Wastewater Treatment Facility Plan

0M2.122673

City of Redwood Falls, Minnesota
March 3, 2022

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Certification

Wastewater Treatment Facility Plan

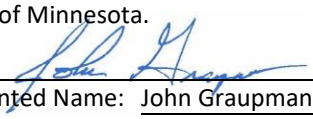
For

City of Redwood Falls, Minnesota
0M2.122673

March 2022

PROFESSIONAL ENGINEER

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: 

Typed or Printed Name: John Graupman

Date: March 3, 2022 License Number: 26868

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I. INTRODUCTION

A. Purpose

This report provides the City of Redwood Falls, Minnesota with recommendations for wastewater treatment facility improvements to achieve compliance with current and future phosphorus discharge limits for total phosphorus discharge. Recommendations are based on input from City staff and an evaluation of the existing facility in accordance with current design practices.

Section 2 provides a review of the current and future design conditions; section 3 discusses the existing wastewater system components; section 4 discusses various alternatives for wastewater system improvements; section 5 provides cost analysis for the various alternatives; and section 6 provides recommendations and general conclusions.

B. Background

The City of Redwood Falls has a wastewater treatment system that consists of two separate aerated pond systems: 1) Redwood Falls Treatment Center and 2) Regional Treatment Center. The Redwood Falls Treatment Center was originally constructed in 1988 and receives raw wastewater from the City of Redwood Falls. The Regional Treatment Center was originally constructed in 1996 and receives treated effluent from the Redwood Falls Treatment Center and pretreated wastewater from Central Bi-Products. The discharge from the wastewater system yields high phosphorus mass loads to the Minnesota River.

Currently, the City of Redwood Falls has arranged to purchase 1,522 kg/yr of phosphorus credits from the City of New Ulm. This will give the City of Redwood Falls 1,384 kg/yr of credits (See Appendix C for the trade agreement). This trade is based on a trade ratio of 1.1:1. Per the MPCA Pre-TMDL Phosphorus Trading Guidance. The permitted phosphorus limit in the NPDES permit for Redwood Falls is 1,460 kg/yr as a 12-month total. With the additional 1,384 kg/yr of phosphorus credits, the City of Redwood Falls limit is equal to 2,844 kg/yr as a 12-month total. Historically, the City has been exceeding the phosphorus limit with the additional credits purchased from New Ulm with phosphorus discharge ranging from 2,500 – 3000 kg/yr. The Minnesota Pollution Control Agency plans to implement River Eutrophication Standards (RES) that will subject the City to stringent phosphorus limits. Due to downstream exceedance of RES water quality standards, it is anticipated that downstream sellers of phosphorus credits will become unavailable once the new standards are implemented. The City has still been exceeding the phosphorus limits even after purchasing credits with New Ulm. Since there are no upstream sellers that would cover the City's credit needs, the City is forced to explore alternatives to remove phosphorus from their treated effluent to meet mass limits for the Lake Pepin TMDL, prior to more facility expansion for the RES standards. This would be accomplished by additional infrastructure at the Redwood Falls Treatment Center.

The City consulted with Bolton & Menk, Inc. to develop a Wastewater Treatment Facility Report to develop phosphorus removal alternatives to meet the mass phosphorus limit for the discharge of the Redwood Falls wastewater system. The alternatives discussed in this report are 1) construct chemical feed system and tertiary clarifiers designed for future design conditions and 2) construct a chemical feed system with tertiary filters.

C. Report Organization

This report is organized into six (6) sections:

1. Introduction
2. Summary of Design Flows
3. Evaluation of Existing Facility
4. Evaluation of Clarifier and Filter Alternatives
5. Cost Analysis
6. Recommendation and Conclusions

II. SUMMARY OF DESIGN FLOWS

A. Planning Period

Wastewater treatment facilities are typically designed based on a 20-year planning period, as it is generally not feasible to make frequent changes in the capacity of a wastewater treatment facility. A design year of 2040 is used for this evaluation. Figure 2.1 shows the planning area encompassed by this report.

Projected wastewater flows and loadings are determined by using a combination of population trends and expected commercial or industrial growth. Wastewater discharged to the Redwood Falls wastewater system is derived from two sources: The City of Redwood Falls, and Central Bi-Products, an animal feed rendering facility.

