WQT column amounts are the Flows recommended to be used in calculating the WQT credits necessary. Current flows are well below the

Design Annual Average of 0.335 MGD. As Galesville grows or flows otherwise increased, additional WQT credits may need to be generated.

The lagoon is designed to maintain a Monthly Average 1.0 mg/L effluent Total Phosphorus. With that level of treatment and using the WQT Flow rates above, the Required Phosphorus Mass Offsets are summarized as follows in Table 17.1:

TABLE 17.1: PHOSPHORUS MASS OFFSET 1.0 mg/L

Description	Units	Annual	6-Month
Galesville Average Daily Existing Flow	GPD	137,000	147,000
Effluent Phosphorus Concentration	mg/L	1.00	1.00
MDV Target Concentration	mg/L	0.075	0.075
Annual Mass of Phosphorus	lbs/year	417	447
Target Mass of Phosphorus	lbs/year	31	34
Baseline Mass (Existing - Target)	**lbs/year**	**386**	**414**

The actual Phosphorus treatment performance has been better than the 1.0 mg/L:

Effluent Phosphorus	2021	2022	2023	WQT	Design
Annual Average, mg/L	0.67	0.84	0.68	0.85	1.00
6-Month Ave J-J, mg/L	0.61	0.82	0.77	0.85	1.00
6-Month Ave J-D, mg/L	0.69	0.85	0.60	0.85	1.00

Sustaining this level of treatment allows using the mass produced from a 0.85 mg/L effluent Phosphorus for WQT purposes and the Required Phosphorus Mass Offset is recalculated as follows in Table 17.2:

TABLE 17.2: PHOSPHORUS MASS OFFSET AT 0.85 mg/L

Description	Units	Annual	6-Month
Galesville Average Daily Existing Flow	GPD	137,000	147,000
Effluent Phosphorus Concentration	mg/L	0.85	0.85
MDV Target Concentration	mg/L	0.075	0.075
Annual Mass of Phosphorus	lbs/year	354	380
Target Mass of Phosphorus	lbs/year	31	34
Baseline Mass (Existing - Target)	**lbs/year**	**323**	**347**

The total credits generated from the 2019 MDV Watershed Plan are summarized in the following Table 17.3:

TABLE 17.3: CREDITS GENERATED FROM MDV WATERSHED PLAN PROJECTS

Project Description	BMP Type	Trade Ratio TR	P lbs/year	P/TR lbs/year
Town of Galesville Sand Pile Site	Streambank Stabilization	3	22	7
Old Swinging Bridge Site	Streambank Stabilization	3	56	19
Baseball Diamond Site	Streambank Stabilization	3	18	6
Spoil Site	Cover Conversion	1.2	36	30
Jokisch	Streambank Stabilization	3	107	36
Becker	Streambank Stabilization	3	284	95
Total			**523**	**192**

192 lbs./year are available from the completed Watershed Plan WQT projects. The streambank projects do not include fish habitat improvements to reduce the trade ratio. If the 2019 MDV Watershed Plan projects are kept without fish habitat, the new credits required are calculated as follows in Table 17.4:

TABLE 17.4: REQUIRED ADDITIONAL PHOSPOHRUS CREDITS

	Annual	6-Month
Required New P Credits, lbs./year	131	154
Required Net P Credits 2:1 TR New Projects	*262*	***309***
Required Net P Credits 3:1 TR New Projects	*393*	***463***

With the lagoon operating at 0.85 mg/L and using the higher 6-month Flow period, the proposed Additional WQT Projects need to earn credits at a rate of 309 lbs./year at a 2:1 Trade Ratio and 463 lbs./year at a 3:1 Trade Ratio.

If the fish habitat improvements are implemented into the Becker and Jokisch projects to reduce the trade ratio to 2:1, the credits generated are as follows in Table 17.5:

TABLE 17.5: CREDITS GENERATED FROM MDV WATERSHED PLAN PROJECTS WITH BECKER & JOKISCH HABITAT IMPROVEMENTS

Project Description	BMP Type	Trade Ratio TR	P lbs/year	P/TR lbs/year
Town of Galesville Sand Pile Site	Streambank Stabilization	3	22	7
Old Swinging Bridge Site	Streambank Stabilization	3	56	19
Baseball Diamond Site	Streambank Stabilization	3	18	6
Spoil Site	Cover Conversion	1.2	36	30
Jokisch	Streambank Stabilization	2	107	54
Becker	Streambank Stabilization	2	284	142
Total			**523**	**258**

With fish habitat added to the Jokisch and Becker projects, 258 lbs/year will be available from the completed Watershed Plan WQT projects. The new credits required are calculated as follows in Table 17.6:

TABLE 17.6: REQUIRED ADDITIONAL PHOSPOHRUS CREDITS WITH BECKER & JOKISCH FISH HABITAT IMPROVEMENTS

	Annual	6-Month
Required New P Credits, lbs./year	50	89
Required Net P Credits 2:1 TR New Projects	*99*	***179***
Required Net P Credits 3:1 TR New Projects	*149*	***268***

The total credits generated from the Additional WQT Halama site are summarized in the following Table 17.7:

TABLE 17.7: CREDITS GENERATED FROM ADDITIONAL WQT PROJECTS

Project Description	BMP Type	Trade Ratio TR	P lbs/year	P/TR lbs/year
Halama Streambanks	Streambank Stabilization-Habitat	2	40	20
Halama Stream Crossing	Stream Crossing	2	133	67
Halama Outlet Spring	Grade Stabilization	2	24	12
Halama Upstream Spring	Grade Stabilization	2	5	3
Total			**202**	**101**

The Halama WQT Projects will generate 102 lbs./year in P credits, approximately 12 lbs./year more credits than the 89 lbs./year necessary.

Trempealeau County estimates the construction cost for the Additional WQT project at Halama's to be approximately **$195,000** to complete the Halama streambank project. An estimate has not been prepared for adding habitat features to the Becker and Jokisch projects.

Converting the W. Mill Road City Farm Site to a cover crop will generate 15 lbs./year in P credits. This is a future project, if needed. It is recommended that the City of Galesville construct the Additional WQT Projects on the Halama property and implement fish habitat on the Becker and Jokisch projects to reduce the trade ratio to 2:1.

SUMMARY. Galesville WWTP cannot meet the new phosphorus limits with the technology currently employed at the WWTP, 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 City.

The City will utilize the projects constructed for the 2019 MDV Watershed Plan to generate part of the credits for full WQT. Fish habitat structures are recommended to be installed on the Becker and Jokisch projects to gain credits from those projects. A combination of instream boulders and rock weirds will be constructed in Beaver Creek along the Becker and Jokisch properties, which was agreed upon by a DNR fish biologist. Trempealeau County has identified Additional WQT Projects on the Halama property along Dutch Creek which include streambank stabilization and grade stabilization on numerous areas. Historically, the Halama property has been used as a cattle farm which causes significant erosion annually along the streambanks. The Halama's intend to reduce cattle on the property from 100 head to 3 heads which will significantly reduce phosphorus losses from the property.

Galesville is currently operating under a Multi-Discharge Variance (MDV) that allows a modified Phosphorus limit in exchange for the completed Watershed Plan. While the intent is to complete the new WQT projects necessary to complete the full WQT before the existing WPDES Permit expires, Galesville may be able to apply for a continuation of the MDV to allow time to complete the construction, if necessary.

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 5 (Revised 2023, p. 45). Table 5 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 City of Galesville will be installing riprap bank stabilization at several locations to generate phosphorus credits for the WWTP.

Below is a list of the requirements to be included in a WQT plan per column (e) of Table 5. This list includes a brief statement of where to find the information in this plan.

- Permittee's / credit user's WPDES Permit number. The Galesville WWTP WPDES permit number is WI-0036749-06-0 and is referenced in Section 2.
- 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 20.
- 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 **Appendix 2-2**.
- 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.
- 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 date when the credits become effective is in 2025 when projects are constructed and the permit is modified. This date is referenced in Section 8.
- Models are 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 and NRCS. APLE Lots modeling was also included for estimating credits. This is discussed in Section 9.
- The applicable trade ratio for each management practice including supporting technical basis (see p. 26 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. The habitat adjustment reduces the trade ratio to a 2:1, which is also discussed in Section 6.

19 PRELIMINARY COST ESTIMATES/FINANCING

The Preliminary Cost Estimate **(Appendix 19-1**) lists the construction cost estimate prepared by the County and adds the fees, engineering, legal and contingencies to arrive at a Total Estimated Project Cost of $195,000.00. The Sewer Utility established a WQT Capital Reserve Fund and set aside $96,700 in

2022, $100,000 in 2023 and $100,000 in 2024 (total $296,700). Some expenditures have been made for engineering over the past 3 years but there are sufficient funds available to cash-flow the Halama project without any borrowing or increase in Sewer rates.

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

Owner: City of Galesville

By: Todd Peterson

Todd Peterson
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City of Galesville
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Telephone: 608-582-2475

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. (2023). *Guidance for Implementing Water Quality Trading in WPDES Permits.* doi:Guidance Number: 3800-2013-04

APPENDIX 1-1

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WISCONSIN
DEPT. OF NATURAL RESOURCES

WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

City of Galesville

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility located at
N15386 Cnty Rd K, Galesville, WI
to
Beaver Creek in the Beaver Creek and Lake Marinuka Watershed of the Black River Basin in Trempealeau County

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

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

State of Wisconsin Department of Natural Resources
For the Secretary

By Geisa B Thiel
Geisa Thielen
Wastewater Field Supervisor

November 21, 2022
Date Permit Signed/Issued for Modification

PERMIT TERM: EFFECTIVE DATE - July 01, 2020 **EXPIRATION DATE - June 30, 2025**
EFFECTIVE DATE OF MODIFICATION: December 01, 2022

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1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
701	Representative influent samples shall be collected after the Parshall flume.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT AFTER PARSHALL FLUME

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD_5, Total		mg/L	Weekly	24-Hr Comp	
Suspended Solids, Total		mg/L	Weekly	24-Hr Comp	

2 Surface Water Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
001	Representative effluent composite and grab samples shall be collected at Sample Manhole #21 after discharge from the lagoon or clarifier, and prior to discharge to Beaver Creek.

2.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point (Outfall) 001 - EFFLUENT TO BEAVER CREEK

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD_5, Total	Monthly Avg	30 mg/L	Weekly	24-Hr Flow Prop Comp	
BOD_5, 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	
Suspended Solids, Total	Weekly Avg	45 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	
Nitrogen, Total		mg/L	See Listed Qtr(s)	Calculated	Annual monitoring in rotating quarters. See Nitrogen Series subsection below. Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen.

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Total Kjeldahl		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual monitoring in rotating quarters. See Nitrogen Series subsection below.
Nitrogen, Nitrite + Nitrate Total		mg/L	See Listed Qtr(s)	24-Hr Flow Prop Comp	Annual monitoring in rotating quarters. See Nitrogen Series subsection below.
Nitrogen, Ammonia Variable Limit		mg/L	Weekly	24-Hr Flow Prop Comp	See Ammonia subsection below.
Nitrogen, Ammonia (NH_3-N) Total	Daily Max - Variable	mg/L	Weekly	24-Hr Flow Prop Comp	See Ammonia subsection below.
E. coli	Geometric Mean - Monthly	126 #/100 ml	2/Month	Grab	Limit Effective May through September annually
E. coli	% Exceedance	10 Percent	Monthly	Calculated	Limit Effective May through September annually. See the E. coli Percent Limit section below. Enter the result in the DMR on the last day of the month.
Chlorine, Total Residual	Daily Max	38 mg/L	Per Occurrence	Grab	See Disinfection subsection below.
Phosphorus, Total	Monthly Avg	3.5 mg/L	Weekly	24-Hr Flow Prop Comp	This interim limit is effective through 06/30/2022. See MDV/Phosphorus subsections below and compliance schedules.
Phosphorus, Total	Monthly Avg	1.0 mg/L	Weekly	24-Hr Flow Prop Comp	This interim MDV limit becomes effective 07/01/2022. See MDV/Phosphorus subsections below and compliance schedules.

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		lbs/month	Monthly	Calculated	Report the total monthly discharged in lbs/month on the last day of the month on the eDMR. See Standard Requirements for 'Appropriate Formulas' to calculate the Total Monthly Discharge in lbs/month.
Phosphorus, Total		lbs/yr	Annual	Calculated	Report the sum of the total monthly discharges for the calendar year on the Annual eDMR form. See Standard Requirements for 'Appropriate Formulas' to calculate.
Acute WET		TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See WET subsection below.

2.2.1.1 Annual Average Design Flow

The annual average design flow of the permittee's wastewater treatment facility is 0.335 MGD.

2.2.1.2 *E. coli* Percent Limit

No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 #/100 ml. Bacteria samples may be collected more frequently than required. All samples shall be reported on the monthly discharge monitoring reports (DMRs). The following calculation should be used to calculate percent exceedances.

$$\frac{\#\ of\ Samples\ greater\ than\ 410\ \#/100}{Total\ \#\ of\ samples} \times 100 = \%\ Exceedance$$

2.2.1.3 Nitrogen Series Monitoring

Monitoring for Total Kjeldahl Nitrogen (TKN), Nitrite + Nitrate Nitrogen, and Total Nitrogen shall be conducted once each year in rotating quarters in order to collect seasonal information about the discharge.

- 4th Quarter (October – December) 2020
- 1st Quarter (January – March) 2021
- 2nd Quarter (April – June) 2022
- 3rd Quarter (July – September) 2023
- 4th Quarter (October – December) 2024

Nitrogen Series monitoring shall continue after the permit expiration date (until the permit is reissued) in accordance with the monitoring requirements specified in the last full calendar year of this permit. For example, the next test would be required in 4th quarter (October – December) 2025.

Testing: Monitoring shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during testing.

2.2.1.4 Ammonia Nitrogen Daily Maximum Limits

When possible total ammonia (NH3-N) sampling shall occur on the same day pH levels are monitored. Below is a table which states the ammonia daily maximum limit for any given pH value. Compare the daily maximum limit from the table value below with the discharge value and report the exceedances in the box to the right of the zero limit on the eDMR.

Note that pH values should be rounded to the 0.1 s.u. before using the table below. For example, if the pH field reading is 8.04, the value of 8.0 should be used. If the pH field reading is 8.06, the value of 8.1 should be used.

Table 1. Daily Maximum Ammonia Limits based on pH

Effluent pH s.u.	NH_3-N Limit mg/L	Effluent pH s.u.	NH_3-N Limit mg/L	Effluent pH s.u.	NH_3-N Limit mg/L
$6.0 < pH \leq 6.1$	108	$7.0 < pH \leq 7.1$	66	$8.0 < pH \leq 8.1$	14
$6.1 < pH \leq 6.2$	106	$7.1 < pH \leq 7.2$	59	$8.1 < pH \leq 8.2$	11
$6.2 < pH \leq 6.3$	104	$7.2 < pH \leq 7.3$	52	$8.2 < pH \leq 8.3$	9.4
$6.3 < pH \leq 6.4$	101	$7.3 < pH \leq 7.4$	46	$8.3 < pH \leq 8.4$	7.8
$6.4 < pH \leq 6.5$	98	$7.4 < pH \leq 7.5$	40	$8.4 < pH \leq 8.5$	6.4
$6.5 < pH \leq 6.6$	94	$7.5 < pH \leq 7.6$	34	$8.5 < pH \leq 8.6$	5.3
$6.6 < pH \leq 6.7$	89	$7.6 < pH \leq 7.7$	29	$8.6 < pH \leq 8.7$	4.4
$6.7 < pH \leq 6.8$	84	$7.7 < pH \leq 7.8$	24	$8.7 < pH \leq 8.8$	3.7
$6.8 < pH \leq 6.9$	78	$7.8 < pH \leq 7.9$	20	$8.8 < pH \leq 8.9$	3.1
$6.9 < pH \leq 7.0$	72	$7.9 < pH \leq 8.0$	17	$8.9 < pH \leq 9.0$	2.6

2.2.1.5 Disinfection Monitoring and Chlorine Use

The limitation of 38 mg/L daily maximum, weekly monitoring and reporting requirements for chlorine will only apply if the permittee resumes chlorination of the effluent for disinfection. The permittee shall notify the Department at least 72 hours prior to commencing operation of the chlorination equipment to allow Department staff to modify the reporting forms.

2.2.1.6 MDV (Multi-Discharger Variance) Requirements

Optimization: The permittee shall continue to optimize performance to control phosphorus discharges in accordance with s. 283.16(6), Wis. Stats. See the Schedules section for optimization requirements.

Watershed Provisions: The permittee is required to implement watershed measures to reduce the amount of phosphorus entering the receiving water. The permittee has selected the following approved watershed measure.

Binding Written Agreement with the Department: The permittee has entered into a binding written agreement with the Department under which the permittee implements Watershed Plan # MDV-2019-001 that is designed to result in a reduction of phosphorus pollution in the basin in an amount equal to the difference between the amount of phosphorus discharged by the permittee minus the target value or $640,000, whichever is less. The target value is 0.2 mg/L per s. 283.16(1)(h), Wis. Stats., and is applicable during the months that the MDV is in effect. The MDV is in effect year around. Refer to the Schedules section for the scheduled reporting requirements.

Annual **Reduction of Phosphorus (Offset):** The permittee's discharge that exceeds the target value shall be offset by phosphorus reductions generated under the approved Watershed Plan during the months that the MDV is in effect. The permittee shall comply with the MDV interim limit regardless of the offset generated. If the necessary offset is not generated, *the permittee* shall notify the Department. To determine compliance with the required offset, use *the* following steps.

Calculation Steps:

- Calculate pounds of phosphorus discharged for each month that the MDV is in effect:

Monthly Phosphorus Load (lbs/month) = Total Monthly Flow (MG) × Monthly Avg. TP effluent conc. (mg/L) × 8.34

- Sum the lbs/month discharged for the months that the MDV is in effect to calculate the annual phosphorus load:

Annual Phosphorus Load (lbs/year) = $\sum$ [Monthly Phosphorus Load (lbs/month)]

- Calculate the Target Load (lbs/month) for each month that the MDV is in effect.

Target Value = 0.2 mg/L:
Monthly Target Load (lbs/month) = Total Monthly Flow (MG) × 0.2 mg/L × 8.34

- Sum the lbs/months for the months that the MDV is in effect to calculate the Annual Target Load:

Annual Target Load (lbs/year) = $\sum$ [Monthly Target Load (lbs/month)]

2.2.1.7 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Beaver Creek

Instream Waste Concentration (IWC): Not Applicable

Acute Mixing Zone Concentration: Not Applicable

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted twice during the permit term in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

Acute Tests:

- 3rd Quarter (July – September) 2021
- 1st Quarter (January – March) 2024

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the last full calendar year of this permit. For example, the next test would be required in 1st Quarter (January – March) 2025.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: $TU_a = 100 \div LC_{50}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90-day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

3 Land Application Requirements

3.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
002	Representative composite sludge samples shall be collected once in 2021 from the ponds and monitored for List 1 parameters and PCBs.
003	Representative reed bed sludge shall be collected once in 2023 from the reed beds and monitored for List 1 parameters.

3.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 002 - LAGOON SLUDGE

Sludge Management: The permittee shall contact the Department prior to recycling/disposing of any sludge. The permittee shall monitor for the following parameters during the second year of the permit, (**2021**). Analysis shall be submitted by **January 31, 2022**.

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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
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	
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	

3.2.1.1 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2021**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

3.2.2 Sampling Point (Outfall) 003 - REED BED SLUDGE

Sludge Management: The permittee shall contact the Department prior to recycling/disposing of any sludge. The permittee shall monitor for the following parameters during the second year of the permit, (**2023**). Analysis shall be submitted by **January 31, 2024**.

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

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	

3.2.2.1 Requirements for Reed Bed Sludge Systems

The reed bed system shall be operated and maintained to function properly and to ensure that the potential for dissemination of Phragmites (Phragmites australis) is minimized.

A daily log of the sludge volume applied to each cell of the reed bed shall be maintained and available for Department inspection.

Harvested reeds shall be disposed of by a method that has been approved by the Department. Such disposal methods typically include burning in place or hauling to a landfill.

If land application is utilized when sludge is removed, all sludge removed from the reed beds shall be processed to remove all viable roots and/or rhizomes to prevent propagation of Phragmites. The viable roots and/or rhizomes removed from the sludge shall be disposed of at a sanitary landfill. The basin engineer shall be notified at least 72 hours prior to sludge removal.

WPDES Permit modification shall be at the discretion of the Department.