B. Development Projections

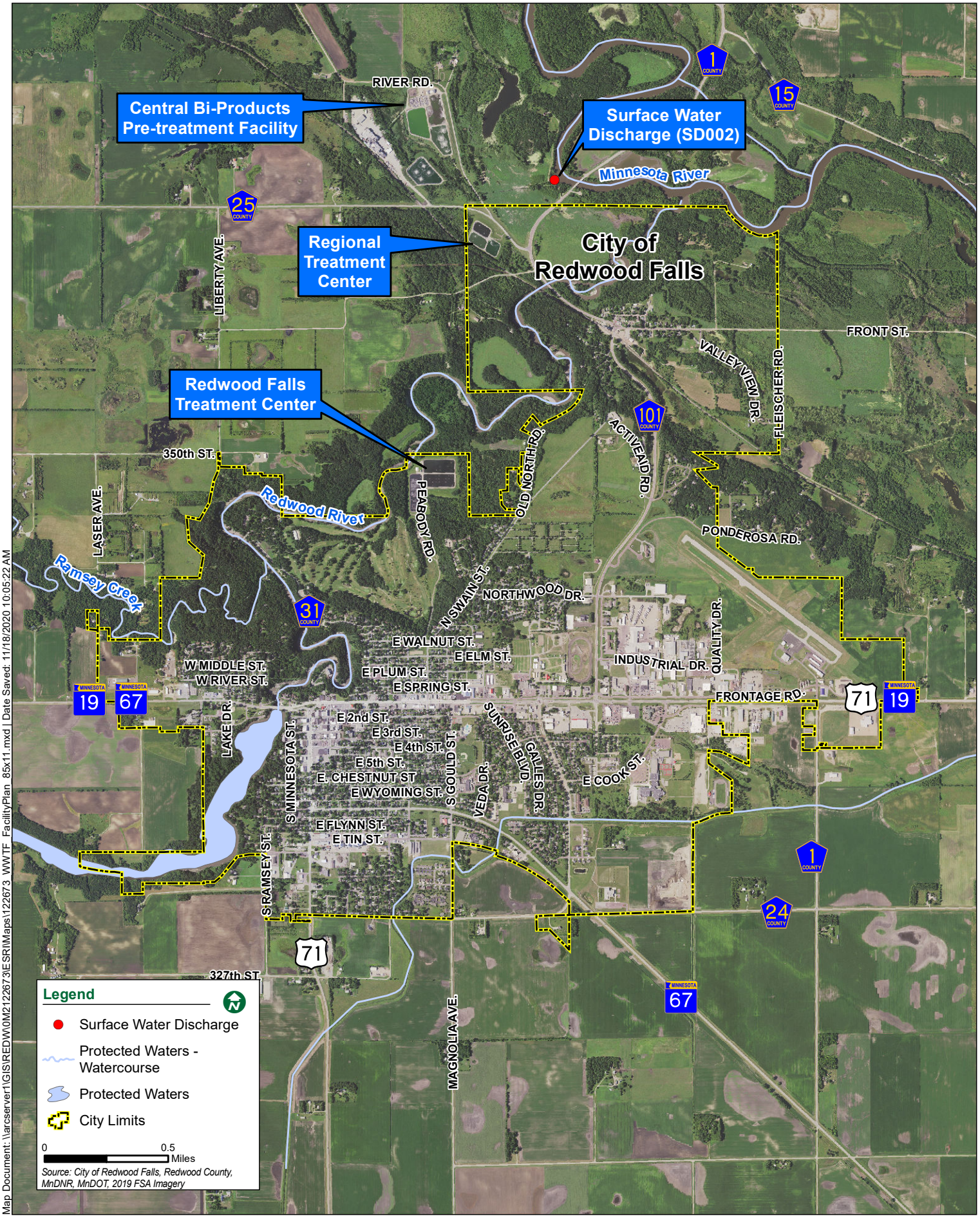
1. Population Projections

Several methods are available for predicting population trends. Historical city and county population trends are reviewed. Future trends can be predicted by using a variety of mathematical projections including arithmetic, geometric, and linear regression methods. Additionally, the MN State Demographer publishes historical populations for MN cities as well as projections for all counties in MN. The most recent projection was completed in 2017.

Table 2.1 and Figure 2.2 below show historical and projected populations for the City of Redwood Falls and Redwood County. The State Demographer projects a decrease in the population of Redwood County over the design period.

Historical City populations show a decreasing trend since 2000. Linear regression modelling suggests that the population will continue to decline through the design period. It is acceptable with a decreasing population trend to assume the future population will remain the same as the current population. It is assumed that the design year of 2040 will have a population of 5,236.