4 Schedules

4.1 Effluent Limitations for E. coli (Outfall 001)

Required Action	Due Date
Status Update: : The permittee shall submit information within the discharge monitoring report (DMR) comment section documenting the steps taken in preparation for properly monitoring and testing for E. coli including, but not limited to, selected test method and location of sampling.	08/31/2020
Operational Evaluation Report: : The permittee shall prepare and submit an Operational Evaluation Report to the Department for review and approval. The report shall include an evaluation of collected effluent data and proposed operational improvements that will optimize efficacy of disinfection at the treatment plant during the period prior to complying with final E. coli limitations and, to the extent possible, enable compliance with the final E. coli limitations. The report shall include a plan and schedule for implementation of the operational improvements. These improvements shall occur as soon as possible, but not later than 01/31/2022. The report shall state whether the operational improvements are expected to result in compliance with the final E. coli limitations. The permittee shall implement the operational improvements in accordance with the approved plan and schedule specified in the Operational Evaluation Report and in no case later than 01/31/2022. If the Operational Evaluation Report concludes that the operational improvements are expected to result in compliance with the final E. coli limitations, the permittee shall comply with the final E. coli limitations by 01/31/2022 and the permittee is not required to comply with subsequent milestones identified below in this compliance schedule ('Submit Facility Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet Limitations', 'Construction Upgrade Progress Report', 'Complete Construction', 'Achieve Compliance'). FACILITY PLAN - If the Operational Evaluation Report concludes that operational improvements alone are not expected to result in compliance with the final E. coli limitations, the permittee shall initiate development of a facility plan for meeting final E. coli limitations and comply with the remaining required actions in this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final E. coli limitations using the existing treatment system with only operational improvements, the Department may reopen and modify the permit to include an implementation schedule for achieving the final E. coli limitations sooner than 04/30/2025.	07/31/2021

4.2 Phosphorus Schedule - Continued Optimization

Required Action	Due Date
Optimization: The permittee shall continue to implement the optimization plan as previously approved to optimize performance to control phosphorus discharges. Submit a progress report on optimizing removal of phosphorus by the Due Date.	06/30/2021
Progress Report #2: Submit a progress report on optimizing removal of phosphorus.	06/30/2022
Progress Report #3: Submit a progress report on optimizing removal of phosphorus.	06/30/2023
Progress Report #4: Submit a progress report on optimizing removal of phosphorus.	06/30/2024

Progress Report #5: Submit a progress report on optimizing removal of phosphorus.	06/30/2025

4.3 Phosphorus Multi-Discharger Variance Interim Limit (1.0 mg/L)

Required Action	Due Date
Report on Effluent Discharges: Submit a report on effluent discharges of phosphorus with conclusions regarding compliance.	12/31/2020
Action Plan: Submit an action plan for complying with the specified interim effluent limit. If construction is required, include plans and specifications with the submittal.	06/30/2021
Initiate Actions: Initiate actions identified in the plan.	12/31/2021
Complete Actions: Complete actions identified in the plan and achieve compliance with the specified interim effluent limit of 1.0 mg/L.	06/30/2022

4.4 Phosphorus Watershed Project Requirements

Required Action	Due Date
Annual Watershed Report: Submit an annual report by May 1 of each year that documents: 1)The calculated monthly discharge of phosphorus in lbs/month and the calculated monthly target value in lbs/month for the previous calendar year. See the calculation steps in the Surface Water section of this permit. 2)The calculated Annual Offset to be generated by the approved Watershed Plan for the previous calendar year. See the calculation steps in the Surface Water section of this permit. 3)Verification that Watershed Plan # MDV-2019-001 was implemented as approved and practices are operated and maintained consistent with the approved plan. 4)The pounds of phosphorus reduction achieved through the approved Watershed Plan for the previous calendar year. 5)The source of the phosphorus reductions with a reference to the approved Watershed Plan used to generate the offset. 6)Identification of any non-compliance or failure to implement the approved Watershed Plan. The first report is due by the specified Due Date.	05/01/2021
Annual Watershed Report #2: Submit an annual report (as described above) by May 1.	05/01/2022
Annual Watershed Report #3: Submit an annual report (as described above) by May 1.	05/01/2023
Annual Watershed Report #4: Submit an annual report (as described above) by May 1.	05/01/2024
Annual Watershed Report #5: Submit an annual report (as described above) by May 1.	05/01/2025
Agreement Modification: If the required offset of phosphorus is not generated by the approved Watershed Plan in any year, the permittee shall propose a modification to the binding written agreement or seek alternative compliance or variance options allowed under state law.	

Note: Failure to propose a modification to achieve compliance with the offset requirements may result in termination of the binding written agreement.	
Continued Coverage: If the permittee intends to seek a renewed variance, an application for the MDV (Multi Discharge Variance) shall be submitted as part of the application for permit reissuance in accordance with s. 283.16(4)(b), Wis. Stats.	
Annual Watershed Report After Permit Expiration: In the event that this permit is not reissued prior to the expiration date, the permittee shall continue to submit annual reports to the Department including the information above by May 1 each year.	

5 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

5.1 Reporting and Monitoring Requirements

5.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

5.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

5.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

5.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.
- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.
- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD5 and Total Suspended Solids shall be considered to be limits of quantitation
- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a "0" (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.
- If no discharge occurs through an outfall, flow related parameters (e.g. flow rate, hydraulic application rate, volume, etc.) should be reported as "0" (zero) at the required sample frequency specified for the outfall. For example: if the sample frequency is daily, "0" would be reported for any day during the month that no discharge occurred.

5.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted and certified by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

The CMAR shall be certified electronically by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The certification verifies that the electronic report is true, accurate and complete.

5.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings or electronic data records for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

5.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

5.1.8 Reporting Requirements – Alterations or Additions

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is only required when:

- The alteration or addition to the permitted facility may meet one of the criteria for determining whether a facility is a new source.
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification requirement applies to pollutants which are not subject to effluent limitations in the existing permit.
- The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use of disposal sites not reported during the permit application process nor reported pursuant to an approved land application plan. Additional sites may not be used for the land application of sludge until department approval is received.

5.2 System Operating Requirements

5.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.
The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.
A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.
NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources immediately of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

5.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

5.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-555, Wis. Adm. Code.

5.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

5.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

5.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

5.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions'

section of this permit, the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled 'Bypass' are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

5.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and
- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

5.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

5.2.10 Operator Certification

The wastewater treatment facility shall be under the direct supervision of a state certified operator. In accordance with s. NR 114.53, Wis. Adm. Code, every WPDES permitted treatment plant shall have a designated operator-in-charge holding a current and valid certificate. The designated operator-in-charge shall be certified at the level and in all subclasses of the treatment plant, except laboratory. Treatment plant owners shall notify the department of any changes in the operator-in-charge within 30 days. Note that s. NR 114.52(22), Wis. Adm. Code, lists types of facilities that are excluded from operator certification requirements (i.e. private sewage systems, pretreatment facilities discharging to public sewers, industrial wastewater treatment that consists solely of land disposal, agricultural digesters and concentrated aquatic production facilities with no biological treatment).

5.3 Sewage Collection Systems

5.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

5.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and
- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

5.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

5.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:
    - The date and location of the overflow;
    - The surface water to which the discharge occurred, if any;
    - The duration of the overflow and an estimate of the volume of the overflow;
    - A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
    - The estimated date and time when the overflow began and stopped or will be stopped;
    - The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
    - Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;

- A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
- Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
- To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
- The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at http://dnr.wi.gov/topic/wastewater/SSOreport.html. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

5.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

5.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall have written documentation of the Capacity, Management, Operation and Maintenance (CMOM) program components in accordance with s. NR 210.23(4), Wis. Adm. Code. Such documentation shall be available for Department review upon request. The Department may request that the permittee provide this documentation or prepare a summary of the permittee's CMOM program at the time of application for reissuance of the WPDES permit.
- The permittee shall implement a CMOM program in accordance with s. NR 210.23, Wis. Adm. Code.

- The permittee shall at least annually conduct a self-audit of activities conducted under the permittee's CMOM program to ensure CMOM components are being implemented as necessary to meet the general standards of s. NR 210.23(3), Wis. Adm. Code.

5.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

5.4 Surface Water Requirements

5.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

5.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

5.4.3 Effluent Temperature Requirements

Weekly Average Temperature – If temperature limits are included in this permit, Weekly Average Temperature shall be calculated as the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock pursuant to Wis. Adm. Code, s. NR 102.28. 'Cold Shock' means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state pursuant to Wis. Adm. Code, s. NR 102.29.

5.4.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

5.4.5 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.

b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.

c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.

d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

5.4.6 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD_5 and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

5.4.7 Fecal Coliform

The monthly limit for fecal coliform shall be expressed as a geometric mean. In calculating the geometric mean, a value of 1 is used for any result of 0.

5.4.8 Seasonal Disinfection

Disinfection shall be provided from May 1 through September 30 of each year. Monitoring requirements and the limitations for Fecal Coliform (interim) and *E. coli* apply only during the period in which disinfection is required. Whenever chlorine is used for disinfection or other uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

5.4.9 Total Residual Chlorine Requirements (When De-Chlorinating Effluent)

Test methods for total residual chlorine, approved in ch. NR 219 - Table B, Wis. Adm. Code, normally achieve a limit of detection of about 20 to 50 micrograms per liter and a limit of quantitation of about 100 micrograms per liter. Reporting of test results and compliance with effluent limitations for chlorine residual and total residual halogens shall be as follows:

- Sample results which show no detectable levels are in compliance with the limit. These test results shall be reported on Wastewater Discharge Monitoring Report Forms as "< 100 µg/L". (Note: 0.1 mg/L converts to 100 µg/L)
- Samples showing detectable traces of chlorine are in compliance if measured at less than 100 µg/L, unless there is a consistent pattern of detectable values in this range. These values shall also be reported on Wastewater Discharge Monitoring Report Forms as "<100 µg/L." The facility operating staff shall record actual readings on logs maintained at the plant, shall take action to determine the reliability of detected results (such as re sampling and/or calculating dosages), and shall adjust the chemical feed system if necessary to reduce the chances of detects.
- Samples showing detectable levels greater than 100 µg/L shall be considered as exceedances, and shall be reported as measured.
- To calculate average or mass discharge values, a "0" (zero) may be substituted for any test result less than 100 µg/L. Calculated values shall then be compared directly to the average or mass limitations to determine compliance.

5.4.10 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition" (PUB-WT-797*, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

5.4.11 Whole Effluent Toxicity (WET) Identification and Reduction

Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;
- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including the following actions:
    a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
    b) Identify the compound(s) causing toxicity. Conduct toxicity screening tests on the effluent at a minimum of once per month for six months to determine if toxicity recurs. Screening tests are WET tests using fewer effluent concentrations conducted on the most sensitive species. If any of the screening tests contain toxicity, conduct a toxicity identification evaluation (TIE) to determine the cause. TIE methods are available from USEPA "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures (EPA/600/6-91/003) and "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA/600/6-91/005F).

c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)

d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)

- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;
- If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

5.4.12 Reopener Clause

Pursuant to s. 283.15(11), Wis. Stat. and 40 CFR 131.20, the Department may modify or revoke and reissue this permit if, through the triennial standard review process, the Department determines that the terms and conditions of this permit need to be updated to reflect the highest attainable condition of the receiving water.

5.5 Land Application Requirements

5.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

5.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

5.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

5.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

5.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:
Water Extractable Phosphorus (% of Total P) =
[Water Extractable Phosphorus (mg/kg, dry wt) ÷ Total Phosphorus (mg/kg, dry wt)] x 100

5.5.6 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

5.5.7 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2, Wis. Adm. Code. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

5.5.8 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

5.5.9 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

5.5.10 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

6 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Effluent Limitations for E. coli (Outfall 001) -Status Update	August 31, 2020	10
Effluent Limitations for E. coli (Outfall 001) -Operational Evaluation Report	July 31, 2021	10
Phosphorus Schedule - Continued Optimization -Optimization	June 30, 2021	10
Phosphorus Schedule - Continued Optimization -Progress Report #2	June 30, 2022	10
Phosphorus Schedule - Continued Optimization -Progress Report #3	June 30, 2023	10
Phosphorus Schedule - Continued Optimization -Progress Report #4	June 30, 2024	10
Phosphorus Schedule - Continued Optimization -Progress Report #5	June 30, 2025	11
Phosphorus Multi-Discharger Variance Interim Limit (1.0 mg/L) -Report on Effluent Discharges	December 31, 2020	11
Phosphorus Multi-Discharger Variance Interim Limit (1.0 mg/L) -Action Plan	June 30, 2021	11
Phosphorus Multi-Discharger Variance Interim Limit (1.0 mg/L) -Initiate Actions	December 31, 2021	11
Phosphorus Multi-Discharger Variance Interim Limit (1.0 mg/L) -Complete Actions	June 30, 2022	11
Phosphorus Watershed Project Requirements -Annual Watershed Report	May 1, 2021	11
Phosphorus Watershed Project Requirements -Annual Watershed Report #2	May 1, 2022	11
Phosphorus Watershed Project Requirements -Annual Watershed Report #3	May 1, 2023	11
Phosphorus Watershed Project Requirements -Annual Watershed Report #4	May 1, 2024	11
Phosphorus Watershed Project Requirements -Annual Watershed Report #5	May 1, 2025	11
Phosphorus Watershed Project Requirements -Agreement Modification	See Permit	11
Phosphorus Watershed Project Requirements -Continued Coverage	See Permit	12
Phosphorus Watershed Project Requirements -Annual Watershed Report After Permit Expiration	See Permit	12
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	15
General Sludge Management Form 3400-48	prior to any significant sludge management changes	24
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	24
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	25

Other Methods of Disposal or Distribution Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	25
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	14

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:
West Central Region, 1300 W. Clairemont Ave., Eau Claire, WI 54701

APPENDIX 2-1

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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
City of Galesville	WI- 0021725-09-0	

Facility Address	City	State	ZIP Code
N15386 County Road K	Galesville	WI	54630

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

Project Name: City of Galesville Water Quality Trade

Receiving Water Name	Parameter(s) being traded	HUC 12(s)
Beaver Creek	Phosphorus	070400071104

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

Credit Generator Information

Credit generator type (select all that apply):
- ☐ Permitted Discharge (non-MS4/CAFO)
- ☐ Permitted MS4
- ☐ Permitted CAFO
- ☒ Urban nonpoint source discharge
- ☒ Agricultural nonpoint source discharge
- ☐ Other - Specify: _____

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

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

Will a broker/exchange be used to facilitate trade?
- ◉ Yes; Name: Trempealeau 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

Notice of Intent to Conduct Water Quality Trading

Form 3400-206 (1/14)

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: Snapplus, streambank P calc.
- ☐ Other: _____

Projected date credits will be available: 04/30/2019

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
Bruce A. Nelson	8/29/2018

Authorized Representative Signature

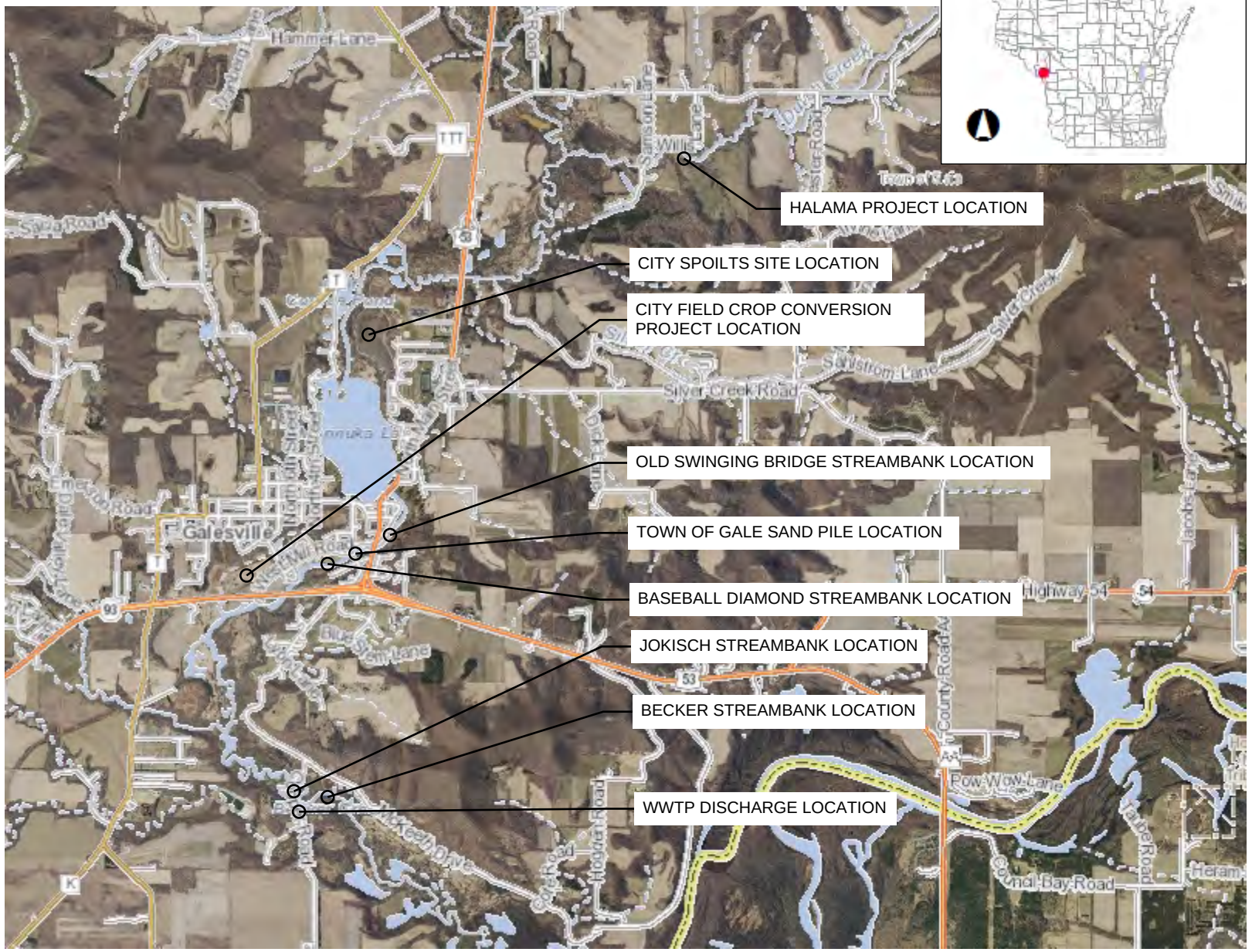
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. Based on my inquiry of those persons directly responsible for gathering and entering the information, the information is, to the best of my knowledge and belief, accurate and complete. 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
Vince Howe	8-29-18

APPENDIX 2-2

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Surface Water Data Viewer 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

Notes

1.5 0 0.75 1.5 Miles

NAD_1983_HARN_Wisconsin_TM

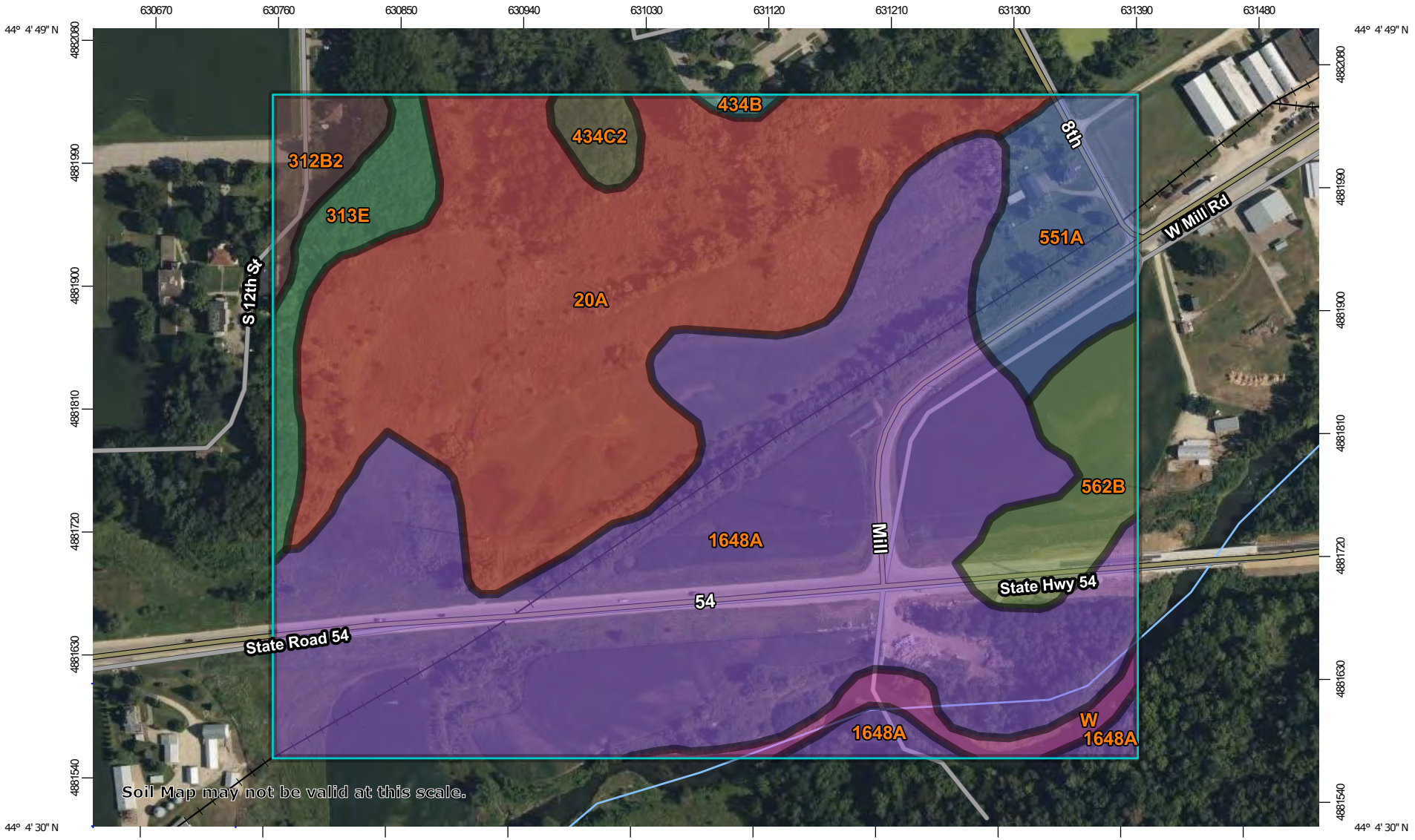
1: 47,520

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/

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APPENDIX 3-1

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Map Scale: 1:4,120 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Bilson sandy loam, 1 to 6 percent slopes
- Bilson sandy loam, 6 to 12 percent slopes, moderately eroded
- Festina silt loam, 1 to 6 percent slopes, moderately eroded
- Gosil loamy sand, 1 to 6 percent slopes
- Impact sand, 0 to 3 percent slopes
- Northbend-Ettrick silt loams, 0 to 3 percent slopes, frequently flooded
- Palms and Houghton mucks, 0 to 1 percent slopes
- Plumcreek silt loam, 20 to 45 percent slopes
- Water
- Not rated or not available

Soil Rating Lines

- Bilson sandy loam, 1 to 6 percent slopes
- Bilson sandy loam, 6 to 12 percent slopes, moderately eroded
- Festina silt loam, 1 to 6 percent slopes, moderately eroded
- Gosil loamy sand, 1 to 6 percent slopes
- Impact sand, 0 to 3 percent slopes
- Northbend-Ettrick silt loams, 0 to 3 percent slopes, frequently flooded
- Palms and Houghton mucks, 0 to 1 percent slopes
- Plumcreek silt loam, 20 to 45 percent slopes
- Water
- Not rated or not available

Soil Rating Points

- Bilson sandy loam, 1 to 6 percent slopes
- Bilson sandy loam, 6 to 12 percent slopes, moderately eroded
- Festina silt loam, 1 to 6 percent slopes, moderately eroded
- Gosil loamy sand, 1 to 6 percent slopes
- Impact sand, 0 to 3 percent slopes
- Northbend-Ettrick silt loams, 0 to 3 percent slopes, frequently flooded
- Palms and Houghton mucks, 0 to 1 percent slopes
- Plumcreek silt loam, 20 to 45 percent slopes
- Water
- Not rated or not available

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.

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: Trempealeau County, Wisconsin
Survey Area Data: Version 16, Sep 8, 2023

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

Date(s) aerial images were photographed: Jul 21, 2022—Sep 13, 2022

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 Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
20A	Palms and Houghton mucks, 0 to 1 percent slopes	Palms and Houghton mucks, 0 to 1 percent slopes	24.7	32.2%
312B2	Festina silt loam, 1 to 6 percent slopes, moderately eroded	Festina silt loam, 1 to 6 percent slopes, moderately eroded	1.7	2.2%
313E	Plumcreek silt loam, 20 to 45 percent slopes	Plumcreek silt loam, 20 to 45 percent slopes	2.7	3.5%
434B	Bilson sandy loam, 1 to 6 percent slopes	Bilson sandy loam, 1 to 6 percent slopes	0.2	0.3%
434C2	Bilson sandy loam, 6 to 12 percent slopes, moderately eroded	Bilson sandy loam, 6 to 12 percent slopes, moderately eroded	0.9	1.1%
551A	Impact sand, 0 to 3 percent slopes	Impact sand, 0 to 3 percent slopes	5.0	6.5%
562B	Gosil loamy sand, 1 to 6 percent slopes	Gosil loamy sand, 1 to 6 percent slopes	3.6	4.7%
1648A	Northbend-Ettrick silt loams, 0 to 3 percent slopes, frequently flooded	Northbend-Ettrick silt loams, 0 to 3 percent slopes, frequently flooded	36.3	47.3%
W	Water	Water	1.6	2.1%
Totals for Area of Interest			**76.6**	**100.0%**

Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

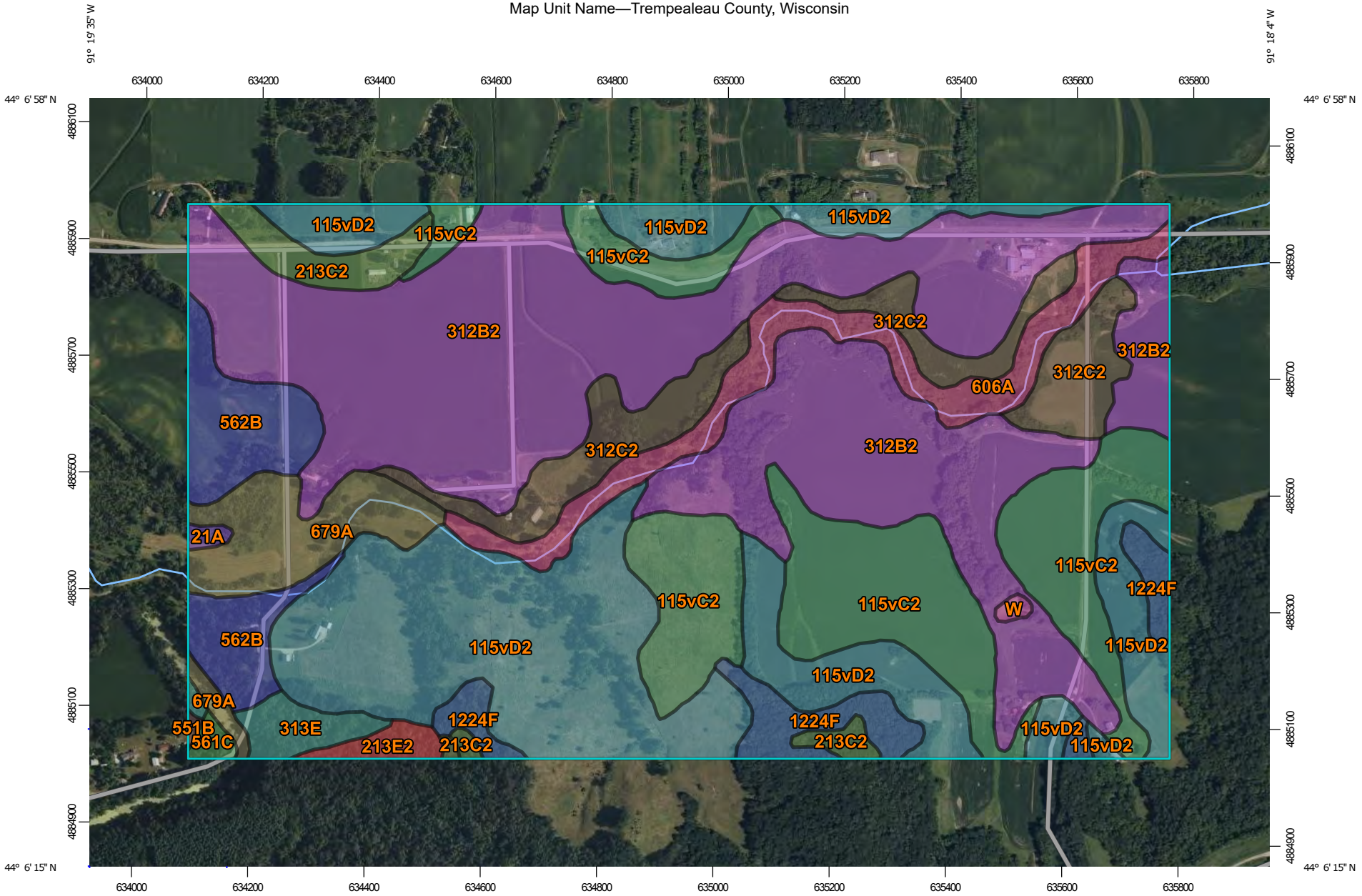
Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

APPENDIX 3-2

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91° 19' 35" W
91° 18' 4" W
634000
634200
634400
634600
634800
635000
635200
635400
635600
635800
44° 6' 58" N
44° 6' 15" N
4886100
4885900
4885700
4885500
4885300
4885100
4884900
115vD2
115vC2
213C2
312B2
562B
21A
679A
606A
W
1224F
551B
561C
313E
213E2
Map Scale: 1:9,280 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 100 200 400 600
Feet
0 450 900 1800 2700
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Boone-Elevasil complex, 15 to 45 percent slopes, rocky
- Ettrick silt loam, shallow, 0 to 2 percent slopes, frequently flooded
- Festina silt loam, 1 to 6 percent slopes, moderately eroded
- Festina silt loam, 6 to 12 percent slopes, moderately eroded
- Gosil loamy sand, 1 to 6 percent slopes
- Hixton silt loam, 12 to 20 percent slopes, moderately eroded
- Hixton silt loam, 20 to 30 percent slopes, moderately eroded
- Hixton silt loam, 6 to 12 percent slopes, moderately eroded
- Huntsville silt loam, 0 to 3 percent slopes, occasionally flooded
- Impact sand, 2 to 6 percent slopes
- Palms muck, 0 to 1 percent slopes, frequently flooded
- Plumcreek silt loam, 20 to 45 percent slopes
- Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded
- Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded
- Tarr sand, 6 to 15 percent slopes
- Water
- Not rated or not available

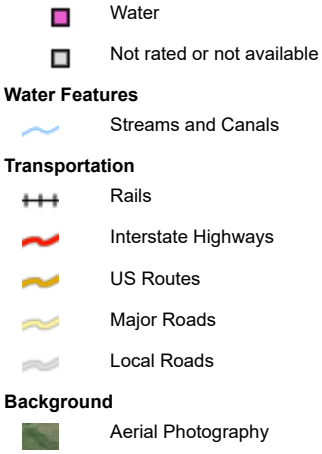
Soil Rating Lines

- Boone-Elevasil complex, 15 to 45 percent slopes, rocky
- Ettrick silt loam, shallow, 0 to 2 percent slopes, frequently flooded
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- Gosil loamy sand, 1 to 6 percent slopes
- Hixton silt loam, 12 to 20 percent slopes, moderately eroded
- Hixton silt loam, 20 to 30 percent slopes, moderately eroded
- Hixton silt loam, 6 to 12 percent slopes, moderately eroded
- Huntsville silt loam, 0 to 3 percent slopes, occasionally flooded
- Impact sand, 2 to 6 percent slopes
- Palms muck, 0 to 1 percent slopes, frequently flooded
- Plumcreek silt loam, 20 to 45 percent slopes
- Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded
- Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded
- Tarr sand, 6 to 15 percent slopes
- Water
- Not rated or not available

Soil Rating Points

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- Festina silt loam, 6 to 12 percent slopes, moderately eroded
- Gosil loamy sand, 1 to 6 percent slopes
- Hixton silt loam, 12 to 20 percent slopes, moderately eroded
- Hixton silt loam, 20 to 30 percent slopes, moderately eroded
- Hixton silt loam, 6 to 12 percent slopes, moderately eroded
- Huntsville silt loam, 0 to 3 percent slopes, occasionally flooded
- Impact sand, 2 to 6 percent slopes
- Palms muck, 0 to 1 percent slopes, frequently flooded
- Plumcreek silt loam, 20 to 45 percent slopes
- Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded
- Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded
- Tarr sand, 6 to 15 percent slopes

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: Trempealeau County, Wisconsin
Survey Area Data: Version 16, Sep 8, 2023

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

Date(s) aerial images were photographed: Jul 21, 2022—Sep 13, 2022

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 Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
21A	Palms muck, 0 to 1 percent slopes, frequently flooded	Palms muck, 0 to 1 percent slopes, frequently flooded	0.7	0.2%
115vC2	Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	59.2	14.9%
115vD2	Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded	Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded	89.1	22.4%
213C2	Hixton silt loam, 6 to 12 percent slopes, moderately eroded	Hixton silt loam, 6 to 12 percent slopes, moderately eroded	8.0	2.0%
213D2	Hixton silt loam, 12 to 20 percent slopes, moderately eroded	Hixton silt loam, 12 to 20 percent slopes, moderately eroded	0.2	0.1%
213E2	Hixton silt loam, 20 to 30 percent slopes, moderately eroded	Hixton silt loam, 20 to 30 percent slopes, moderately eroded	2.4	0.6%
312B2	Festina silt loam, 1 to 6 percent slopes, moderately eroded	Festina silt loam, 1 to 6 percent slopes, moderately eroded	142.1	35.7%
312C2	Festina silt loam, 6 to 12 percent slopes, moderately eroded	Festina silt loam, 6 to 12 percent slopes, moderately eroded	26.1	6.6%
313E	Plumcreek silt loam, 20 to 45 percent slopes	Plumcreek silt loam, 20 to 45 percent slopes	4.6	1.2%
551B	Impact sand, 2 to 6 percent slopes	Impact sand, 2 to 6 percent slopes	0.2	0.1%
561C	Tarr sand, 6 to 15 percent slopes	Tarr sand, 6 to 15 percent slopes	1.1	0.3%
562B	Gosil loamy sand, 1 to 6 percent slopes	Gosil loamy sand, 1 to 6 percent slopes	17.8	4.5%
606A	Huntsville silt loam, 0 to 3 percent slopes, occasionally flooded	Huntsville silt loam, 0 to 3 percent slopes, occasionally flooded	19.0	4.8%
679A	Ettrick silt loam, shallow, 0 to 2 percent slopes, frequently flooded	Ettrick silt loam, shallow, 0 to 2 percent slopes, frequently flooded	15.5	3.9%
1224F	Boone-Elevasil complex, 15 to 45 percent slopes, rocky	Boone-Elevasil complex, 15 to 45 percent slopes, rocky	11.6	2.9%
W	Water	Water	0.5	0.1%
Totals for Area of Interest			**398.2**	**100.0%**

Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

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APPENDIX 4-1

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Trempealeau County
Department of Land Management
Courthouse, P.O. Box 67
Whitehall, WI 54773
Phone: (715) 538-2311 ext 223
Web Page: www.tremplocounty.com/tchome/landmanagement

Narrative of Streambank Protection Projects – Galesville

Site 1: Old Swinging Bridge – City of Galesville

Due to severe flooding in the summer of 2017, the swinging bridge was completely washed away due to the discharge and velocity of water that came through. Since the bridge was destroyed, this caused erosion where the abutment and piles were in place that helped to support the bridge. Since this flood event, no measures have been taken to stabilize the bank after the erosion had occurred. Continual water action will allow unstable characteristics of this bank to continue, such as cleaving soil along the toe and increased degradation of the overall stream bank, measuring close to 110 feet in length and 12 feet in height. With increased degradation of the overall streambank, sloughing will continue to occur, which will cause deposition of the loose, silty sediment that this bank is composed of. The lateral recession of this bank is considered to be 0.50 and could easily turn more severe if measures aren't taken to fix the current condition of the erosion at this site and prevent future erosion.





Site 2: Sand Pile – City of Galesville

Flooding and channelized flow from runoff of the impervious service close to the stream bank, measuring about 65 feet in length and 10 feet in height, has caused minor erosion at this site. This is causing the toe to erode, leading to cleaving soil and the development of a vertical bank. With the development of a vertical bank and visible sloughing, significant amounts of loose, silty sediment are continuing to be deposited on an annual basis. The lateral recession of this streambank is determined to be moderate. With lack of proper slope and continual runoff from the sand pile, sedimentation and erosion will continue to occur, leading to severe lateral recession of 0.50.

Site 3: Baseball Diamond – City of Galesville

Severe flooding, continual water action, and variation in sinuosity along this stretch of stream has caused increased degradation along the streambank. This streambank, measuring 210 feet in length and nine feet in height, has become vertical in certain areas due to cleaving soil. Due to the fact that this stretch of streambank is vertical and bare, the lateral recession is considered to be 0.20 because of the amount of loose, silty sediment that is being deposited on an annual basis. With lack of a stable toe and proper slope, this increasing degradation will continue, and erosion will also continue to approach into the grassed area behind the streambank.


2017. 11. 27 10:53


2017. 11. 27 10:58


2017.11.27 10:59


2017.11.27 10:59

Site 4: Anderson and Koxlien Properties - Town of Gale

The Anderson and Koxlien properties are farms along the main branch of the Beaver Creek in Frenchville (Town of Gale). Being the fourth generation on their farm, the Anderson family has told us how drastically the Beaver Creek along their property has changed over the course of the years. Severe flooding, continual water action, and variation in sinuosity along this stretch of stream has caused increased degradation along the streambank. The recession rate has been deemed to be a variation of severe to very severe (0.40-0.60), as this stretch of stream is littered with fallen trees, exposed roots, bare banks, large deposits of sediment on the banks, and even a tiny "island" that has been created by extreme floods carving a new channel around a portion of streambank. Portions of the streambank have become so eroded that the stream depth varies from almost 15-feet in one spot to merely inches in others. There is about 1700 feet of streambank that is in need of riprap along the south side of the bank and nearly 1500 feet of riprap is needed along the north side. There are two or three corners that are riprapped between these two properties and the riprap is about 25 years old. There is cattle that pastures on both the north and south sides of the stream, with fencing near the edge of the streambank. According to both the Anderson and Koxlien families, the fence used to be at least 10 feet away from the edge of the bank, and now there are many spots were the fence is hanging over the streambank or within centimeters of it.




2018.10.12 14:08


2018.10.12 14:09


2018.10.12 14:32


2018.10.12 14:32


2018.10.12 14:32







Site 5: Robert Schultz Property - Town of Gale

This 600-foot stretch of streambank is located just downstream of the Anderson and Koxlien properties. It is an average of two feet in height and with its mostly bare bank and roots of several trees exposed, it is determined to have moderate to severe recession of 0.30. This stretch of Beaver Creek touts fast-moving currents and has there is on-site and aerial photography evidence showing that the corners have been washing out at concerning rates over the last decade. Continual and severe flooding of the Beaver Creek watershed have greatly impacted this stretch of streambank and many others. While there is no continual livestock on site, this site is used at times to pasture the cattle from the Anderson site upstream. There is evidence of wildlife such as muskrats, ducks, and deer frequently using this area as habitat and so streambank improvement will only increase the quality of their environment.


2018 10 12 15:10


2018.10.12 15:11


2018. 10. 12 15:14


2018.10.12 15:14


2018.10.12 15:21

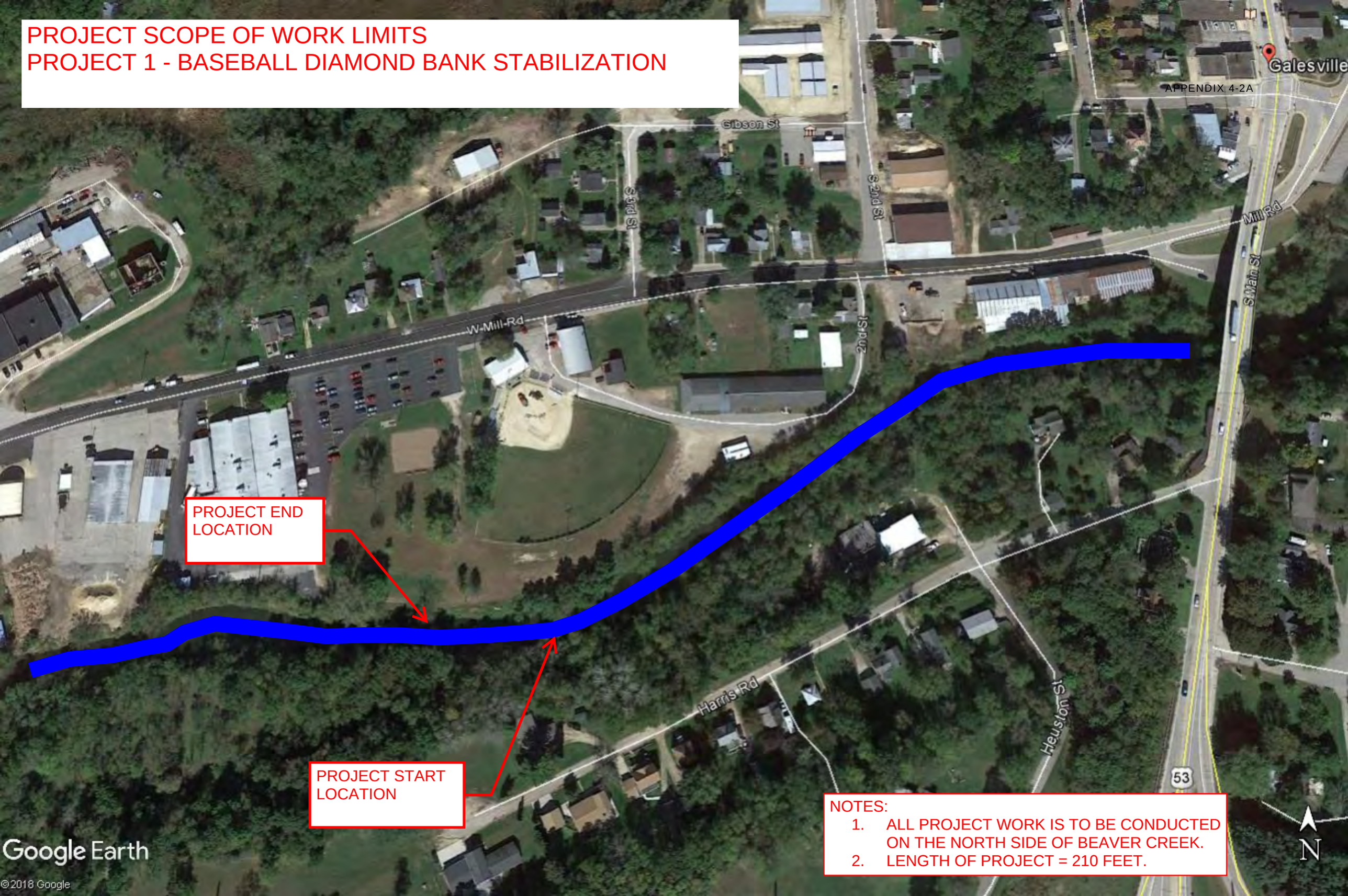
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APPENDIX 4-2

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PROJECT SCOPE OF WORK LIMITS
PROJECT 1 - BASEBALL DIAMOND BANK STABILIZATION

APPENDIX 4-2A



NOTES:

1. ALL PROJECT WORK IS TO BE CONDUCTED ON THE NORTH SIDE OF BEAVER CREEK.
2. LENGTH OF PROJECT = 210 FEET.

900 feet



August 22, 2019

1:2,400

0 0.02 0.04 0.08 mi

0 0.0325 0.065 0.13 km

- County Civil Townships
- County Sections
- County QQ
- Parcel Base

Water_Line

- Unnamed
- Water Line

Water_Region

- Water Region
- Gov_Lots

Jokisch Project Site Location



August 22, 2019

1:1,200

0 0.01 0.02 0.04 mi

0 0.015 0.03 0.06 km

- County Civil Townships
- County Sections
- County QQ
- Addressing
- Parcel Base

Water_Line

- Unnamed
- Water Line

Water_Region

- Water Region
- Gov_Lots
- County_QQ

Appendix 3-2

PROJECT SCOPE OF WORK LIMITS
PROJECT 3 - TOWN OF GALE SAND STORAGE BANK STABILIZATION

PROJECT END LOCATION

PROJECT START LOCATION

NOTES:
1. ALL PROJECT WORK IS TO BE CONDUCTED ON THE NORTH SIDE OF BEAVER CREEK.
2. LENGTH OF PROJECT = 65 FEET.

N

Google Earth
©2018 Google

SPOIL SITE LOCATION MAP

SPOIL SITE PROJECT LOCATION

0.65 Reservoir
Harvest View Ln
Prairie Ridge Ln
Bluffview Pl
Crestwood Ln
Cottage Ave
Park Dr
Silver Creek Rd
Eden Dr
Tower Dr
Marinuka Ln
Haug Ln
Marinuka Lake
53
N Main St
Fairview St
E Orchard Ln
T
McKinley Ave
N 6th St
Babby St
N 4th St
N 7th St
N 5th St
W Ridge Ave
E Ridge Ave
Google Earth
© 2018 Google
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APPENDIX 4-3

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Spoil Site







Baseball Diamond





Old Swinging Bridge



Becker





Jokisch



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APPENDIX 4-4

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TREMPEALEAU COUNTY

Department of Land Management
18600 Hobson St
Whitehall, WI 54773

Web Page: www.co.trempealeau.wi.us
Telephone (715)538-1917
@TrempCoDLM

Galesville Water Quality Trading Narrative – Halama

Overview

The Halama property is located in the Town of Gale. Dutch Creek runs through the property and is a tributary of Beaver Creek. This property has historically been used for pasture, causing high amounts of erosion. The areas of concern were degraded by the presence of constant cattle traffic. The Halama Family recently purchased the property and are restoring the property to a natural state without the presence of cattle. There are multiple areas on this property that will be addressed with this project which are described in detail below.