Table 2.1: Population Projections		
Year	**Historic Redwood Falls Population [1]**	**Historic Redwood County Population [1]**
2000	5,459	16,815
2001	5,327	16,778
2002	5,407	16,519
2003	5,370	16,317
2004	5,348	16,245
2005	5,327	16,096
2006	5,307	16,005
2007	5,271	15,851
2008	5,247	15,680
2009	5,198	15,518
2010	5,254	16,059
2011	5,248	15,986
2012	5,230	15,842
2013	5,218	15,755
2014	5,207	15,573
2015	5,214	15,486
2016	5,211	15,275
2017	5,203	15,278
2018	5,236	15,252
2019	5,236	15,204
2020	5,236	14,457(2)
2025	5,236	13,699(2)
2030	5,236	13,088 (2)
2035	5,236	12,588(2)
2040	5,236	12,182 (2)
[1] Historical population from MN State Demographer [2] MN State Demographer Population Projection by County 2015-2050 (March 2017)		



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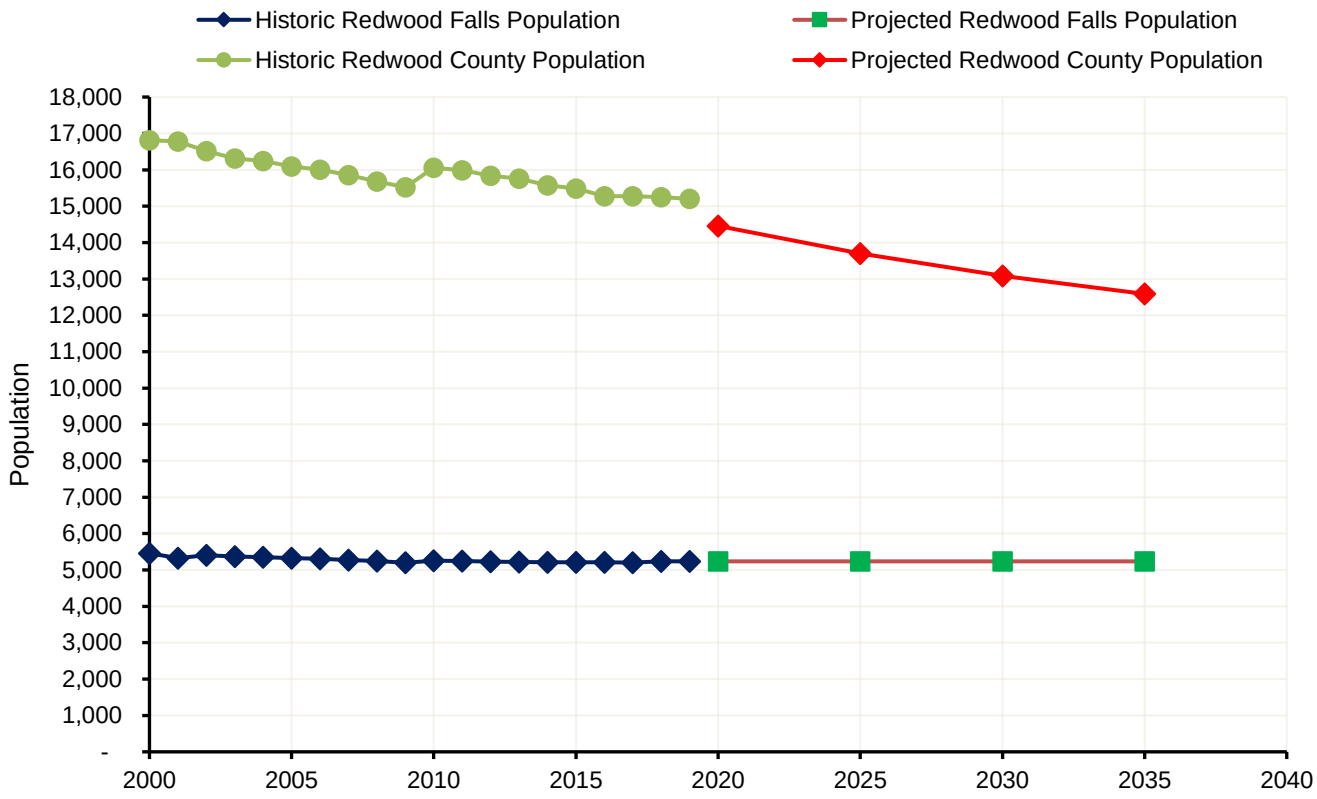


Figure 2.2: Population Projections

2. Industrial Development

Central Bi-Products is the only significant industrial client in the City of Redwood Falls. There are no plans for expansion of the facility or plan for any new significant industrial clients during the design period.

C. Wastewater Flows

1. Historical Monitoring Data

Wastewater produced throughout the City of Redwood Falls is conveyed to the Redwood Falls Treatment Center located within the northern boundary of the City limits. The facility continuously monitors wastewater flow at Station WS001. A summary of average daily and monthly max flows for the past four years is presented in below.