Access Area/Crossing

The access area or stream crossing was historically used as an access for the cattle to get to the other side of the stream. The area has deep gullies, some gullies are up to 3 feet deep, making it impossible for machinery or animals to cross safely. This area is bare of vegetation with large gullies leading to the stream. The area is approximately 75 feet across by 175 feet in length. The crossing would need to be continued to the other side of the stream to allow for safe access of machinery and animals. If a remedy is not completed snow melt and rainfall will continue to erode the soil and lead to increased phosphorous release into the watershed.



Figure 1: Stream Crossing area looking towards the stream.



Figure 2: Stream Crossing Area looking towards the stream.

Outlet/Spring Area

Due to the springs and continuous degradation by the cattle, this area is highly eroded. It is also adjacent to Dutch Creek, during floods the soil is eroded by fast moving waters. There are currently Black Walnut trees located here that are likely holding some of the soil from continuously eroding. This area will continue to degrade if action is not taken to stabilize it. The dimensions are approximately 3.5ft deep by 15ft in width and 35ft in length. This would be an ideal area for a rock outlet.



Figure 3: Outlet area looking upstream



Figure 4: Outlet area looking upstream

Grade Stabilization

There is an area upstream of the spring that has a large gully from heavy rains, cattle degradation of soil, and previous maintenance issues. This area appears to have been a grade stabilization area that has been washed out. There are large areas of bare ground that are leading to increased erosion. The area of the exposed soil and gully is 75ft by 160ft. The Halama family has indicated that even in the short time they have owned the property, this area has lost large amounts of soil due to heavy rains. If this area is not fixed, it will continue to degrade and form larger gullies.



Figure 5: Crossing/Grade Stabilization looking up the existing crossing area



Figure 6: Crossing/Grade Stabilization of existing pipe outlet



Figure 7: Grade Stabilization Area

Streambank Protection

Dutch Creek runs through the length of the property. The total length of the creek on the property is 0.3miles (1,590 feet). Along this stretch of stream, there are at least 8 areas that have erosion along the banks, with a total of 800 feet needing repair with shaping and potentially rip rap. The average recession rate of these areas is 0.2ft/yr. The recession rate was determined by aerial photography analysis between 2014 and 2023 along with visual inspection this fall. The following are the recession rates by bank: Bank 1 – 0.0.4ft/yr, Bank 2 – 0.91ft/yr, Section 3/Bank 3 – 0.1 ft/yr, Section 4/Bank 4 – 0.05ft/yr, Bank 5 – 0.5ft/yr, Bank 6 – 0.5 ft/yr, Bank 7 – 0.08 ft/yr and Bank 8 – 0.07 ft/yr with an average across the entire stretch of 0.2 ft/yr. The following are photos of all the bank with labels of which section which correspond to the overview map. The recession rate calculations are also included. Most of the banks along this stretch are bare soil with exposed roots. The heavy rains have caused increased flooding in recent years, leading to increased erosion along these bare banks. There is evidence of wildlife such as muskrats, ducks, and deer frequently using this stretch of stream for water. The streambank improvement will increase the quality of their environment and habitat.



Figure 8: Bank 1 North Side Looking Down Stream



Figure 9: Bank 1 North Side Straight On



Figure 10: Bank 2 South Side Looking Up Stream



Figure 11: Section 3/Bank 3 - South Side Looking Up Stream



Figure 12: Section 3/Bank 3 - North Side Looking Up Stream



Figure 13: Section 3/Bank 3 – South Side Looking Down Stream



Figure 14: Section 3/Bank 3 - South Side Looking Down Stream



Figure 15: Section 3/Bank 3 – South Side Looking Down Stream



Figure 16: Section 3/Bank 3 – South Side Straight On



Figure 17: Section 3/Bank 3 - North Side Looking Up Stream



Figure 18: Section 3/Bank 3 – Looking Down Stream



Figure 19: Section 3/Bank 3 - North Side Straight On



Figure 20: Section 3/Bank 3 – Looking Upstream



Figure 21: Section 4/Bank 4 – South Side Looking Up Stream



Figure 22: Section 4/Bank 4 – North Side Looking Up Stream



Figure 23: Section 4/Bank 4 – South Side Straight On View



Figure 24: Bank 5 – North Side Looking Up Stream



Figure 25: Bank 6 – South Side On Top of Bank Looking Up Stream



Figure 26: Bank 6 – South Side Looking Up Stream



Figure 27: Bank 6 - South Side Looking Up Stream



Figure 28: Bank 7 - South Side Looking Down Stream



Figure 29: Bank 7 - South Side Looking Up Stream



Figure 30: Bank 7 – South Side Looking Up Stream



Figure 31: Bank 8 – Straight On View



Figure 32: Bank 8 – South Side Looking Down Stream



Figure 33: Bank 8 – South Side Looking Upstream

APPENDIX 4-5

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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

-Figure 8-

R. D. Windhorn 6/99

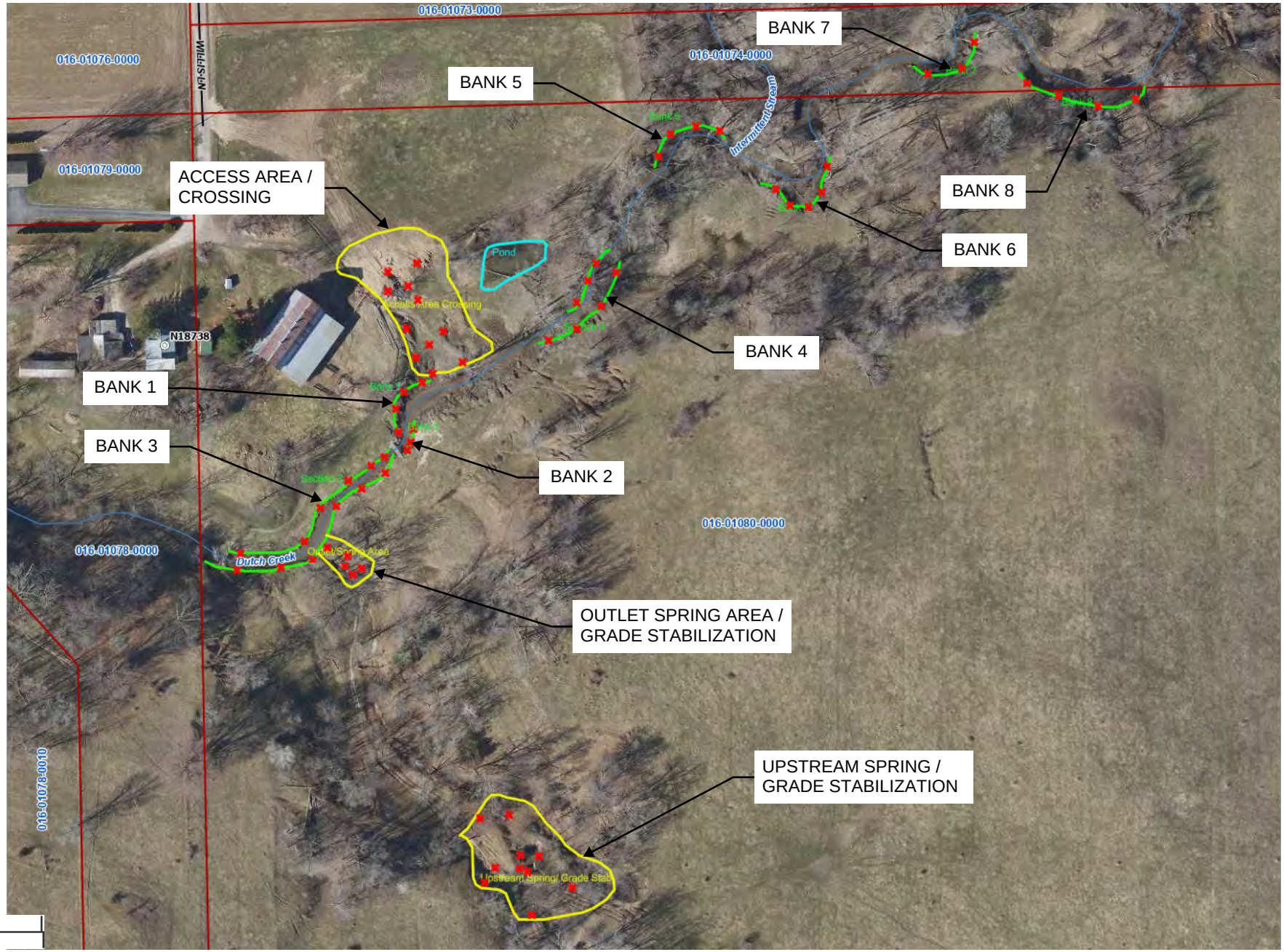
Lateral Recession Rates

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 4-6

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Date created: 11/20/2023
Last Data Uploaded: 11/17/2023 11:04:42 PM
Developed by
Schneider GEOSPATIAL

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APPENDIX 5-1

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

Farmer / Cooperator Name: City of Galesville
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^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)
Old Swing Bridge	1	110.0	12.0	1,320	0.50	660.0	Silt Loam	85	28.1
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						28.1
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.10%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.028
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**56**

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)
Baseball Diamond	1	210.0	9.0	1,890	0.20	378.0	Silt Loam	85	16.1
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						16.1
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.06%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.009
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**18**

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)*
Town of Gale Sand Pile	1	65.0	5.0	325	0.50	162.5	Silt Loam	85	6.9

Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):	6.9
Percent Leachable Phosphorus in the Soil (nitric/peroxide):	0.16%
Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):	0.011
Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):	**22**

Total Phosphorus Loss for sum of reaches (lbs/yr):	**96**

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

Streambank or Ditch Erosion Calculation Formula:

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

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

Farmer / Cooperator Name:	Peter Becker - Beaver Creek	Evaluated By:	Kirstie Heidenreich
Tract Number:		Evaluation Date:	July 31, 2019

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	225.0	15.0	3,375	0.50	1,687.5	Sand	105	88.6
	2	225.0	12.0	2,700	0.50	1,350.0	Sand	105	70.9
	3	225.0	10.0	2,250	0.50	1,125.0	Sand	105	59.1
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						218.5
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.05%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.109
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**219**

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)
	4	225.0	8.0	1,800	0.50	900.0	Sand	105	47.3
	5	75.0	9.0	675	0.50	337.5	Sand	105	17.7
			Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):						65.0
			Percent Leachable Phosphorus in the Soil (nitric/peroxide):						0.05%
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):						0.032
			Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):						**65**

Total Phosphorus Loss for sum of reaches (lbs/yr):	**284**

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

Streambank or Ditch Erosion Calculation Formula:

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

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

Farmer / Cooperator Name:	Eric Jokisch - Beaver Creek	Evaluated By:	Kirstie Heidenreich
Tract Number:		Evaluation Date:	July 31, 2019

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	340.0	12.0	4,080	0.50	2,040.0	Sand	105	107.1

Total Estimated Annual Streambank or Ditch Erosion Soil Loss (Tons):	107.1
Percent Leachable Phosphorus in the Soil (nitric/peroxide):	0.05%
Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):	0.054
Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):	**107**

Total Phosphorus Loss for sum of reaches (lbs/yr):	**107**

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

Streambank or Ditch Erosion Calculation Formula:

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

WQ1: P Trade Report

Reported For	Galesville Spoil Site
Printed	2018-07-27
Plan Completion/Update Date	2017-09-20
SnapPlus Version 17.1 built on 2018-05-25	
M:\Water Quality Trading\Galesville\Potential Project Sites\Spoil Site \SnapPlus\Galesville Spoil Site.snapDb	

Prepared for:
Galesville Spoil Site
attn:Galesville Spoil Site
Galesville,

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

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

Questions? Please contact DNRphosphorus@wisconsin.gov

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

P Trade Report				PTP			
Field Name	Soil Series	Soil Symbol	Acres	2018	2019	2020	2021
Spoil Site	ETTRICK	679A	23	15	10	9	8
Total			**23**	**15**	**10**	**9**	**8**

WQ1: P Trade Report

Reported For	Galesville Spoil Site
Printed	2018-07-27
Plan Completion/Update Date	2017-09-20
SnapPlus Version 17.1 built on 2018-05-25	
M:\Water Quality Trading\Galesville\Potential Project Sites\Spoil Site \SnapPlus\Galesville Spoil Site.snapDb	

Prepared for:
Galesville Spoil Site
attn:Galesville Spoil Site
Galesville,

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

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P Trade Report				PTP			
Field Name	Soil Series	Soil Symbol	Acres	2018	2019	2020	2021
Spoil Site	ETTRICK	679A	23	47	48	48	42
Total			**23**	**47**	**48**	**48**	**42**

APPENDIX 5-2

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

Farmer / Cooperator Name: Jacob Halama - Dutch Creek
Tract Number:
Evaluated By: Carson Hackett
Evaluation Date: October 1, 2024

sorted by
Daniel Cook
9/16/2024

Field Number	Eroding Strmbnk Reach #; or Ditch Side/Bottom	Eroding Bank or Ditch Length (Feet)	Eroding Bank Height; or Ditch Bottom Width* (Feet)	Area of Eroding Strmbank or Ditch (FT^2)	Lateral or Ditch Bottom Recession Rate (Estimated) (FT / Year)	Estimated Volume (FT^3) Eroded Annually	Soil Texture	Approximate Pounds of Soil per FT^3	Estimated Soil Loss (Tons/Year)	% Leachable Phosphorus in the Soil	Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (Tons):	Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):
	Section 4 - North	125.0	6.0	750	0.20	150.0	Silt Loam	85	6.4	0.049%	0.003	6.2
	Section 4 - South	125.0	6.0	750	0.20	150.0	Silt Loam	85	6.4	0.049%	0.003	6.2
	Bank 6 - South	50.0	10.0	500	0.15	75.0	Silt Loam	85	3.2	0.049%	0.002	3.1
	Bank 5 - North	60.0	15.0	900	0.50	450.0	Silt Loam	85	19.1	0.042%	0.008	16.1
	Bank 2 - South	30.0	3.0	90	0.20	18.0	Silt Loam	85	0.8	0.039%	0.000	0.6
	Bank 8 - South	50.0	8.0	400	0.50	200.0	Silt Loam	85	8.5	0.038%	0.003	6.5
	Bank 1 - North*	20.0	8.0	160	0.50	80.0	Silt Loam	85	3.4	0.034%	0.001	2.3
	~~Section 3 - North~~	~~150.0~~	~~3.5~~	~~525~~	~~0.40~~	~~210.0~~	~~Silt Loam~~	~~85~~	~~8.9~~	~~0.032%~~	~~0.003~~	~~5.7~~
	Section 3 - South**	40.0	3.5	140	0.25	35.0	Silt Loam	85	1.5	0.032%	0.000	1.0
	~~Bank 7 - South~~	~~60.0~~	~~8.0~~	~~480~~	~~0.50~~	~~240.0~~	~~Silt Loam~~	~~85~~	~~10.2~~	~~0.029%~~	~~0.003~~	~~5.9~~
		440.0									**0.027**	**53.6**
		500.0	20' of Bank 1 and 40' of Bank 3 south, revised 11/12/24.									39.7

Total Phosphorus Loss for sum of reaches under 500' (lbs/yr):	**40**

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

Streambank or Ditch Erosion Calculation Formula:

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

*Bank 1 North - Revised from 70' to 20'.
**Section 3 South - Revised from 150' to 40'

NRCS Classic Gully Erosion Estimator

Farmer / Cooperator Name:	Jacob Halama - Dutch Creek	Evaluated By:	Carson Hackett
Tract Number:		Evaluation Date:	October 1, 2024

Field Number	Gully	Total Active Gully Length (Feet) *	Gully Average Top Width (Feet)	Gully Average Bottom Width (Feet)	Gully Average Depth (Feet)	Estimated Total Volume (FT^3) Eroded	Gully Formation: Estimated Number of Years	Soil Texture	Approximate Pounds of Soil per FT^3	Estimated Total Gully Soil Loss (Tons)	Estimated Gully Soil Loss Per Year (Tons)	% Leachable Phosphorus in the Soil	Total Estimated Annual Gully Erosion Phosphorus Loss (Tons):	Total Estimated Annual Gully Erosion Phosphorus Loss (lbs):
Upstream Spring	U1	14.0	1.1	1.1	0.67	15.2	1.0	Silt Loam	85	0.64	0.645	0.047%	0.000303	0.61
	U2	18.0	0.8	0.8	0.67	15.0	1.0	Silt Loam	85	0.64	0.638	0.047%	0.000300	0.60
	U3	23.0	0.8	0.8	0.75	21.6	1.0	Silt Loam	85	0.92	0.916	0.047%	0.000431	0.86
	U4	8.0	1.9	1.9	0.50	11.5	1.0	Silt Loam	85	0.49	0.489	0.047%	0.000230	0.46
	U5	21.0	2.5	2.5	0.83	65.6	1.0	Silt Loam	85	2.79	2.789	0.047%	0.001311	2.62
	U6	10.0	0.8	0.8	0.33	4.2	1.0	Silt Loam	85	0.18	0.177	0.047%	0.000083	0.17
													0.002657	5.31

Total Estimated Annual Streambank or Ditch Erosion Phosphorus Loss (lbs):	**5**

* Only measure the active gully erosion areas. Areas which have become stabilized are no longer a major resource concern.

Classic Gully Erosion Calculation Formula:

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

APPENDIX 5-3

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APLE-Lots Average Annual Runoff Report
2/17/2025 4:18:50 PM

Project Name	Halama
Version Name	Original
Lot Name	Stream Crossing
County	Trempealeau
Location	19N 8W s22
Cover Type	dirt
Area(sq.ft.)	16000
Date	2/17/2025
% Vegetated	0
Average Days Between Cleaning	120

Contributing Area Name	Area	Type(CN) Type	Mitigation	Mitigation Text	Percent Diverted
Upstream Crossing	56000	Grass(69)	FALSE		0

Animals

Month	Animal type/hours a day	Number	Manure dry matter produced in month(ton)
March	Dairy Dry Cows 1600 lb/12 hrs	75	6.28
April	Dairy Dry Cows 1600 lb/12 hrs	75	6.07
May	Dairy Dry Cows 1600 lb/12 hrs	75	6.28
June	Dairy Dry Cows 1600 lb/12 hrs	75	6.07
July	Dairy Dry Cows 1600 lb/12 hrs	75	6.28
August	Dairy Dry Cows 1600 lb/12 hrs	75	6.28
September	Dairy Dry Cows 1600 lb/12 hrs	75	6.07
October	Dairy Dry Cows 1600 lb/12 hrs	75	6.28
November	Dairy Dry Cows 1600 lb/12 hrs	75	6.07
		Manure dry matter produced in year(ton):	55.7

Model results for Stream Crossing annual output

Runoff (in)	21.5
Sediment loss (ton)	14.8
Total P loss (lb.)	135.6

APLE-Lots Average Annual Runoff Report
3/31/2025 9:33:08 AM

Project Name	Halama
Version Name	Original
Lot Name	Stream Crossing
County	Trempealeau
Location	19N 8W s22
Cover Type	dirt
Area(sq.ft.)	16000
Date	3/31/2025
% Vegetated	100
Average Days Between Cleaning	120

Contributing Area Name	Area	Type(CN) Type	Mitigation	Mitigation Text	Percent Diverted
Upstream Crossing	56000	Grass(69)	FALSE		0

Animals Month	Animal type/hours a day	Number	Manure dry matter produced in month(ton)
March	Dairy Dry Cows 1600 lb/12 hrs	2	0.17
April	Dairy Dry Cows 1600 lb/12 hrs	2	0.16
May	Dairy Dry Cows 1600 lb/12 hrs	2	0.17
June	Dairy Dry Cows 1600 lb/12 hrs	2	0.16
July	Dairy Dry Cows 1600 lb/12 hrs	2	0.17
August	Dairy Dry Cows 1600 lb/12 hrs	2	0.17
September	Dairy Dry Cows 1600 lb/12 hrs	2	0.16
October	Dairy Dry Cows 1600 lb/12 hrs	2	0.17
November	Dairy Dry Cows 1600 lb/12 hrs	2	0.16
		Manure dry matter produced in year(ton):	1.5

Model results for Stream Crossing annual output

Runoff (in)	7.1
Sediment loss (ton)	0.1
Total P loss (lb.)	2.6

APLE-Lots Average Annual Runoff Report
2/17/2025 2:50:47 PM

Project Name	Halama
Version Name	Original
Lot Name	Outlet Spring Area
County	Trempealeau
Location	19N 8W s22
Cover Type	dirt
Area(sq.ft.)	1900
Date	2/17/2025
% Vegetated	0
Average Days Between Cleaning	120

Animals

Month	Animal type/hours a day	Number	Manure dry matter produced in month(ton)
March	Dairy Dry Cows 1600 lb/12 hrs	25	2.09
April	Dairy Dry Cows 1600 lb/12 hrs	25	2.02
May	Dairy Dry Cows 1600 lb/12 hrs	25	2.09
June	Dairy Dry Cows 1600 lb/12 hrs	25	2.02
July	Dairy Dry Cows 1600 lb/12 hrs	25	2.09
August	Dairy Dry Cows 1600 lb/12 hrs	25	2.09
September	Dairy Dry Cows 1600 lb/12 hrs	25	2.02
October	Dairy Dry Cows 1600 lb/12 hrs	25	2.09
November	Dairy Dry Cows 1600 lb/12 hrs	25	2.02
		Manure dry matter produced in year(ton):	18.5

Model results for Outlet Spring Area annual output

Runoff (in)	15.1
Sediment loss (ton)	1
Total P loss (lb.)	24.4

APLE-Lots Average Annual Runoff Report

2/17/2025 4:04:45 PM

Project Name	Halama
Version Name	Original
Lot Name	Outlet Spring Area
County	Trempealeau
Location	19N 8W s22
Cover Type	dirt
Area(sq.ft.)	1900
Date	2/17/2025
% Vegetated	100
Average Days Between Cleaning	120

Animals

Month	Animal type/hours a day	Number	Manure dry matter produced in month(ton)
March	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
April	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
May	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
June	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
July	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
August	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
September	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
October	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
November	Dairy Dry Cows 1600 lb/12 hrs	1	0.08
		Manure dry matter produced in year(ton):	0.7

Model results for Outlet Spring Area annual output

Runoff (in)	2.9
Sediment loss (ton)	0
Total P loss (lb.)	0.5

CREDITS SUMMARY
HALAMA PROPERTY - APLE LOTS
GALESVILLE WQT

Assumptions:
100 Dry Dairy Cows (1600 lbs) - 75 in Stream Crossing, 25 in the Outlet Spring Area
Active 12 hrs/day March - November
Halama's plan to keep 3 cattle on the property year-round and will be raised to be butchered.
2 cattle in Stream Crossing, 1 cattle in Outlet Spring Area

	100 Cattle	3 Cattle	Difference
Stream Crossing	136	2.6	133
Outlet Spring	24	0.5	24
Total lbs. P/year	160	3.1	157

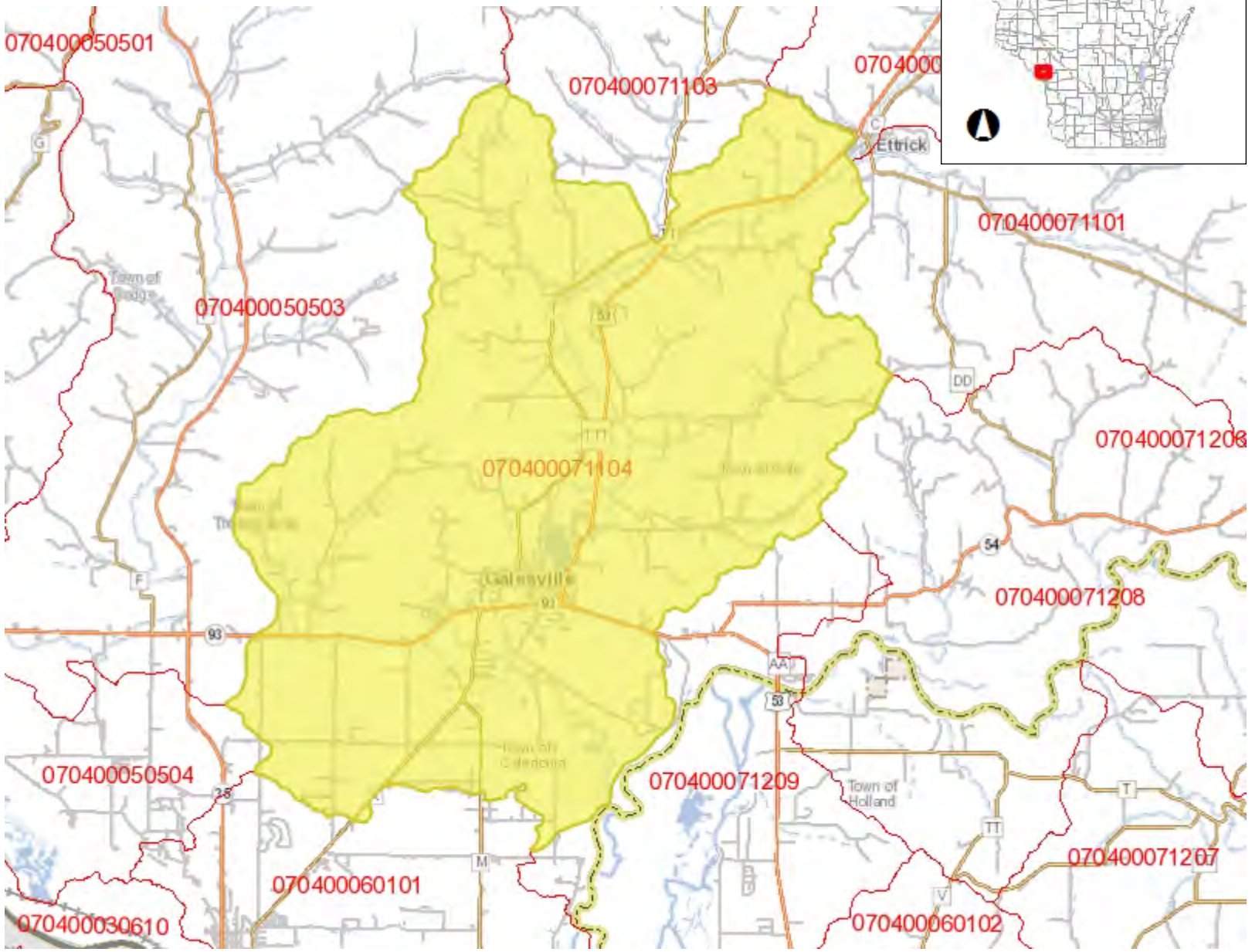
Total difference represents the total pounds of phosphorus saved after reducing the herd count from 100 cattle to 3.

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APPENDIX 6-1

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HUC 12 Watershed 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

Notes

APPENDIX 6-1

4.0 0 2.00 4.0 Miles

NAD_1983_HARN_Wisconsin_TM

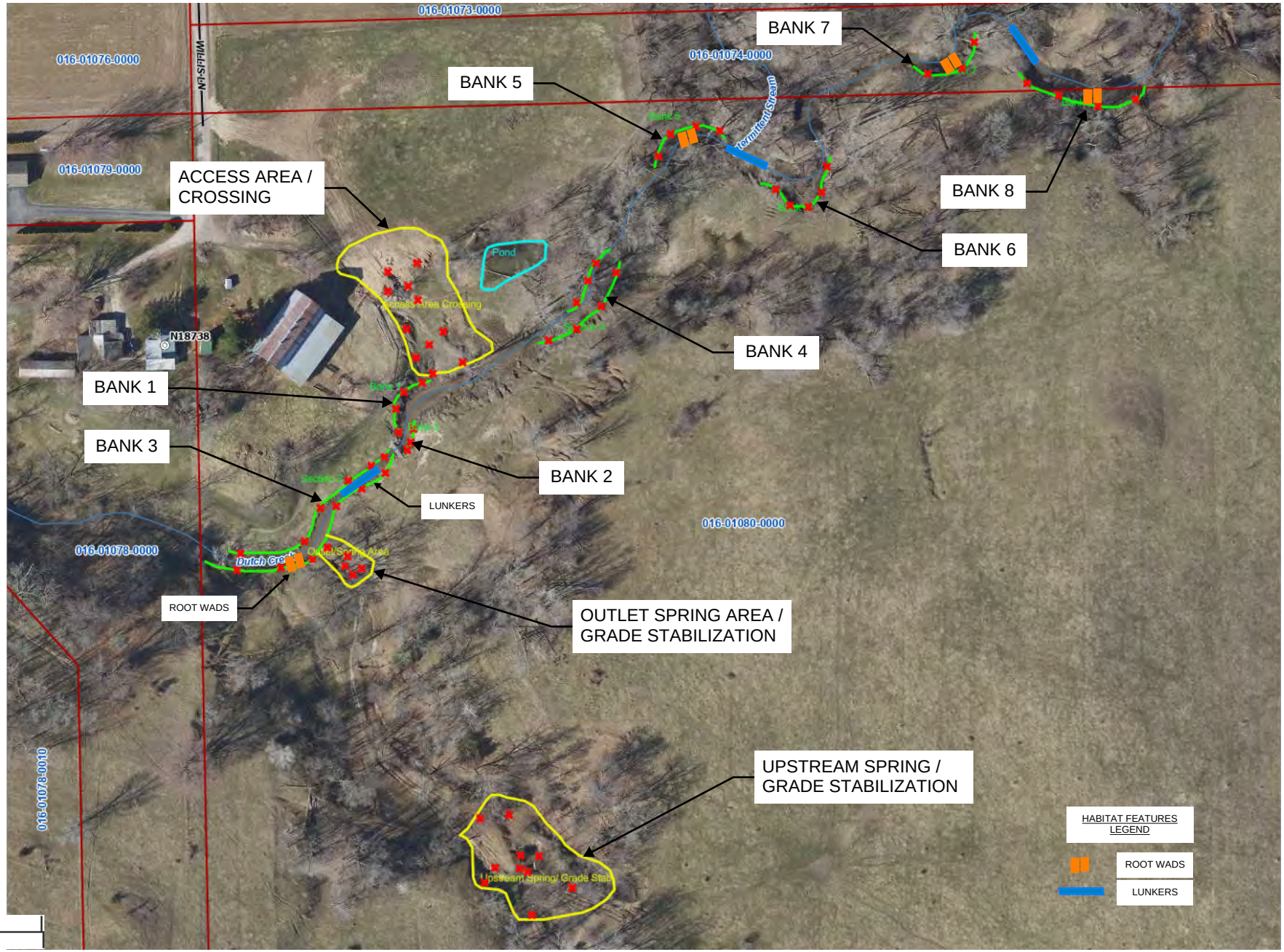
1: 126,720

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/

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APPENDIX 6-2

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Developed by
Schneider GEOSPATIAL

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APPENDIX 6-3

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008-00040-0000
008-00045-0000
INSTREAM BOULDERS
ROCK WEIR
INSTREAM BOUDLERS
008-00041-0000
ROCK WEIR

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APPENDIX 8-1

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Water Quality Trading Agreement: City of Galesville and Peter and Diane Becker

Permittee Information

Credit User Name (Permittee)	Permit Number
City of Galesville	WI-0021725-09-0

Credit User Address: 16773 S. Main St., Galesville, WI 54630

Broker Name	Trade Agreement Number
Trempealeau County Dept. of Land Management	

Broker Address

Street Address	City	State	ZIP Code
36245 Main St.	Whitehall	WI	54773

Project Name: Peter & Diane Becker Beaver Creek Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.): Becker, Peter and Diane

Street Address	City	State	ZIP Code
N14624 County Rd M	Galesville	WI	54630

Property Information

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

Street Address	City	State	ZIP Code

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

Parcel 008000410000

Parcel ID(s):
016007840000

Site Locator for Construction Projects

County	Township	Range E/W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Trempealeau	18N	08W	05	NE SE S & W of Creek
	N			
	N			
	N			

Agreement

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

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

Landowner/Operator

Signed this 28th day of August, 20 19.

Peter J. Becker
Signature of Operator

Peter Becker, Operator/Landowner
Typed Name of Operator

Diane L Becker
Signature of Landowner/Operator

Diane Becker, Operator/Landowner
Typed Name of Landowner/Operator

STATE OF WISCONSIN)
Trempealeau County) ss.
)

Personally came before me this 28th day of August, 20 19.

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

Signature of Notary Public

Jess Johnson
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) ~~(expires~~ 2/4/2023).

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)

Typed Name of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF ILLINOIS)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20 19.

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 16th day of September, 20 19.

Vince Howe
Signature of credit user

City of Galesville
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
Trempealeau County) ss.
)

Personally came before me this 16th day of September, 20 19.

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

Signature of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 8/14/2020).

Other Signer- Specify title or relationship: Trempealeau County Dept. of Land Management – Broker

Signed this 28 day of August, 20 19.

Kirstie M. Heidenreich
Signature

Signature

Kirstie Heidenreich, Planning & Conservation Coordinator
Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
Trempealeau County)

Personally came before me this 28 day of August, 20 19.

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

Signature of Notary Public

Tess Johnson
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 2/4/2023).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
_____ County)

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

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
_____ County)

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 _____).

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Section A – General Requirements

1. The following relationship has been established for this Water Quality Trading Agreement:
A. The City of Galesville will hereby be known as the Credit User. They will hereby be responsible for all monetary costs incurred with the BMP practice installation, which includes but is not limited to: site preparation, clearing, and finished to planned grades; stream shaping; limestone rock riprap and installation; liming, fertilizing, seeding and mulching. The Credit User shall have the right to access the property for inspection or maintenance.
B. The Trempealeau County Department of Land Management will be known as the Broker. The Broker will be responsible for the oversight of the BMP practice design, contractor bidding process and signed agreements, inspection of site preparation and design installation, regulation of applicable performance standards, annual inspections and monitoring of landowners' obligations in the form of performing on-site checks as needed and as stated in Section B. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
C. Peter and Diane Becker will be known as the Landowners/Operators. Landowners will be responsible for all aspects of the operation and maintenance of BMP practices as outlined in Section B below.

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land for the full 20 years 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 by circumstances which are beyond the control of the Landowner.
3. This contract will be recorded in the Trempealeau County Register of Deeds office.

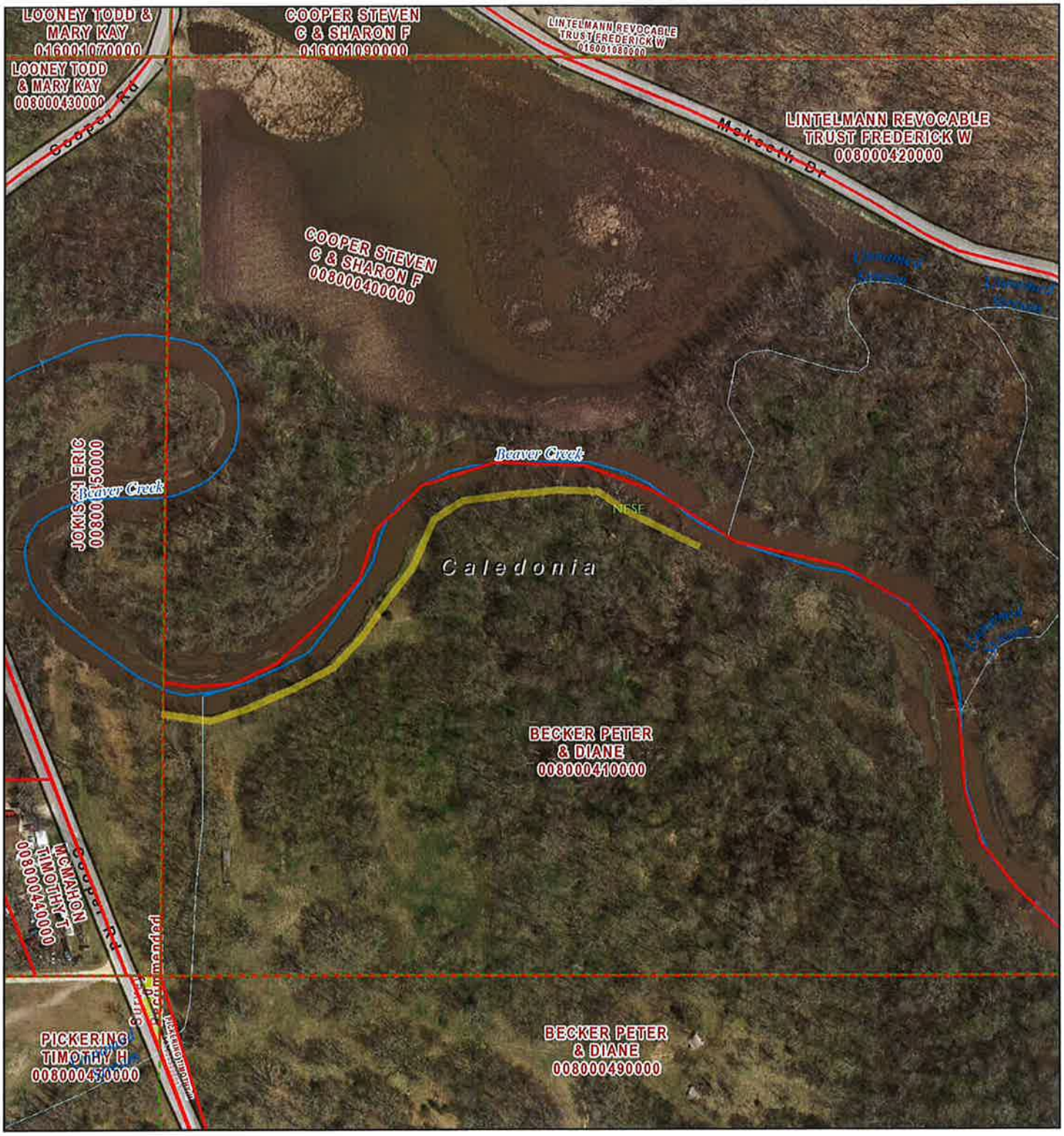
2. This contract may be amended, by written mutual agreement of the parties, during the installation or maintenance period, if the proposed changes will provide equal or greater control of water pollution. For any changes in practice components or costs, the County will determine eligibility and whether to approve such changes. Any increases to the project cost shall be approved in advance in writing by the Credit User.
3. The City of Galesville reserves the right to terminate this agreement, if the Wisconsin Department of Natural Resources (DNR) does NOT approve the MDV Watershed Plan (WP). The WP identifies this project for phosphorus credits to help the Galesville WWTF. These credits are established in the WP and has been analyzed as a cost-effective project. Should the DNR either deny or reduce the project credits, which results in a high cost per pound of phosphorus credit, then the City of Galesville may terminate the agreement.
4. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
5. 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.

Section B – Landowner/Operator Shall:
1. Inspect riprap annually and after heavy storms for any erosion or displacement of rocks. The Broker should be contacted immediately and directly if any damage has occurred. Repairs should be done immediately by Landowner, at Landowner's cost.
2. Ensure that no grazing of animals will occur within 30 feet of the stream channel to prevent clogging or rerouting of water in the channel.
3. 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.
4. 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.
5. If cattle are introduced to the stream corridor, fencing must be installed to prevent unlimited access of cattle to waters of the State. If fences are installed, they shall be maintained to prevent unauthorized human or livestock access. Fencing shall be set back to allow for a 30-foot vegetative buffer along the stream corridor.
6. Periodically, mow vegetative buffer to control weeds and invading brush. All farm equipment and row crops must remain outside of the agreed upon 30-foot vegetated 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 this practice allows the Landowner to comply with the applicable state/local performance standard. Compliance with this performance standard shall be for a period of 20 years. This practice must be maintained or replaced with a practice which ensures continued compliance with the applicable performance standard.
10. The landowner agrees that the annual inspections are to be performed on inspection forms, which will be provided by the Broker. The landowner will be required to take pictures of the BMP for the annual report, which will be submitted with the inspection form to the Broker. **The landowner agrees to submit the annual inspection and pictures by September 30th each year**. Should the landowner fail to submit the annual inspection to the Broker within 30 days of the due date, then the Broker may enter the Landowner's property to perform the inspection. Should the Broker need to perform the inspection due to failure of the Landowner to submit the inspection, then the **Landowner will be responsible for a $250 inspection fee payable to the Broker**.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Peter and Diane Becker	P.J.B D.L.B	8-28-19

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) 09/19		To (MM/YY) 11/19	
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.	$ 500.00	$ 500.00				2019
	NRCS 580	Site Preparation, clearing, and grading	1	L.S.	$ 1000.00	$ 5,000.00				2019
	NRCS 580	Limestone rock riprap D50 size 8" Diameter	1539	cu. yd.	$ 40.00	$ 61,560.00				2019
	NRCS 580	Geotextile Fabric, Type SAS	3431	sq. yd.	$ 3.00	$ 10,293.00				2019
	NRCS 580	Liming, fertilizing, seeding and mulching	4,000	sq. yd.	$ 4.00	$ 16,000.00				2019
	NRCS 580	Erosion Control	1	L.S.	$ 1,000.00	$ 1,000.00				2019
		Sub-Total				**$ 94,353.00**				
		Contingencies (10%)				$ 5,370.00				
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**	$ 99, 723	$ -	$ -	$ -	
CSA Number		Typed Name of Landowner / Operator Peter and Diane Becker				Initials of Landowner/Operator G.J.B D.L.B.			Date 8-28-19	

900 feet



August 22, 2019

1:2,400

0 0.02 0.04 0.08 mi

0 0.0325 0.065 0.13 km

County Civil Townships

County Sections

County QQ

Parcel Base

Water_Line

Unnamed

Water Line

Water_Region

Water Region

Gov_Lots

Water Quality Trading Agreement: City of Galesville and Eric Jokisch & Dawn Marie Mocny

Permittee Information

Credit User Name (Permittee)	Permit Number
City of Galesville	WI-0021725-09-0

Credit User Address: 16773 S. Main St.. Galesville. WI 54630

Broker Name	Trade Agreement Number
Trempealeau County Dept. of Land Management	

Broker Address

Street Address	City	State	ZIP Code
36245 Main St.	Whitehall	WI	54773

Project Name: Jokisch_Mocny Beaver Creek Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.): Jokisch, Eric and Mocny, Dawn Marie

Street Address	City	State	ZIP Code
12832 E. Tanglewood Circle	Palos Park	IL	60464

Property Information

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

Street Address	City	State	ZIP Code

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

Parcel 008000450000

Parcel ID(s):
016007840000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Trempealeau	18N	08W	05	NW ¼ of the SW 1/4
	N			
	N			
	N			

Agreement

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

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

Landowner/Operator

Signed this 28th day of August, 20 19.

Signature of Operator

Signature of Landowner/Operator

Eric Jokisch, Operator/Landowner
Typed Name of Operator

Dawn Marie Mocny, Operator/Landowner
Typed Name of Landowner/Operator

STATE OF ILLINOIS)
Cook County) ss.
)

Official Seal
Sally A Zurawski
Notary Public State of Illinois
My Commission Expires 07/31/2021

Personally came before me this 28TH day of AUGUST, 20 19.

The above named ERIC JOKISCH AND DAWN MOCNY to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature of Notary Public

SALLY A. ZURAWSKI
Typed Name of Notary Public

Notary Public Cook County, Illinois

My commission (is permanent) (expires 7/31/21).

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 ILLINOIS)
_____ County) ss.
)

Personally came before me this _____ day of _____, 20 19.

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, Illinois

My commission (is permanent) (expires _____).

Credit User

Signed this 16th day of September, 20 19.

Signature of credit user

City of Galesville
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
Trempealeau County) ss.
)

Personally came before me this 16th day of September, 20 19.

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

Signature of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 8/14/2020).

Other Signer- Specify title or relationship: Trempealeau County Dept. of Land Management – Broker

Signed this 3rd day of September, 2019.

Kirstie Heidenreich
Signature

Signature

Kirstie Heidenreich, Planning & Conservation Coordinator
Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
Trempealeau County)

Personally came before me this 3rd day of September, 2019.

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

Signature of Notary Public

Tess Johnson
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 2/4/2023).

Other Signer- Specify title or relationship:_____

Signed this_____ day of_____, 20_____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
_____ County)

Personally came before me this_____ day of_____, 20_____.

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public_____ County, Wisconsin

My commission (is permanent) (expires_____).

Other Signer- Specify title or relationship:_____

Signed this_____ day of_____, 20_____.

Signature

Signature

Typed Name

Typed Name

STATE OF WISCONSIN)
) ss.
_____ County)

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:
A. The City of Galesville will hereby be known as the Credit User. They will hereby be responsible for all monetary costs incurred with the BMP practice installation, which includes but is not limited to: site preparation, clearing, and finished to planned grades; stream shaping; limestone rock riprap and installation; liming, fertilizing, seeding and mulching. The Credit User shall have the right to access the property for inspection or maintenance.
B. The Trempealeau County Department of Land Management will be known as the Broker. The Broker will be responsible for the oversight of the BMP practice design, contractor bidding process and signed agreements, inspection of site preparation and design installation, regulation of applicable performance standards, annual inspections and monitoring of landowners' obligations in the form of performing on-site checks as needed and as stated in Section B. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
C. Eric Jokisch and Dawn Marie Mocny will be known as the Landowners/Operators. Landowners will be responsible for all aspects of the operation and maintenance of BMP practices as outlined in Section B below.