Table 2.2 shows the historical flow data for the previous 4 years and Figure 2.3 below shows historical influent flows for the City of Redwood Falls treatment facility (both maximum month flow and average monthly flow). The figure also shows recorded precipitation through July of 2019 to show the effect of high rain events on flows. The facility is currently rated at 1.321 MGD average wet weather flow.

The figure shows that only eight times since January of 2017 average monthly flow increased above the facility average monthly design flow, but each time this occurred is correlated to a peak in precipitation or snow melt. These months averaged over 9-inches of precipitation. These major precipitation events resulted in flood conditions, which impacted wastewater flows through severe inflow and infiltration (I&I) of stormwater into the City's wastewater collection system. The figure shows that since July of 2019 there has not been an average monthly flow event higher than the design average monthly flow capacity.

The City has been implementing an inflow and infiltration reduction plan. At the time this report was written, no defined flow decrease from the project can be quantified. The goal is to identify areas of the collection system that lead to the highest I&I and target those areas first. With sustained targeting of I&I problem areas it is anticipated that large precipitation events will not have a large impact on influent flows in the future.

Table 2.2: Historical Flow Data - Redwood Falls WWTF										
Month	2017		2018		2019		2020		4-Year	
	Monthly Average (MGD)	Monthly Max (MGD)	Monthly Average (MGD)	Max Day (MGD)	Monthly Average (MGD)	Max Day (MGD)	Monthly Average (MGD)	Max Day (MGD)	4-year Average (MGD)	4-year Max Day (MGD)
January	0.784	0.942	0.613	0.720	0.691	0.975	0.728	0.834	0.704	0.975
February	0.809	0.909	0.550	0.618	0.620	0.710	0.669	0.882	0.662	0.909
March	0.800	0.899	0.671	0.905	1.159	2.692	1.115	2.147	0.936	2.692
April	1.120	1.658	1.158	1.915	2.032	3.620	1.264	1.791	1.394	3.620
May	1.359	1.982	1.071	1.359	1.661	2.450	1.079	1.307	1.293	2.450
June	0.837	1.059	1.667	4.209	1.193	1.462	0.795	0.980	1.123	4.209
July	0.688	0.799	2.145	6.316	1.562	4.615	0.843	1.077	1.310	6.316
August	1.537	6.858	0.869	1.057	0.634	0.815	0.875	1.533	0.979	6.858
September	0.890	1.220	1.067	3.399	0.770	1.427	0.743	0.990	0.868	3.399
October	1.582	5.443	1.177	2.257	0.973	1.500	No Data Available		1.244	5.443
November	0.796	0.954	0.796	0.985	0.766	1.024			0.786	1.024
December	0.679	0.797	0.678	0.791	0.715	0.994			0.691	0.994
Yearly Average/Max	0.990	6.86	1.039	6.316	1.065	4.62	0.901	2.15	0.999	6.86

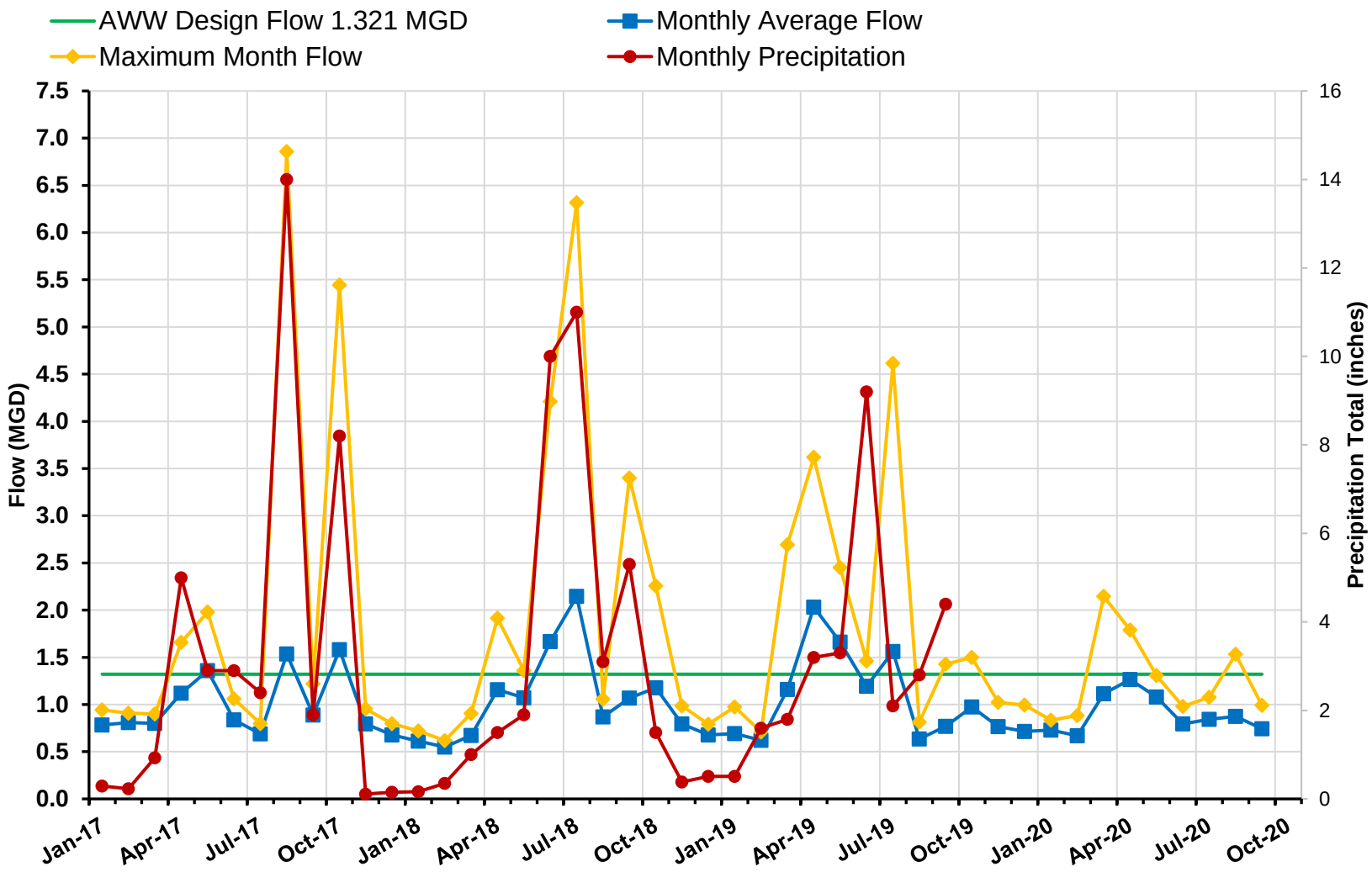


Figure 2.3: Historical Flows – Redwood Falls WWTF

2. Infiltration and Inflow Analysis

As shown above, the Redwood Falls facility experienced several high precipitation events which led to increased flows at the WWTF. Severe inflow and infiltration (I&I) of stormwater into the City's wastewater collection system contributed to the high flows at the WWTF.

The MPCA has developed guidelines to provide a comprehensive and systematic approach to analyze I&I. These guidelines were used to determine if I&I is considered excessive in the City of Redwood Falls' wastewater collection system. The following are definitions of inflow and infiltration as provided by the MPCA guidelines:

- *Infiltration* – is water other than wastewater that enters a sewer system (including service sewer connections and foundation drains) from the ground through broken or defective pipes, pipe joints, connections, manholes, and wet basements.
- *Inflow* – is water other than wastewater that enters a sewer system (including sewer service connections) through sources such as, but not limited to, roof leaders, foundation drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, storm waters, surface runoff, street wash water, or other drainage structures.
- *Excessive infiltration* – Infiltration is excessive if the quantity of flow (domestic base flow and infiltration) is greater than 120 gallons per capita per day (gpcd). The quantity of flow was determined using the annual average flow over the past four years and the 2019 population of 5,236:

  999,000 gpd / 5,236 people = 191 gpcd

- *Excessive Inflow* – Inflow is excessive if the quantity of flow during storm events that results in chronic operational problems related to the hydraulic overloading of the treatment system or that results in a total flow of more than 275 gpcd (domestic base flow plus infiltration and inflow). The flow during storm events was determined using the maximum 30-day average flow over the past four years:

  1,516,000 gpd / 5,236 people = 289 gpcd

According to MPCA criteria, infiltration and inflow is considered excessive in Redwood Falls' wastewater collection system, which is typical of many cities throughout the state. This is likely due to aging collection system infrastructure that slowly degrades over time and is not watertight when ground water levels are high. This Facility Plan does not include any improvements to the City's collection system infrastructure. As stated earlier, the City is working on an I&I program to target areas with high I&I first. There is no known flow reduction from this program at the time this report was written.

3. Industrial Flows

The only industry that sends wastewater to the City of Redwood Falls is Central Bi-Products. The industry will not discharge more water than they currently are permitted to discharge and therefore will not impact future design flows. A copy of the treatment agreement can be found in Appendix B.

4. Design Flows

The MPCA has guidelines for determining design wastewater flows for new or expanded treatment facilities. Flow projections are developed for different climatic conditions as described below.