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land for the full 20 years 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 by circumstances which are beyond the control of the Landowner.
3. This contract will be recorded in the Trempealeau County Register of Deeds office.

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 County 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. The City of Galesville reserves the right to terminate this agreement, if the Wisconsin Department of Natural Resources (DNR) does NOT approve the MDV Watershed Plan (WP). The WP identifies this project for phosphorus credits to help the Galesville WWTF. These credits are established in the WP and has been analyzed as a cost-effective project. Should the DNR either deny or reduce the project credits, which results in a high cost per pound of phosphorus credit, then the City of Galesville may terminate the agreement.
4. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
5. 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.

Section B – Landowner/Operator Shall:
1. Inspect riprap annually and after heavy storms for any erosion or displacement of rocks. The Broker should be contacted immediately and directly if any damage has occurred. Repairs should be done immediately by Landowner, at Landowner's cost.
2. Ensure that no grazing of animals will occur within 30 feet of the stream channel to prevent clogging or rerouting of water in the channel.
3. 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.
4. 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.
5. If cattle are introduced to the stream corridor, fencing must be installed to prevent unlimited access of cattle to waters of the State. If fences are installed, they shall be maintained to prevent unauthorized human or livestock access. Fencing shall be set back to allow for a 30-foot vegetative buffer along the stream corridor.
6. Periodically, mow vegetative buffer to control weeds and invading brush. All farm equipment and row crops must remain outside of the agreed upon 30-foot vegetated 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 this practice allows the Landowner to comply with the applicable state/local performance standard. Compliance with this performance standard shall be for a period of 20 years. This practice must be maintained or replaced with a practice which ensures continued compliance with the applicable performance standard.
10. The landowner agrees that the annual inspections are to be performed on inspection forms, which will be provided by the Broker. The landowner will be required to take pictures of the BMP for the annual report, which will be submitted with the inspection form to the Broker. **The landowner agrees to submit the annual inspection and pictures by September 30th each year**. Should the landowner fail to submit the annual inspection to the Broker within 30 days of the due date, then the Broker may enter the Landowner's property to perform the inspection. Should the Broker need to perform the inspection due to failure of the Landowner to submit the inspection, then the **Landowner will be responsible for a $250 inspection fee payable to the Broker**.

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Eric Jokisch and Dawn Marie Mocny	EJ DMM	

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) 09/19		To (MM/YY) 11/19	
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.	$ 500.00	$ 500.00				2019
	NRCS 580	Site Preparation, clearing, and grading	1	L.S.	$ 1000.00	$ 1,000.00				2019
	NRCS 580	Limestone rock riprap D50 size 8" Diameter	200	cu. yd.	$ 40.00	$ 8,000.00				2019
	NRCS 580	Geotextile Fabric, Type SAS	400	sq. yd.	$ 3.00	$ 1,200.00				2019
	NRCS 580	Liming, fertilizing, seeding and mulching	525	sq. yd.	$ 4.00	$ 2,100.00				2019
	NRCS 580	Erosion Control	1	L.S.	$ 1,000.00	$ 1,000.00				2019
		Sub-Total				**$ 13,800.00**				
		Contingencies (10%)				$ 1,380.00				
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**	$ 15,180	$ -	$ -	$ -	

CSA Number	Typed Name of Landowner / Operator	Initials of Landowner/Operator	Date
	Eric Jokisch and Dawn Marie Mocny	EJ DMM	

Water Quality Trading Agreement: City of Galesville and Town of Gale

Permittee Information

Credit User Name (Permittee)	Permit Number
City of Galesville	WI-0021725-09-0

Credit User Address: 16773 S. Main St., Galesville, WI 54630

Broker Name	Trade Agreement Number
Trempealeau County Dept. of Land Management	

Broker Address

Street Address	City	State	ZIP Code
36245 Main St.	Whitehall	WI	54773

Project Name: Town of Gale Sand Pile Beaver Creek Bank Stabilization

Name of Credit Generator (Landowner/Operator) (Last, First, M.I.): Town of Gale, Attn: Roland Thompson

Street Address	City	State	ZIP Code
20037 Gibson Street	Galesville	WI	54630

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Town of Gale Attn: Roland Thompson

Street Address	City	State	ZIP Code
20037 Gibson Street	Galesville	WI	54630

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

231006650000 -- PT SW NW *LYING NW OF BEAVER CREEK & SW OF DAVIS 1ST ADD* LESS RR SPUR.
231000850000 -- ORIGINAL PLAT LOTS 1 & 2 BLK 11

Parcel ID(s):
231006650000, 231000850000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Trempealeau	19N	08W	33	NW 1/4
Trempealeau	19N	08W	33	NW 1/4
	N			
	N			

Agreement

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

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

Landowner/Operator

Signed this 9th day of May, 2019

Roland Thompson Chairman
Signature of Operator

Signature of Landowner/Operator

Town of Gale – Roland Thompson, Chairman
Typed Name of Operator

Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
Trempealeau County) ss.
)
)

Personally came before me this 9th day of May, 2019.

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

Virginette Gamroth
Signature of Notary Public

VIRGINETTE GAMROTH
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 9-6-2021).

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 9th day of May, 2019.

Roland Thompson Chairman
Signature of Landowner (if not operator)

Signature of Landowner (if not operator)

Town of Gale – Roland Thompson, Chairman
Typed Name of Landowner (if not operator)

Typed Name of Landowner (if not operator)

STATE OF WISCONSIN)
)
Trempealeau County) ss.
)
)

Personally came before me this 9th day of May, 2019

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

Virginette Gamroth
Signature of Notary Public

VIRGINETTE GAMROTH
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 9-6-2021).

Credit User

Signed this 31 day of May, 2019.

Vince Howe
Signature of credit user

City of Galesville
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
)
Trempealeau County) ss.
)
)

Personally came before me this 31 day of May, 2019.

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

BRIDGET CHADWICK NOTARY PUBLIC STATE OF WISCONSIN

Signature of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 10/17/2020).

Other Signer- Specify title or relationship: Trempealeau County Dept. of Land Management – Broker

Signed this 10 day of May, 20 19.

Kristie Heidenreich
Signature

Signature

Kirstie Heidenreich, Planning & Conservation Coordinator
Typed Name

Typed Name

STATE OF WISCONSIN)
)
Trempealeau County) ss.
)
)

Personally came before me this 10 day of May, 20 19.

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

Tess Johnsen
Signature of Notary Public

Tess Johnsen
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (~~is permanent~~) (expires 2/4/2023).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20_____.

Signature

Signature

Typed Name

Typed Name

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

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

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Other Signer- Specify title or relationship: _____

Signed this _____ day of _____, 20_____.

Signature

Signature

Typed Name

Typed Name

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

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

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

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

Section A – General Requirements

1. The following relationship has been established for this Water Quality Trading Agreement:
A. The City of Galesville will hereby be known as the Credit User. They will hereby be responsible for all monetary costs incurred with the BMP practice installation, which includes but is not limited to: site preparation, clearing, and finished to planned grades; stream shaping; limestone rock riprap and installation; liming, fertilizing, seeding and mulching. The Credit User shall have the right to access the property for inspection or maintenance.
B. The Trempealeau County Department of Land Management will be known as the Broker. The Broker will be responsible for the oversight of the BMP practice design, contractor bidding process and signed agreements, inspection of site preparation and design installation, regulation of applicable performance standards, annual inspections and monitoring of landowners' obligations in the form of performing on-site checks as needed and as stated in Section B. The Broker shall not have any financial obligation or liability for this project except as expressly stated in this agreement.
C. Town of Gale will be known as the Landowners/Operators. Landowners will be responsible for all aspects of the operation and maintenance of BMP practices as outlined in Section B below.
   1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land for the full 20 years 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 by circumstances which are beyond the control of the Landowner.
   3. This contract will be recorded in the Trempealeau County Register of Deeds office.
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 County 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. The City of Galesville reserves the right to terminate this agreement, if the Wisconsin Department of Natural Resources (DNR) does NOT approve the MDV Watershed Plan (WP). The WP identifies this project for phosphorus credits to help the Galesville WWTF. These credits are established in the WP and has been analyzed as a cost-effective project. Should the DNR either deny or reduce the project credits, which results in a high cost per pound of phosphorus credit, then the City of Galesville may terminate the agreement.
4. The Broker reserves the right to enter the property to verify the information on the inspection report is accurate.
5. 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.

Section B – Landowner/Operator Shall:
1. Inspect riprap annually and after heavy storms for any erosion or displacement of rocks. The Broker should be contacted immediately and directly if any damage has occurred. Repairs should be done immediately by Landowner, at Landowner's cost.
2. Ensure that no impermeable surfaces will be installed or erosion will occur within 30 feet of the stream channel to prevent clogging or rerouting of water in the channel.
3. 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.
4. 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.
5. If cattle are introduced to the stream corridor, fencing must be installed to prevent unlimited access of cattle to waters of the State. If fences are installed, they shall be maintained to prevent unauthorized human access. Fencing shall be set back to allow for a 30-foot vegetative buffer along the stream corridor.
6. Periodically, mow vegetative buffer to control weeds and invading brush.
7. Eliminate all burrowing rodents and repair damage caused by them.
8. Maintain the project consistent with NRCS technical standard 580.
9. Installation of this practice allows the Landowner to comply with the applicable state/local performance standard. Compliance with this performance standard shall be for a period of 20 years. This practice must be maintained or replaced with a practice which ensures continued compliance with the applicable performance standard.
10. The landowner agrees that the annual inspections are to be performed on inspection forms, which will be provided by the Broker. The landowner will be required to take pictures of the BMP for the annual report, which will be submitted with the inspection form to the Broker. **The landowner agrees to submit the annual inspection and pictures by September 30th each year.** Should the landowner fail to submit the annual inspection to the Broker within 30 days of the due date, then the Broker may enter the Landowner's property to perform the inspection. Should the Broker need to perform the inspection due to failure of the Landowner to submit the inspection, then the **Landowner will be responsible for a $250 inspection fee payable to the Broker.**

TA Number	Typed Name of Landowner/Operator	Initials of Landowner/Operator	Date
	Town of Gale – Roland Thompson	R.T	5-9-19

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) 04/19		To (MM/YY) 10/19	
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.	$ 1,500.00	$ 1,500.00				2019
	NRCS 580	Site Preparation, clearing, and grading	1	L.S.	$ 750.00	$ 750.00				2019
	NRCS 580	Limestone rock riprap D50 size 8" Diameter	70	cu. yd.	$ 40.00	$ 2,800.00				2019
	NRCS 580	Geotextile Fabric, Type SAS	175	sq. yd.	$ 3.00	$ 530.00				2019
	NRCS 580	Liming, fertilizing, seeding and mulching	160	sq. yd.	$ 4.00	$ 640.00				2019
	NRCS 580	Erosion Control	1	L.S.	$ 1,000.00	$ 1,000.00				2019
	NRCS 580	Tracking Pad	1	L.S.	$ 500.00	$ 500.00				2019
		Sub-Total				**$ 7,720.00**				
		Contingencies (10%)				$ 770.00				
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**	**$ 8,490.00**	$ -	$ -	$ -	
CSA Number		Typed Name of Landowner / Operator Town of Gale – Roland Thompson, Chairman				Initials of Landowner/Operator R.T.			Date 5-9-19	

Water Quality Trading Agreement: City of Galesville and Halama Family

Permittee Information

Credit User Name (Permittee)	Permit Number
City of Galesville	WI-0021725-09-0

Credit User Address

16773 S. Main St.. Galesville. WI 54630

Broker Name	Trade Agreement Number
Trempealeau County Dept. of Land Management	

Broker Address

Street Address	City	State	ZIP Code
18600 Hobson St	Whitehall	WI	54773

Project Name

Halama Family WQT Project

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

Halama, Jacob R and Ashley J

Street Address	City	State	ZIP Code
N18738 Willis Ln	Galesville	WI	54630

Property Information

Name of Landowner(s) (if not Operator) (Last, First, M.I.)
Halama, Jacob R and Ashley J

Street Address	City	State	ZIP Code
N18738 Willis Ln	Galesville	WI	54630

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

As described in Doc #479373 in the records of the Trempealeau County Register of Deeds in Trempealeau County, Wisconsin. Town of Gale.

Parcel ID(s):
016-01078-0000, 016-01093-0000, 016-01080-0000, 016-01092-0000

Site Locator for Construction Projects

County	Township	Range E/ W	Section	Quarter/Quarter (e.g., NW ¼ of the NE ¼)
Trempealeau	19N	08W	22	NE1/4 of the SE1/4
Trempealeau	19N	08W	22	NE1/4 of the SW1/4
Trempealeau	19N	08W	22	SE1/4 of the NW1/4
Trempealeau	19N	08W	22	SE1/4 of the NE1/4

Agreement

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

The Water Quality Trading Plan, project plans, and any addenda which describe the BMPs, costs, installation schedule, and conditions are hereby incorporated into this agreement and are on file with the credit user and may be given to Wisconsin DNR upon request by the Department.

Operator/Landowner

Signed this 29th day of April, 2024

Signature of Operator

Jacob Halama
Typed Name of Landowner/Operator

Signature of Landowner/Operator

Ashley Halama
Typed Name of Landowner/Operator

STATE OF WISCONSIN)
)
Trempealeau County) ss.
)

Personally came before me this 29 day of April, 2024.

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

Haillie Passow
Signature of Notary Public

Haillie Passow
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 11/11/2025).

Landowners (If not operator)

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

[X] Landowner is also operator

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

Signed this _____ day of _____, 20_____.

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

Signature of Landowner (if not operator)

Typed Name of Landowner (if not operator)

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

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

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

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

Credit User

Signed this _____ day of _____, 20_____.

Signature of credit user

City of Galesville
Typed Name of credit user/broker/exchange

STATE OF WISCONSIN)
)
Trempealeau County) ss.
)
)

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

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

Signature of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires _____).

Other Signer- Specify title or relationship: TREMPEALEAU COUNTY LAND MANAGEMENT – BROKER
Signed this Ninth day of May, 2024.

Signature

REBECCA GLEWEN, COUNTY ADMINISTRATOR
Typed Name

Signature

Typed Name

STATE OF WISCONSIN)
)
Trempealeau County) ss.
)
)

Personally came before me this 9 day of May, 20 24.

The above named Rebecca Glewen to me known to be the person(s) who executed the foregoing instrument and acknowledge thesame.

Hailie Passow
Signature of Notary Public

Hailie Passow
Typed Name of Notary Public

Notary Public Trempealeau County, Wisconsin

My commission (is permanent) (expires 11/11/25).

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 thesame.

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 thesame.

Signature of Notary Public

Typed Name of Notary Public

Notary Public _____ County, Wisconsin

My commission (is permanent) (expires _____).

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Section A – Relationships

The following relationships have been established for this Water Quality Trading Agreement:

1. The **City of Galesville** will hereby be known as the **Credit User**. The City will be responsible for all monetary costs incurred with the planned Best Management Practice (BMP) installation. The proposed BMP includes but is not limited to stream crossing improvement, stabilization regarding spring area, grade stabilization, access road, and/or streambank stabilization with rock riprap. The BMP cost estimate includes, but is not limited to, County Fee, engineering, site preparation, clearing, grading to planned grades, stream shaping, riprap, liming, fertilizing, seeding, and mulching. The Credit User shall have the right to access the property for inspection or maintenance.
2. The **Trempealeau County Department of Land Management** will be known as the **Broker.** The Broker will be responsible for assistance with the design, permitting, bidding, inspection of construction, annual inspection reminders, and/or monitoring of landowners' obligations by performing on-site checks as needed and as stated in Section C. The Broker shall not have any financial obligation for this project except as expressly stated in this agreement.
3. **Jacob and Ashley Halama** will be known as the **Landowners/Operators.** The Landowners will be responsible for the operation and maintenance of the BMP practices and terms and conditions as outlined in Section C below.

Section B – General Requirements

1. If any land covered by this agreement is transferred or otherwise changes ownership, this agreement will be held in obligation with the land for the full 20 years 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 is not required if a practice is rendered ineffective by circumstances which are beyond the control of the Landowner.
3. This agreement will be recorded with the Trempealeau County Register of Deeds.
4. This agreement may be amended by written mutual agreement of the parties during the design, construction, 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.
5. The City of Galesville reserves the right to terminate this agreement if the Department of Natural Resources (DNR) does NOT approve the estimated Phosphorus Credits for this project. Should the DNR either deny or reduce the Phosphorus Credits, which results in an unacceptably high cost per pound of Phosphorus Credit, then the City of Galesville may terminate the agreement.
6. The Broker and Credit User reserve the right to enter the property for inspections.
7. Any duly authorized officer, employee or representative of DNR 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.
8. If the landowner misrepresents information as applicable to this agreement and/or the project to the County, the County may terminate this agreement.
9. The parties will separately agree on actual costs when known. The actual costs agreement shall not modify the terms and conditions herein but shall further clarify actual costs between the parties.

TA Number	Landowner(s) Name: Jacob and/or Ashley Halama	Initial(s) of Landowner	Date
		JH.	4/29/24

4-29-24

Section C – Landowner/Operator Has the Following Obligations

1. To be compliant with all applicable Federal, State, County and local laws, regulations, ordinance, and code.
2. Inspect the BMPS after heavy storms and annually. The Broker should be contacted immediately if any damage has occurred. Repairs of any sloughing, erosion or displacement of rocks must be done by Landowner, at Landowner's cost. Repairs are not required if a practice is rendered ineffective by circumstances which are beyond the control of the Landowner.
3. Eliminate burrowing rodents and repair damage.
4. Mow or periodically graze a vegetative buffer adjoining streambanks to control weeds and invading brush. All farm equipment and row crops must remain outside of the 30-foot vegetated buffer from the top of the bank.
5. Any in-stream, channel maintenance shall only be performed 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 done 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 practical.
6. If cattle are introduced to the stream corridor, fencing must be installed to limit access of cattle to waters of the State. Fencing shall be installed in accordance with NRCS 382 and may consist of barbed wire, woven wire or electric fence suitable for livestock control. A County-approved plan for rotational grazing may be a substitute for fencing. A 30 ft vegetative buffer shall be provided along the top of the stream bank. The buffer shall be mowed at least annually, or a grazing plan developed and implemented.
7. Compliance with this agreement shall be for a period of **20 years** from the completion of construction. During this period, this BMPS must be maintained or replaced with a practice which ensures continued compliance with the applicable performance standard. If the practice is damaged by a catastrophic event, the Landowner is not obligated to make repairs. The City as Credit User may make the repairs or secure the necessary credits at another location.
8. The Landowner/Operator will perform annual inspections during September and record observations on inspection forms provided by the Broker. Include recent photographs of the BMP with the report. Should the Landowner fail to submit the annual inspection to the Broker by October 15th, then the Broker may enter the Landowner's property to perform the inspection.
9. By executing this contract, this landowner acknowledges and affirms that the landowner has been fully informed of this project and agrees to its terms and conditions.
10. Not to discriminate against contractors because of age, race, religion, color, handicap, gender, physical condition, developmental disability, or national origin, in the performance of responsibilities under this contract.
11. A copy of the County's Landowner Bidding Procedures is attached in Exhibit A. Landowner understands these requirements set forth by the County and agrees to abide by the requirements. It is the responsibility of the landowner to select the contractor according to the requirements set forth in Exhibit A to coordinate as required.
12. The landowner shall indemnify, hold harmless and defend Trempealeau County, its boards, commissions, agencies, officers, agents, volunteers, employees and representatives against any and all liability, claims, losses (including, but not limited to, property damage or loss, bodily injury and loss of life), damages, costs or expenses [including, but not limited to, court costs, as well as fees and charges of attorney(s)] which Trempealeau County, its officers, employees, agencies, boards, commissions and representatives may sustain, incur or be required to pay by reason of this Agreement and shall apply to any and all liability, claims, losses, damages, costs or expenses. Trempealeau County reserves the right, but not the obligation, to participate in defense without relieving the Provider of any obligation. These provisions shall survive the expiration or termination of this Agreement.
13. Landowner is responsible for communicating quality of work concerns with the contractor and the Broker.
14. To provide timely update and informed changes of any new or discovered changes to this project to the Broker.
15. Until the full and satisfactory of this agreement, this agreement shall continue and bind the landowner, heirs, successors in interest, and all assignees. It is the landowner's responsibility to fully inform all subsequent parties of this agreement.

TA Number	Landowner(s) Name: Jacob and/or Ashley Halama	Initials of Landowner(s): JH AH	Date: 4/29/24

4-29-24

TREMPEALEAU
COUNTY

Department of Land Management
Courthouse, P.O. Box 67, 36245 Main St.
Whitehall, WI 54773

LANDOWNER BIDDING PROCEDURES

BIDDING PROCEDURES

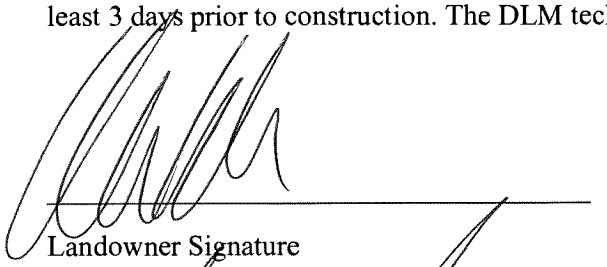
All structural practices, as well as non-structural practices that are estimated at $10,000 or greater, are required to be bid out. Structural practice include grade stabilization structures (dams, toe-walls, rock chutes), barnyard runoff control systems, manure storage structures, streambank riprap, concrete panel stream crossings and concrete panel watering ramps. To assist landowners, the following bidding procedure will be used for these practices:

A. If time permits, the Department of Land Management (DLM), will set up a site showing of the project with prospective bidders. The landowner should be present for this site showing. If time does not permit for a site showing, the contractors will be notified by letter that the design plans have been delivered to the landowner. Plans and bid sheets will also be available at the DLM office.
B. Contractors must submit all bids to DLM, Courthouse 18600 Hobson St, Whitehall, WI 54773. The landowner and contractors will be notified of the deadline date for accepting bids. After the deadline date, a letter listing the contractors and their bids will be sent to the landowner and to the contractors that bid.
C. It is the policy of the Environment and Land Use Committee that the landowner must accept the lowest bid or a bid within 5% of the lowest bid, and cost-sharing will be based on the selected bid. A landowner wishing to select a bidder that is not within the 5% will receive cost-share based on the lowest bid. Only contractors submitting a bid are eligible for consideration. If the lowest bid is greater than the 115% of the estimated design cost, the landowner and/or DLM have the authority to reject all bids. If the lowest bid is within 115% of the estimated design cost, the landowner must select a bidder. If only one bid is received and it is within 115% of the estimated design cost, the landowner may accepted or reject the bid.
D. To accept a bid, the landowner must sign the bid and the Construction Contract within 5 days after he/she receives the list of the bids from the DLM, and he must notify the contractor who he/she has accepted the bid from. The landowner must also notify those contractors whose bids were not accepted, within the same 5 day period. Once the landowner has signed the Construction Contract, the contractor has 5 business days to sign the Construction Contract and provide all the necessary insurance certificates to the DLM.
E. The bid price will be the official cost when the project is constructed according to plans. Unit quantity changes from the plan will result in the adjustment of the bid price according to the unit price of the accepted bid. Authorized changes in the plan not covered in the unit prices will be cost-shared on the basis of the additional cost as agreed to by the landowner, contractor, and DLM technician. This amount will be recorded on the Change Order Form. Additional work or materials to meet the design will not be cost-shared without a signed Change Order form.
F. All required seeding, fertilizing, mulching, and fencing, as included in the design plan, must be completed before the project can be certified for payment. Payments **will not** be made to the landowner until the protective fences are installed around the barnyard, filter strip, manure storage facility, diversion, dams, streambanks and other practices if the project design and/or contract requires protective fencing (only fences meeting the Field Office Standards and Specifications will be cost-shared).