- Average Dry Weather (ADW) Flow – Measure of flow during which there is no inflow due to precipitation and/or snow melt and no infiltration due to high groundwater. This flow typically occurs during winter months or very dry summers. It is also strongly correlated with drinking water usage.
- Average Wet Weather (AWW) Flow – Daily average flow for the wettest 30 consecutive days for mechanical treatment facilities. AWW flow is based on flow with infiltration due to high groundwater and typical inflow due to precipitation and/or snow melt. This flow typically occurs during the spring and early summer.
- Peak Hourly Wet Weather (PHWW) Flow – Peak flow during the peak hour of the day at a time when the groundwater is high and a five-year, one-hour storm event is occurring.
- Peak Instantaneous Wet Weather (PIWW) Flow – Peak instantaneous flow during the day at a time when the groundwater is high and a 25-year, one-hour storm event is occurring. This flow is used for sizing pumps and piping systems.

The flow parameters described above are determined by following the procedures outlined in the MPCA document "Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants." This document is included in Appendix E.

Wastewater discharged to the Redwood Falls treatment system is derived from two primary sources: 1) City of Redwood Falls and 2) Central Bi-Products. There is no projected increase in flow to the WWTF above the facility design average month flow of 1.321 MGD.

D. Wastewater Loading

The City of Redwood Falls monitors influent loadings per the requirements of their NPDES permit. Monitoring data over the past four years is summarized in Table 2.3. Figures 2.4 – 2.7 illustrate monthly fluctuations in carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), and total phosphorus (TP) concentrations. The Redwood Falls facility is designed to treat a $CBOD_5$ concentration of 171 mg/L.

The 4-year average concentrations for the Redwood Falls WWTF are 72 mg/L $CBOD_5$, 97 mg/L TSS, and 2.74 mg/L TP. The typical concentration of medium-strength domestic wastewater is 150 – 200 mg/L $CBOD_5$, 175 – 225 mg/L TSS, and 4 – 7 mg/L TP. While there are seasonal variations due to effects of I&I, these values are typically consistent for most communities. $CBOD_5$, TSS, and TP are all below the typical range for domestic wastewater. There will be no change in loading design parameters for the Redwood Falls treatment facility.

Table 2.3: Historical Influent Monitoring Data						
Year	**Unit**	**2017**	**2018**	**2019**	**2020 (1)**	**4 Year Average**
Flow (average monthly)	MGD	0.990	1.039	1.065	0.901	0.999
$CBOD_5$	mg/L	69	92	65	63	72
	lb/day	550	616	473	460	525
	lbs/capita/day (2)	0.106	0.118	0.090	0.088	0.100
TSS	mg/L	106	95	95	91	97
	lb/day	835	680	726	673	728
	lbs/capita/day (2)	0.160	0.130	0.139	0.129	0.139
Phosphorus, Total (as P)	mg/L	2.82	2.78	2.56	2.79	2.74
	lb/day	22.5	20.9	19.8	20.4	20.9
	lbs/capita/day (2)	0.0043	0.0040	0.0038	0.0039	0.004

(1) 2020 data is through September. Data after September was not available.

(2) lbs./capita/day loadings calculated based on respective year population.

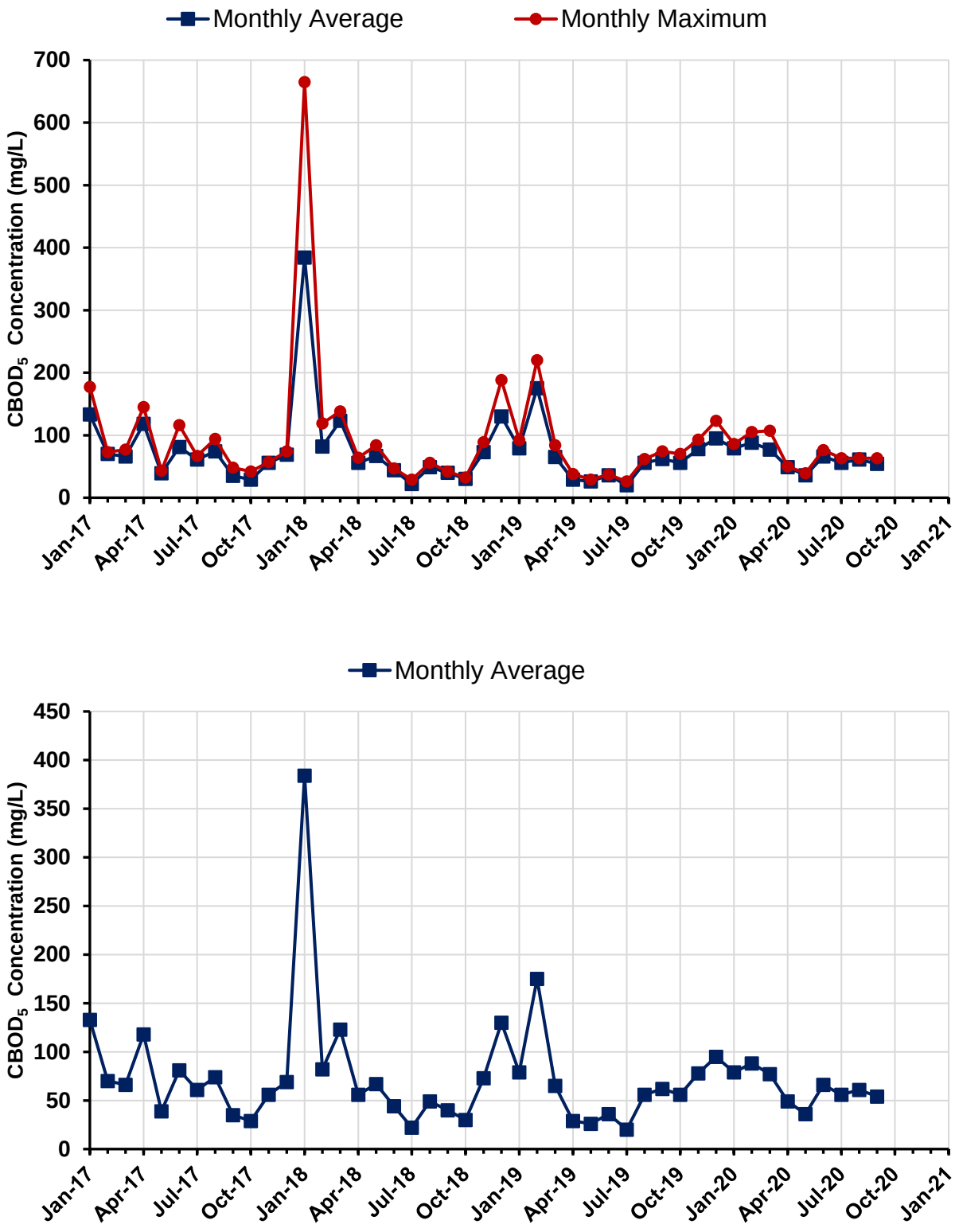


Figure 2.4: Influent CBOD5 Concentrations and Mass Loadings