Note: In the watershed projects, all streambank protection measures must be completed before or during installation of other practices.

NONSTRUCTURAL PRACTICES

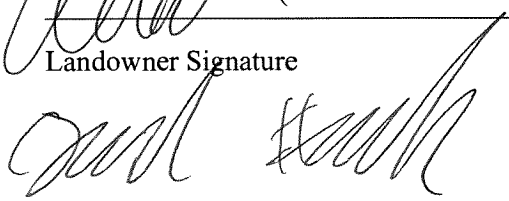
Department of Land Management (DLM) technicians will design nonstructural practices (grassed waterways, diversions, critical area stabilizations, etc.). If nonstructural practice total cost is estimated at greater than $10,000, the practice must then be bid out. If the practice is estimated less than $10,000, then it is the landowner's option to have the practice bid out. If the landowner does not want to bid the practice, then it is up to the landowner to line-up a contractor to do the work (a contractor list is available at the DLM office). It is suggested that the landowner get several estimates on the project. When a contractor has been selected, the DLM office should be notified who the contractor will be. If possible, the DLM technician will coordinate schedules with the contractor, but by all means, the DLM technician needs to be notified, by the landowner, at least 3 days prior to construction. The DLM technician will inspect the project during its construction.



Landowner Signature

4/29/24

Date



4-29-24

PRELIMINARY COST ESTIMATE
2024 HALAMA WQT PROJECT
GALESVILLE, WISCONSIN

Quantity	Unit	Item	NRCS	Unit Price	Total
County Estimate					
1	LS	Mobilization		$ 2,000.00	$ 2,000.00
8	LS	Site Preparation, clearing, and grading	NRCS 580	$ 1,900.00	$ 15,200.00
800	Lin Ft	Bank Shaping	NRCS 580	$ 8.49	$ 6,792.00
240	cu. yd.	Limestone rock riprap D50 size 8" Diameter	NRCS 580	$ 40.00	$ 9,600.00
3200	sq. yd.	Geotextile Fabric	NRCS 580	$ 3.40	$ 10,880.00
2	acre	Liming, fertilizing, seeding and mulching	NRCS 580	$ 2,500.00	$ 5,000.00
1	LS	Site Preparation, clearing, and grading	NCRS 578	$ 1,900.00	$ 1,900.00
230	cu. yd.	Sand/Gravel	NRCS 578	$ 50.55	$ 11,626.50
3000	sq. yd.	Geotextile Fabric	NRCS 578	$ 3.40	$ 10,200.00
1	acre	Liming, fertilizing, seeding and mulching	NRCS 578	$ 2,500.00	$ 2,500.00
1	LS	Obstruction Removal	NRCS 578	$ 1,200.00	$ 1,200.00
1	LS	Site Preparation, clearing, and grading	NRCS 468	$ 3,000.00	$ 3,000.00
50	Lin Ft	Rock Outlet	NRCS 468	$ 20.40	$ 1,020.00
230	cu. yd.	Limestone rock riprap D50 size 12" Diameter	NRCS 468	$ 45.00	$ 10,350.00
1	acre	Liming, fertilizing, seeding and mulching	NRCS 468	$ 2,500.00	$ 2,500.00
1	LS	Site Preparation, clearing, and grading	NRCS 410	$ 3,000.00	$ 3,000.00
1500	cu. yd.	Excavation	NRCS 410	$ 7.35	$ 11,025.00
3000	cu. yd.	Earthfill	NRCS 410	$ 7.40	$ 22,200.00
100	Lin Ft	PVC Pipe 8" diameter	NRCS 410	$ 40.00	$ 4,000.00
1	LS	Pipe Bedding	NRCS 410	$ 910.00	$ 910.00
4	each	Pipe Couplers	NRCS 410	$ 50.00	$ 200.00
4	each	Antiseep Collars	NRCS 410	$ 388.00	$ 1,552.00
1	each	Trash Rack	NRCS 410	$ 671.43	$ 671.43
1	each	Hood Inlet	NRCS 410	$ 303.57	$ 303.57
1	each	Pipe Support Structure	NRCS 410	$ 155.00	$ 155.00
2	acre	Liming, fertilizing, seeding and mulching	NRCS 410	$ 2,500.00	$ 5,000.00
		TOTAL ESTIMATED CONSTRUCTION COST			**$ 142,785.50**
		County Fee		$ 10,000.00	
		WQT Plan		$ 10,000.00	
		Engineering Coordination		$ 10,000.00	
		Permit Fees		$ 2,500.00	
		Legal & Administrative (2.5%)		$ 3,570.00	
		Contingencies (10%)		$ 14,280.00	
		Subtotal			$ 50,350.00
		TOTAL ESTIMATED PROJECT COST			**$193,140.00**

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

Landowner/Operator Signatures

4/29/24

4-29-24

APPENDIX 9-1

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

University of Wisconsin
Madison/Extension

Trempealeau County Land Management
PO Box 67
Whitehall WI 54773
Arcadia & Galesville Water Quality Trading

Date 8/8/19
Acct # 558654
Lab # **3737**

Soil Nutrient Analysis

Sample	Total Leachable P nitric/peroxide %
Peter Becker/Eric Jokish	0.05

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

University of Wisconsin
Madison/Extension

Trempealeau County
Kirstie Heidenreich
36245 Main St
Whitehall WI 54773

Date 12/8/17
Acct # 558665
Lab # **6940**

Galesville WQT Project Sites

Soil Nutrient Analysis

Sample	**Total Leachable P** nitric/peroxide %	
Project 1-1	0.05	Baseball Diamond
Project 1-2	0.06	
Project 2	0.10	Old Swing Bridge
Project 3	0.16	Town of Gale - Sand Pile

APPENDIX 9-2

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Soil and Forage Analysis Lab
WISCONSIN STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN–MADISON

4702 University Avenue
Madison, WI 53705
608-262-4364
soil-lab@mailplus.wisc.edu
https://uwlab.soils.wisc.edu

Haillie Passow
18600 Hobson St
Whitehall, WI 54773

Date 12/18/2023
Account # 561547
Lab # 4090

Soil Total Leachable P

COMMENTS:

Galesville WQT - Halama Property

Sample #	Sample ID	Total Leachable P %
1	Access area/crossing	0.047
2	Outlet/Spring Area	0.043
3	ɔstream Spring/Grad St	0.047
4	Bank 1	0.034
5	Bank 2	0.039
6	Section 3	0.032
7	Section 4	0.049
8	Bank 5	0.042
9	Bank 6	0.049
10	Bank 7	0.029
10	Bank 8	0.038

Soil and Forage Analysis Lab
WISCONSIN STATE LABORATORY OF HYGIENE
UNIVERSITY OF WISCONSIN–MADISON

4702 University Avenue
Madison, WI 53705
608-262-4364
soil-lab@mailplus.wisc.edu
https://uwlab.soils.wisc.edu

Hallie Passow / Trempealeau County
18600 Hobson St
Whitehall, WI 54773

Date 1/24/2024
Account # 561547
Lab # 4367

COMMENTS:
Galesville WQT Ditch

Soil Total Leachable P

Sample #	Sample ID	Total Leachable P %
1	field	0.06
2	woods	0.14

APPENDIX 9-3

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Halama Map

Generated:2/24/2025, Township Range Section:19N 8W s22



- Municipal well 1000ft buffers
- Runoff to direct conduits to gw
- Direct conduit to groundwater 300ft
- Evidence of runoff
- Counties
- Township/Range
- County Defined Karst Features
- Lots
- Contributing areas

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APPENDIX 13-1

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NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

STREAMBANK AND SHORELINE PROTECTION

(Ft.)

CODE 580

DEFINITION

Treatment(s) used to stabilize and protect banks of streams or constructed channels, and shorelines of lakes, reservoirs, or estuaries.

PURPOSE

- To prevent the loss of land or damage to land uses, or facilities adjacent to the banks of streams or constructed channels, shoreline of lakes, reservoirs, or estuaries including the protection of known historical, archeological, and traditional cultural properties.
- To maintain the flow capacity of streams or channels.
- Reduce the offsite or downstream effects of sediment resulting from bank erosion.
- To improve or enhance the stream corridor for fish and wildlife habitat, aesthetics, recreation.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to streambanks of natural or constructed channels and shorelines of lakes, reservoirs, or estuaries where they are susceptible to erosion. It does not apply to erosion problems on main ocean fronts, beaches or similar areas of complexity.

CRITERIA

General Criteria Applicable to All Purposes

Treatments shall be in accordance with all applicable local, state and federal laws and regulations.

Treatments applied shall seek to avoid adverse effects to endangered, threatened, and candidate species and their habitats, whenever possible.

Treatments applied shall seek to avoid adverse effects to archaeological, historic, structural, and traditional cultural properties, whenever possible.

An assessment of unstable streambank or shoreline sites shall be conducted in sufficient detail to identify the causes contributing to the instability (e.g. livestock access, watershed alterations resulting in significant modifications of discharge or sediment production, in channel modifications such as gravel mining, head cutting, water level fluctuations, boat-generated waves, etc.).

Proposed protective treatments to be applied shall be compatible with improvements being planned or installed by others.

Protective treatments shall be compatible with the bank or shoreline materials, water chemistry, channel or lake hydraulics, and slope characteristics above and below the water line.

End sections of treatment areas shall be adequately anchored to existing treatments, terminate in stable areas, or be otherwise stabilized to prevent flanking of the treatment.

Protective treatments shall be installed that result in stable slopes. Design limitations of the bank or shoreline materials and type of measure installed shall determine steepest permissible slopes.

Designs will provide for protection of installed treatments from overbank flows resulting from upslope runoff and flood return flows.

Internal drainage for bank seepage shall be provided when needed. Geotextiles or properly

designed filter bedding shall be incorporated with structural measures where there is the potential for migration of material from behind the measure.

Treatments shall be designed to account for any anticipated ice action, wave action, and fluctuating water levels.

All disturbed areas around protective treatments shall be protected from erosion. Disturbed areas that are not to be cultivated shall be protected as soon as practical after construction.

Vegetation shall be selected that is best suited for the site conditions and achieves the intended purpose(s).

In order to ensure plant community establishment and integrity, a vegetative management plan shall be prepared in accordance with NRCS conservation practice standard Critical Area Planting, Code 342.

Additional Criteria for Streambanks

Stream segments to be protected shall be classified according to a system deemed appropriate by the state. Segments that are incised or that contain the 5-year return period (20 percent probability) or greater flows shall be evaluated for further degradation or aggradation.

A site assessment shall be performed to determine if the causes of instability are local (e.g. poor soils, high water table in banks, alignment, obstructions deflecting flows into bank, etc.) or systemic in nature (e.g. aggradation due to increased sediment from the watershed, increased runoff due to urban development in the watershed, degradation due to channel modifications, etc.). The assessment need only be of the extent and detail necessary to provide a basis for design of the bank treatments and reasonable confidence that the treatments will perform adequately for the design life of the measure.

Changes in channel alignment shall not be made without an assessment of both upstream and downstream fluvial geomorphology that evaluates the affects of the proposed alignment. The current and future discharge-sediment regime shall be based on an assessment of the watershed above the proposed channel alignment.

Bank protection treatment shall not be installed in channel systems undergoing rapid and extensive changes in bottom grade and/or alignment unless the treatments are designed to control or accommodate the changes. Bank treatment shall be constructed to a depth at or below the anticipated lowest depth of streambed scour.

If the failure mechanism is a result of the degradation or removal of riparian vegetation, stream corridor restoration shall be implemented, where feasible, (see Additional Criteria for Stream Corridor Improvement) as well as treating the banks.

Toe erosion shall be stabilized by treatments that redirect the stream flow away from the toe or by structural treatments that armor the toe. Additional design guidance is found in the EFH Part 650, Chapter 16, Streambank and Shoreline Protection.

Where toe protection alone is inadequate to stabilize the bank, the upper bank shall be shaped to a stable slope and vegetated, or shall be stabilized with structural or soil-bioengineering treatments.

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.

Treatments shall be functional and stable for the design flow and sustainable for higher flow conditions.

Treatments shall not induce an increase in natural erosion.

Treatments shall not limit stream flow access to the floodplain.

Where flooding is a concern, the effects of protective treatments shall not increase flow levels above those that existed prior to installation.

Additional Criteria for Shorelines

All revetments, bulkheads or groins are to be no higher than 3 feet (1 meter) above mean high tide, or mean high water in non-tidal areas

Structural shoreline protective treatments shall be keyed to a depth to prevent scour during low water.

For the design of structural treatments, the site characteristics below the waterline shall be evaluated for a minimum of 50 feet (15 meters) horizontal distance from the shoreline measured at the design water surface.

The height of the protection shall be based on the design water surface plus the computed wave height and freeboard. The design water surface in tidal areas shall be mean high tide.

When vegetation is selected as the protective treatment, a temporary breakwater shall be used during establishment when wave run up would damage the vegetation.

Additional Criteria for Stream Corridor Improvement

Stream corridor vegetative components shall be established as necessary for ecosystem functioning and stability. The appropriate composition of vegetative components is a key element in preventing excess long-term channel migration in re-established stream corridors. The establishment of vegetation on channel banks and associated areas shall also be in accordance with conservation practice standard Critical Area Planting, Code 342.

Treatments shall be designed to achieve habitat and population objectives for fish and wildlife species or communities of concern as determined by a site-specific assessment or management plan. Objectives shall be based on the survival and reproductive needs of populations and communities, which include habitat diversity, habitat linkages, daily and seasonal habitat ranges, limiting factors and native plant communities. The type, amount, and distribution of vegetation shall be based on the requirements of the fish and wildlife species or communities of concern to the extent possible.

Treatments shall be designed to meet aesthetic objectives as determined by a site-specific assessment or management plan. Aesthetic objectives shall be based on human needs, including visual quality, noise control, and microclimate control. Construction materials, grading practices, and other site development elements shall be selected and designed to be compatible with adjacent land uses.

Treatments shall be designed to achieve recreation objectives as determined by a site-specific assessment or management plan. Safety requirements shall be based on type of human use and recreation objectives.

CONSIDERATIONS

When designing protective treatments, consider should be given to the changes that may occur in the watershed hydrology and sedimentation over the design life of the treatments.

Consider utilizing debris removed from the channel or streambank into the treatment design when it is compatible with the intended purpose to improve benefits for fish, wildlife and aquatic systems.

Use construction materials, grading practices, vegetation, and other site development elements that minimize visual impacts and maintain or complement existing landscape uses such as pedestrian paths, climate controls, buffers, etc. Avoid excessive disturbance and compaction of the site during installation.

Utilize vegetative species that are native and/or compatible with local ecosystems. Avoid introduced, invasive, noxious or exotic species that could become nuisances. Consider species that have multiple values such as those suited for biomass, nuts, fruit, browse, nesting, aesthetics and tolerance to locally used herbicides. Avoid species that may be alternate hosts to disease or undesirable pests. Species diversity should be considered to avoid loss of function due to species-specific pests. Species on noxious plant lists should not be used.

Select plant materials that provide habitat requirements for desirable wildlife and pollinators. The addition of native forbs and legumes to grass mixes will increase the value of plantings for both wildlife and pollinators.

Treatments that promote beneficial sediment deposition and the filtering of sediment, sediment-attached, and dissolved substances should be considered.

Consider maintaining or improving the habitat value for fish and wildlife by including treatments that provide aquatic habitat in the treatment

design and that may lower or moderate water temperature and improve water quality.

Consider the need to stabilize side channel inlets and outlets and outlets of tributary streams from erosion.

Consider aquatic habitat when selecting the type of toe stabilization.

Consider maximizing adjacent wetland functions and values with the project design and minimize adverse effects to existing wetland functions and values.

Livestock exclusion shall be considered during establishment of vegetative treatments and appropriate grazing practices applied after establishment to maintain plant community integrity. Wildlife may also need to be controlled during establishment of vegetative treatments. Temporary and local population control methods should be used with caution and within state and local regulations.

When appropriate, establish a buffer strip and/or diversion at the top of the bank or shoreline protection zone to help maintain and protect installed treatments, improve their function, filter out sediments, nutrients, and pollutants from runoff, and provide additional wildlife habitat.

Consider conservation and stabilization of archeological, historic, structural and traditional cultural properties when applicable.

Consider safety hazards to boaters, swimmers, or people using the shoreline or streambank when designing treatments.

Protective treatments should be self-sustaining or require minimum maintenance.

PLANS AND SPECIFICATIONS

Plans and specifications for streambank and shoreline protection shall be prepared for specific field sites and based on this standard and shall describe the requirements for applying the practice to achieve its intended purpose. Plans shall include treatments to minimize erosion and sediment production during construction and provisions necessary to comply with conditions of any environmental agreements, biological opinions or other terms of applicable permits.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be prepared for use by the owner or others responsible for operating and maintaining the system. The plan shall provide specific instructions for operating and maintaining the system to insure that it functions properly. It shall also provide for periodic inspections and prompt repair or replacement of damaged components or erosion.

REFERENCES

NEH Part 650, Chapter 16, Streambank and Shoreline Protection..

APPENDIX 13-2

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Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

STREAM CROSSING

CODE 578

(no)

DEFINITION

A stabilized area or structure constructed across a stream to provide controlled access for people, livestock, equipment, or vehicles.

PURPOSE

This practice is used to accomplish one or more of the following purposes:

- Improve water quality by reducing sediment, nutrient, or organic loading to a stream
- Reduce streambank and streambed erosion

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land uses where—

- An intermittent or perennial watercourse (stream) exists.
- Controlled access from one side of the stream to the other side is necessary to reduce or eliminate environmental degradation.
- Soils, geology, fluvial geomorphology, and topography are suitable for construction of a stream crossing.

CRITERIA

General Criteria Applicable to All Purposes

The following requirements are applicable regardless of the purpose or type of crossing.

- Apply this standard in accordance with all Federal, State, Tribal, and local regulations, including floodplain regulations and flowage easements.
- The landowner/contractor is responsible for locating all aboveground and buried utilities, and buried structures in the project area, including drainage tile.
- Provide signage and guidance to caution against use during dangerous flow levels. Place staff gage and warning sign in a location that is clearly visible to the user before traveling across structure.
- Do not create a passage barrier where aquatic species are present and using the stream. Where aquatic organism passage is an issue, use additional criteria in NRCS Conservation Practice Standard (CPS) Aquatic Organism Passage (Code 396).

Location

Locate the stream crossing in an area where the streambed is stable or where the streambed can be stabilized. See NRCS CPS Channel Bed Stabilization (Code 584) and NRCS National Engineering

Handbook (NEH Title 210), Part 654, Stream Restoration Handbook, Chapter 3, Site Investigation and Assessment. Do not place a crossing where—

- The channel grade or alignment changes abruptly.
- Excessive seepage or instability is evident.
- Evidence of incision and bed instability exists.
- Large tributaries enter the stream.
- Water velocity and depth are excessive.

Meet guidelines identified by State or Federal agenciesresponsible for aquatic species resources spawning habitat. Where such guidelines do not exist, locate crossings at least 300 feet from listedspecies spawning areas.

To the extent possible, locate the crossing on straight and riffle sections. Avoid locating in bends. Install the stream crossing perpendicular to the direction of stream flow where possible. Account for potential future lateral migration of the stream in developing the design.

Minimize the number of stream crossings planned and installed through evaluation of alternative trail or travel-way locations and land user operations. Where feasible, use existing roads. Discourage livestock loafing in the stream by locating crossings, where possible, out of shady riparian areas or by including gates in the design. Where appropriate, use NRCS CPSs Fence (Code 382) and Access Control (Code 472) in conjunction with management strategies to restrict access to the stream crossing.

Access road crossings
Where the stream crossing is installed as part of an access road, design the crossing in accordance with the location, alignment, width, and surfacing criteria of NRCS CPS Access Road (Code 560) and NRCS National Engineering Manual (NEM) (Title 210), Part 536, “Structural Engineering,” in addition to the criteria in this NRCS CPS.

Width
Provide an adequate travel-way width for the intended use. Provide a travel-way no less than 10 feet wide for a multiuse stream crossing. Make a “livestock only” crossing no less than 6 feet wide and no more than 20 feet wide. Measure widths from the upstream end to the downstream end of the stream crossing, not including the side slopes.

Side slopes
Make all side slope cuts and fills stable for the channel materials involved. Make the side slopes of cuts or fills in soil materials no steeper than 2 horizontal to 1 vertical (2:1). Make rock cuts or fills no steeper than 1.5 horizontal to 1 vertical (1.5:1).

Stream approaches
Where possible, blend approaches to the stream crossing with existing site topography. Use streambank soil bioengineering practices and other streambank stabilization measures such as NRCS CPS Streambank and Shoreline Protection (Code 580) as appropriate and feasible. Design stable approaches with gradual ascent and descent grades that are no steeper than 5 horizontal to 1 vertical (5:1). Construct approaches with suitable material to withstand repeated and long-term use. Design the minimum width of the approaches equal to the width of the crossing surface. Use NRCS CPSs Access Road (Code 560) or Trails and Walkways (Code 575) as needed.

Divert surface runoff around the approaches to prevent erosion. Use NRCS CPSs Diversion (Code 362), Structure for Water Control (Code 587), Lined Waterway or Outlet (Code 468), or Grade Stabilization Structure (Code 410) as needed.

Rock
Use only rock that is sound, durable, and able to withstand exposure to air, water, and freezing and thawing. Use rock of sufficient size and density to resist mobilization by design flood flows. Use appropriate rock sizes that will accommodate the intended traffic without causing injury to livestock or people, or damage to vehicles using the crossing. For a rock livestock crossing, use a hoof contact zone or alternative surfacing method over the rock.

Fencing
Exclude livestock access to the crossing using fence and gates, as needed. Install cross-stream fencing at fords with breakaway wire, swinging floodgates, hanging electrified chain, or other devices to allow the passage of floodwater and large woody material during high flows. Design and construct all fencing in accordance with NRCS CPS Fence (Code 382).

Vegetation
As soon as practical after construction, vegetate highly disturbed areas in accordance with NRCS CPSs Critical Area Planting (Code 342), Riparian Herbaceous Cover (Code 390), and/or Riparian Forest Buffer (Code 391). In areas where the vegetation may not survive use NRCS CPS Heavy Use Area Protection (Code 561).

Criteria Applicable to Bridge Crossings

Design the bridge in a manner that is consistent with sound engineering principles and adequate for its intended use. Utilize appropriate bridge materials and necessary safety measures (including bridge rail and guardrail). Refer to NRCS 210-NEM-536 and the current edition of the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) “Bridge Design Specifications.”

Design the bridge to fully span the stream, passing at least the bankfull flow where the design flow is not dictated by regulations. At design flow capacity, the structure must convey stream flow, sediment, and other materials without appreciably altering stream flow characteristics and pass the design flow without causing erosion or overtopping of the structure. Adequately protect the bridge so that flows exceeding the bridge’s flow capacity can safely bypass without damaging the bridge or eroding the streambanks.

For all bridge crossings, perform a geologic subsurface investigation that is in enough detail and analysis to support the design. Refer to NRCS 210-NEM, Part 531, “Geology.”

Criteria Applicable to Culvert Crossings

Design the culvert in a manner that is consistent with sound engineering principles and adequate for its intended use. Evaluate the need for safety measures such as guardrails at the culvert crossing. Refer to NRCS 210-NEM-536 and the current edition of AASHTO LRFD “Bridge Design Specifications.”

If the culvert is not associated with an NRCS CPS Access Road (Code 560) crossing, designers must account for possible adverse effects to channel bed and bank stability resulting from installation of the crossing. The potential for adverse aggradation and degradation of the bed must be assessed and control measures taken if necessary. Use caution where large pulses of sediment or woody debris flows are expected.

If needed, use additional culverts at various elevations to maintain terrace or floodplain hydraulics and water surface elevations. The length of the culvert system must be adequate to extend the full width of the crossing, including side slopes and inlet or outlet extensions.

Acceptable culvert materials include concrete, corrugated metal, corrugated plastic, or steel. Select pipe material based on height of cover, soil type (corrosivity of the backfill material), and hydraulics.

For open bottom culverts or large culverts, perform a geologic investigation that is in enough detail and analysis to support the design. Refer to 210-NEM-531.

Criteria Applicable to Ford Crossings

Ford crossings have the least detrimental impact on water quality when their use is infrequent. Ford crossings are adapted for crossing wide, shallow watercourses with firm streambeds. The following requirements are applicable to ford crossings regardless of the type of ford crossing:

- Do not place ford crossings immediately downstream from a pipe or culvert because of potential damage from localized high-velocity flows.
- Avoid placement of fords in areas where bank heights exceed 5 feet.
- Stream crossings used frequently or daily by livestock must use a culvert crossing or curbed bridge unless exclusion gates are included in the design to prevent livestock loafing on the crossing.
- To the extent possible, design the top surface of the ford crossing to follow contours of the streambed. Slope the crossing to match the existing thalweg (low-flow) channel.
- Provide cutoff walls at the upstream and downstream edges of the ford when needed to protect against undercutting.
- Evaluate the need for advance warning signage and water depth signage. Refer to Clarkin et al. (2006) for signage recommendations.

Concrete fords

Use a concrete ford crossing only where the foundation of the stream crossing has enough detail and analysis to support the design. Refer to NRCS 210-NEM-531.

Recess the subgrade of the stream crossing so the upstream edge of the constructed (finished) surface of the crossing is at or below the original surface of the streambed. Install the downstream edge with a low-flow hydraulic drop no greater than 0.5 feet above the original stream bottom. If possible, install the entire crossing with a finished grade about 4 inches lower than the natural grade of the channel.

Dewatering of the site and toe walls is required during placement of concrete to lessen the potential for segregation and to maintain the proper water to cement ratio. Flowing water erodes concrete that is not sufficiently hardened. The stream must be diverted or prevented from flowing over the concrete until the concrete makes its final set, at a minimum of 12 hours after placement of the concrete.

Use a minimum thickness of 5 inches of placed concrete. Construct the concrete slab on a minimum 4-inch thick gravel base, unless the foundation is otherwise acceptable. Refer to NRCS 210-NEM-536 for design criteria.

Construct toe walls at the upstream and downstream ends of the crossing. Make the toe walls a minimum of 6 inches thick and 18 inches deep. Extend the toe walls in the stream approaches to the bankfull flow elevation.

Precast panels meeting the above criteria may be used in place of cast-in-place concrete slabs. Impacts to sediment needs to be evaluated to avoid potential problems with sediment accumulation. As with the cast-in-place concrete, install a gravel base and toe walls.

Rock fords and the use of geosynthetic materials

In steep areas subject to flash flooding and where normal flow is shallow or intermittent, use coarse aggregate or crushed rock at ford crossings. When the site has a soft or unstable subgrade, use geosynthetic materials to improve the foundation bearing capacity for the design of rock ford crossings. Geocells can be used for a low-flow ford as they provide economical surfaces in soft soils. Select geosynthetic material for separation and stabilization according to the current version of AASHTO M-288, “Standard Specification for Geosynthetic Specification for Highway Applications.”

Recess the subgrade of the stream crossing so the upstream edge of the constructed (finished) surface of the crossing is at or below the original surface of the streambed. Install the downstream edge with a low-flow hydraulic drop no greater than 0.5 feet above the original stream bottom. If possible, install the entire crossing with a finished grade about 4 inches lower than the natural grade of the channel.

Dewater and excavate the bed of the channel to the necessary depth and width and cover with geotextile material. Install the geotextile material to extend across the bottom of the stream and up the side slopes to at least the bankfull flow elevation.

Use durable geosynthetic materials and install them according to the manufacturer's recommendations, including the use of staples, clips, and anchor pins. Cover the geotextile material with at least 6 inches of crushed compacted rock. Use minimum 6-inch deep geocells if geocells are installed.

Design the rock ford stream crossing to remain stable for design flow. The typical minimum design flow is the 10-year 24-hour storm event. Compute channel velocities and choose rock size using procedures and guidelines set forth in NRCS 210-NEH, Part 654, Technical Supplement (TS) 14N, "Fish Passage and Screening Design," and 210-NEH-650-16, Appendix 16A, "Size Determination for Rock Riprap," or other procedures approved by the State conservation engineer.

Manufactured products such as articulated concrete blocks (ACBs) can be used to construct a low-flow ford. Properly designed ACB surfaces provide stable driving surfaces in a variety of conditions. Refer to 210-NEH-654, Technical Supplement (TS) 14L for guidance for planning, design, and uses of such materials.

Vented fords
Use a vented ford where relatively frequent overtopping is expected during high flow events to have a driving surface above normal flows and remain functional and stable for the design flow and substainable for high flow conditions. Unlike conventional bridges, the deck is depressed relative to the approach and generally has only a curb stop (no rails). The 'vent' can be a culvert or an arch culvert; align either to work with the stream planform (contour). Design the crossing—

- With one or more open structures (vents) that approximates or exceeds the size of the normal channel area, allowing low flows and average daily flows to pass beneath the roadbed.
- To remain functional and stable for the design flow and sustainable for high flow conditions.
- To protect the channel, the structure, and its foundation against scour and erosion and to mitigate downstream energy dissipation for high flow events.

CONSIDERATIONS

For bridge, culvert, and vented ford crossings, consider incorporating natural streambed substrates through the impacted reach (including through the structure) for passage of aquatic organisms. See Bunte and Abt (2001) for sampling procedures. Natural streambeds provide passage and habitat benefits to many life stage requirements for aquatic organisms and may reduce maintenance costs. Consider all life stages of aquatic organisms in the stream crossing design to accommodate their passage, in accordance with the species' requirements. Consider the habitat requirements of other aquatic or terrestrial species that may be affected by construction of a stream crossing. For example, a crossing may be designed with features that also promote safe crossing by terrestrial vertebrates.

Consider including a well-graded rock riprap apron on the downstream edge of concrete crossings to dissipate flow energy.

Locate stream crossings to avoid adverse environmental impacts and consider—

- When riffles are not present, consider using a stable straight reach.
- Effects on upstream and downstream flow conditions that could result in increases in erosion, deposition, or flooding. Consider habitat upstream and downstream of the crossing to avoid fragmentation of aquatic and riparian habitats.
- Short-term and construction-related effects on water quality.
- Timing of construction and other potential impacts in relation to passage of aquatic species.
- Overall effect on erosion and sedimentation that will be caused by the installation of the crossing

and any necessary stream diversion.

- Effects of large woody material on the operation and overall design of the crossing.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for stream crossings in accordance with this standard. Clearly describe the requirements for applying the practice to achieve its intended purpose. As a minimum, include—

- Location of stream crossing
- Stream crossing width and length with profile and typical cross sections
- Details for permanent surface water diversion, as applicable
- Thickness, gradation, quantities, and type of rock or stone
- Type, dimensions, and anchoring requirements of geotextile
- Thickness, compressive strength, reinforcement, and other special requirements for concrete, if used
- Applicable structural details of all components, including reinforcing steel, type of materials, thickness, anchorage requirements, lift thickness, and covering
- Load limits for bridges and culverts
- Vegetative requirements that include seed and plant materials to be used, establishment rates, and season of planting
- Location, type, and extent of fencing required
- Location and types of gates required
- Method of surface water diversion and dewatering during construction or a statement making the contractor responsible for selecting such
- Location of all aboveground and buried utilities and notification requirements
- Location of all buried structures adjacent to the stream, including drainage tile
- Additional site-specific considerations
- Material and construction specifications

OPERATION AND MAINTENANCE

Develop an operation and maintenance plan and implement it for the life of the practice.

As a minimum, include the following items in the operation and maintenance plan:

- State the appropriate conditions when the crossing can be safely used and when it should not be used by a predetermined depth. NOTE: If this restriction prevents the landowner from using a culvert or ford a significant amount of time, a bridge should be considered.
- Inspect the stream crossing, appurtenances, approaches, and associated fence and exclusion gates at least annually and after each major storm event. Make repairs, if needed.
- Remove accumulated organic material, woody material, or excess sediment.
- Replace surfacing stone for livestock crossing as needed.

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APPENDIX 13-3

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Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

CONSERVATION COVER

CODE 327

(ac)

DEFINITION

Establishing and maintaining permanent vegetative cover.

PURPOSE

This practice is used to accomplish one or more of the following purposes:

- Reduce sheet, rill, and wind erosion.
- Reduce sediment transport to surface water.
- Reduce ground and surface water quality degradation by nutrients.
- Reduce emissions of particulate matter.
- Provide wildlife, pollinator, and other beneficial organism habitat.
- Improve soil health by maintaining or increasing soil organic matter quantity.
- Improve soil health by increasing soil aggregate stability.
- Improve soil health by enhancing habitat for soil organisms.
- Improve soil health by reducing compaction.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on most lands needing permanent vegetative cover. This practice may be used to conserve and stabilize archeological and historic sites. This practice does not apply to plantings for forage production or to critical area plantings that require special measures to ensure successful establishment. If the soil and water resource concerns meet minimum planning criteria and the only purpose of the planting is to provide wildlife habitat, Wildlife Habitat Planting (CPS 420) may be implemented.

CRITERIA

General Criteria Applicable to All Purposes

Select species that are adapted to the soil, ecological sites, and climatic conditions and are suitable for the planned purpose and site conditions.

Ensure that planting dates, seeding rates, planting methods, and care in handling and planting seed or planting stock are used to accomplish the planned purpose.

If the specific Rhizobium bacteria for selected legumes are not present in the soil, treat the seed with the appropriate available inoculum. Inoculate legumes at time of planting based on conservation objectives and site history. See USDA NRCS Plant Materials Technical Note No. 5 (Title 190), Using the Appropriate Legume Inoculant for Conservation Plantings.

Prepare the site by eliminating weeds that will impede the establishment and growth of selected species.

NRCS reviews and periodically updates conservation practice standards. To obtain the current version of this standard, contact your Natural Resources Conservation Service State office or visit the Field Office Technical Guide online by going to the NRCS website at https://www.nrcs.usda.gov/ and type FOTG in the search field.

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Apply nutrients and amendments as needed to ensure vegetation establishment and planned growth. Nutrients and amendments are not always needed for native plant establishment.

The established stand will produce a positive soil conditioning index (SCI) value. Use the SCI results available in the current NRCS erosion prediction technology.

For organic and transitioning-to-organic operations, all seeds, planting stock, materials, and methods used in the implementation of this practice standard must comply with the National Organic Program (NOP) Rules. See the USDA Organic Regulations and the NRCS resource page Conservation for Organic Farmers.

Additional Criteria to Reduce Sheet, Rill and Wind Erosion

Determine and maintain the amount of plant biomass and cover needed to reduce wind and water erosion to the planned soil loss objective by using the current NRCS erosion prediction technology. Soil erosion must not exceed the tolerable soil loss value for the critical dominant soil in the planning area.

Additional Criteria to Reduce Emissions of Particulate Matter

Establish plants that can tolerate the impacts of routine operations (e.g., orchard and vineyard alleys during mowing, spraying, or harvest operations) and provide sufficient ground cover in the planted area to minimize the generation of particulate matter.

Additional Criteria to Provide Wildlife, Pollinator, and Beneficial Organism Habitat

Plant a diverse mixture of tree, shrub, grass, and forb species to meet the habitat needs of the targeted species using approved habitat evaluation tools for the respective state.

Reduce pesticide exposures that could harm wildlife, pollinators, and other beneficial organisms.

Additional Criteria to Improve Soil Health

To maintain or improve soil organic matter, select plants that produce high volumes of organic material. Determine the amount of biomass needed by using the current soil conditioning index procedure.

CONSIDERATIONS

General Considerations

Use certified seed and planting stock that is adapted to the site when it is available.

When restoring or repairing sites, consider use of inoculant for native species when available.

When using Conservation Cover as a prairie strip, design a minimum width of 30 feet.

Mowing may be needed during the establishment period to reduce competition from weeds.

To mitigate for greenhouse gas emissions, select species that will store carbon in the soil via extensive root systems or in woody biomass.

Location of this practice in orchard/vineyard alleys can significantly reduce the particulate matter emissions associated with tractor traffic in the alleys when compared to bare alleys.

If nitrogen fertilizer is used on sites where nitrogen-responsive weeds are present, delay N application until the planted species are well established to avoid expected weed problems. If the site has poor or low-fertility soil, consider using slow-release nutrient sources in lieu of soluble fertilizer to improve the site without stimulating weeds.

To maximize spatial and temporal diversity, rotate management and maintenance activities (e.g., mow only one-fourth or one-third of the area each year) throughout the managed area.

Where wildlife management is an objective, encourage plant species and structural diversity to maximize wildlife use. Habitat evaluation tools can aid in selecting plants for food and cover.

As long as soil loss is within tolerable soil loss limits, use less dense seeding rates where ground-nesting pollinator and wildlife habitat are the primary purposes.

To provide habitat for natural enemies of crop pests, select a mix of plant species that provide year-round habitat or food (accessible pollen or nectar) for the desired beneficial species. Use a diverse mix of plant species that come into bloom at different times and provide a sequence of bloom throughout the year (e.g., plant at least three flowering species from each of the three bloom periods—spring, summer, and fall). Use habitat requirements of predatory and parasitic insects, spiders, insectivorous birds and bats, raptors, and predators of terrestrial rodents. Consult land grant university integrated pest management recommendations for beneficial habitat plantings to manage the target pest species. See USDA NRCS Agronomy Technical Note No. 9 (Title 190), Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators using IPM and Other Conservation Practices.

Use native species that are appropriate for the identified resource concern and management objectives with the aim of reestablishing the native plant community for the site. It should be considered adequate if a native cover other than what was planted establishes and addresses the resource concern and landowner objectives .

During vegetation establishment, natural mulches, such as wood products or hay, can be used to conserve soil moisture, support beneficial soil life, and suppress competing vegetation.

Including a diverse mix of species enhances the above- and below ground ecosystem biodiversity.

Additional Considerations to Improve Soil Health

The effects of this practice are enhanced when it is integrated into a soil health management system. Refer to NRCS Soil Health Technical Note No. 4 (Title 450), “The Basics of Addressing Resource Concerns with Conservation Practices within Soil Health Management Systems on Cropland” for more information.

PLANS AND SPECIFICATIONS

Develop plans and specifications for each field or treatment unit according to the criteria and operation and maintenance requirements of this standard. Specifications must describe the requirements to apply this practice to achieve the intended purpose. Record the following specification components in an approved NRCS Conservation Practice Standard Conservation Cover (Code 327) implementation requirements document:

- All applicable purposes for the installation of this practice.
- Field numbers and installation locations referenced on the conservation plan map.
- Recommended plant species.
- Seeding rates and dates.
- Seedbed preparation procedures.
- Establishment methods.
- Management actions needed to ensure an adequate establishment.
- Soil loss estimates and SCI results, if applicable.

When applying this practice to perennial systems, such as orchards and vineyards, the establishment and management requirements apply only to the areas planted with this practice (e.g., the grassed alleyways are seeded and managed under this practice, but the vine row or tree row is managed separately).

OPERATION AND MAINTENANCE

Prepare an operation and maintenance plan for this practice. Planned activities may include, but are not limited to, the following:

- Protect the cover from irreversible damage by traffic, implements, and herbicides.
- Periodic removal of some products (such as high value trees, medicinal herbs, nuts. and fruits) is permitted provided the conservation purpose is not compromised by the loss of vegetation or harvesting disturbance.
- Mowing and harvest operations in a perennial crop system (such as orchards, vineyards, berries, and nursery stock), will be accomplished in a manner that minimizes the generation of particulate matter.
- Mowing may be needed during the establishment period to reduce competition from weeds.
- Control noxious weeds and invasive species.
- If wildlife habitat enhancement is a purpose, maintenance practices and activities will occur during periods of the day or season to minimize negative impacts of disturbance.
- If wildlife habitat is a purpose, include the procedures necessary to conserve the cover's wildlife habitat functions.
- To support insects eaten by grassland nesting birds, spot treat noxious weeds to protect other forbs and legumes that benefit native pollinators and other wildlife.
- Revegetate bare spots when they occur.

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APPENDIX 19-1

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PRELIMINARY COST ESTIMATE
2024 HALAMA WQT PROJECT
GALESVILLE, WISCONSIN

Quantity	Unit	Item	NRCS	Unit Price	Total
County Estimate					
1	LS	Mobilization		$ 2,000.00	$ 2,000.00
8	LS	Site Preparation, clearing, and grading	NRCS 580	$ 1,900.00	$ 15,200.00
800	Lin Ft	Bank Shaping	NRCS 580	$ 8.49	$ 6,792.00
240	cu. yd.	Limestone rock riprap D50 size 8" Diameter	NRCS 580	$ 40.00	$ 9,600.00
3200	sq. yd.	Geotextile Fabric	NRCS 580	$ 3.40	$ 10,880.00
2	acre	Liming, fertilizing, seeding and mulching	NRCS 580	$ 2,500.00	$ 5,000.00
1	LS	Site Preparation, clearing, and grading	NCRS 578	$ 1,900.00	$ 1,900.00
230	cu. yd.	Sand/Gravel	NRCS 578	$ 50.55	$ 11,626.50
3000	sq. yd.	Geotextile Fabric	NRCS 578	$ 3.40	$ 10,200.00
1	acre	Liming, fertilizing, seeding and mulching	NRCS 578	$ 2,500.00	$ 2,500.00
1	LS	Obstruction Removal	NRCS 578	$ 1,200.00	$ 1,200.00
1	LS	Site Preparation, clearing, and grading	NRCS 468	$ 3,000.00	$ 3,000.00
50	Lin Ft	Rock Outlet	NRCS 468	$ 20.40	$ 1,020.00
230	cu. yd.	Limestone rock riprap D50 size 12" Diameter	NRCS 468	$ 45.00	$ 10,350.00
1	acre	Liming, fertilizing, seeding and mulching	NRCS 468	$ 2,500.00	$ 2,500.00
1	LS	Site Preparation, clearing, and grading	NRCS 410	$ 3,000.00	$ 3,000.00
1500	cu. yd.	Excavation	NRCS 410	$ 7.35	$ 11,025.00
3000	cu. yd.	Earthfill	NRCS 410	$ 7.40	$ 22,200.00
100	Lin Ft	PVC Pipe 8" diameter	NRCS 410	$ 40.00	$ 4,000.00
1	LS	Pipe Bedding	NRCS 410	$ 910.00	$ 910.00
4	each	Pipe Couplers	NRCS 410	$ 50.00	$ 200.00
4	each	Antiseep Collars	NRCS 410	$ 388.00	$ 1,552.00
1	each	Trash Rack	NRCS 410	$ 671.43	$ 671.43
1	each	Hood Inlet	NRCS 410	$ 303.57	$ 303.57
1	each	Pipe Support Structure	NRCS 410	$ 155.00	$ 155.00
2	acre	Liming, fertilizing, seeding and mulching	NRCS 410	$ 2,500.00	$ 5,000.00
		TOTAL ESTIMATED CONSTRUCTION COST			**$ 142,785.50**
		County Fee		$ 10,000.00	
		WQT Plan		$ 10,000.00	
		Engineering Coordination		$ 10,000.00	
		Permit Fees		$ 2,500.00	
		Legal & Administrative (2.5%)		$ 3,570.00	
		Contingencies (10%)		$ 14,280.00	
		Subtotal			$ 50,350.00
		TOTAL ESTIMATED PROJECT COST			**$ 193,140.00**

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

Landowner/Operator Signatures

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