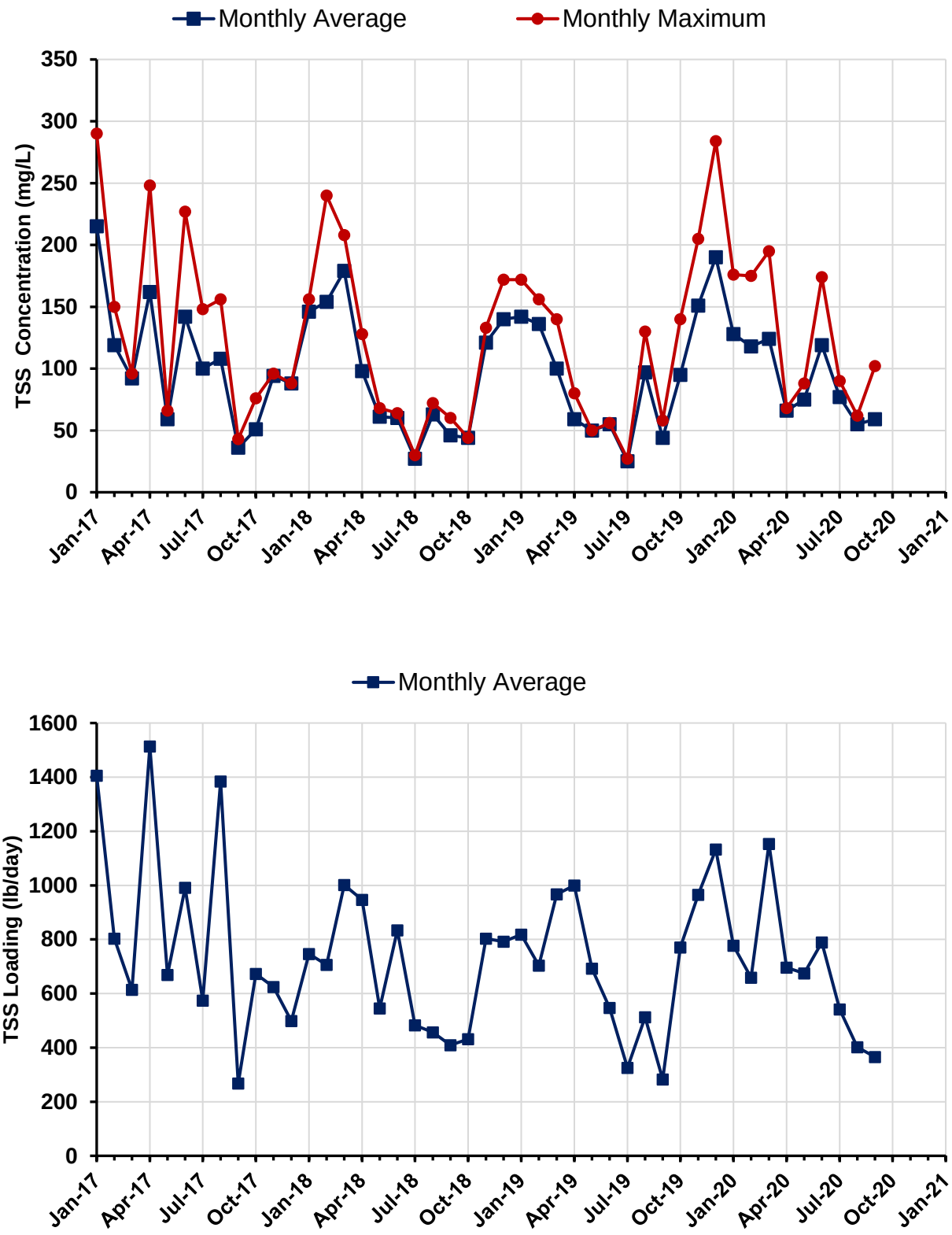
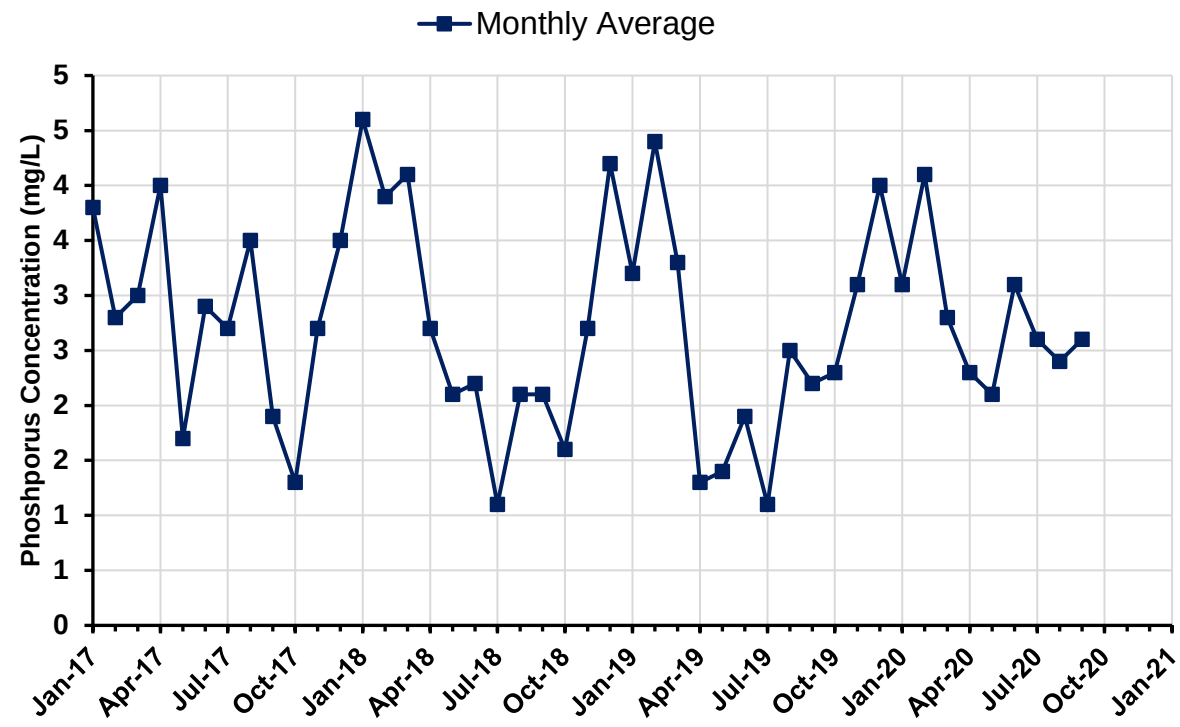


Figure 2.5: Influent TSS Concentrations and Mass Loadings



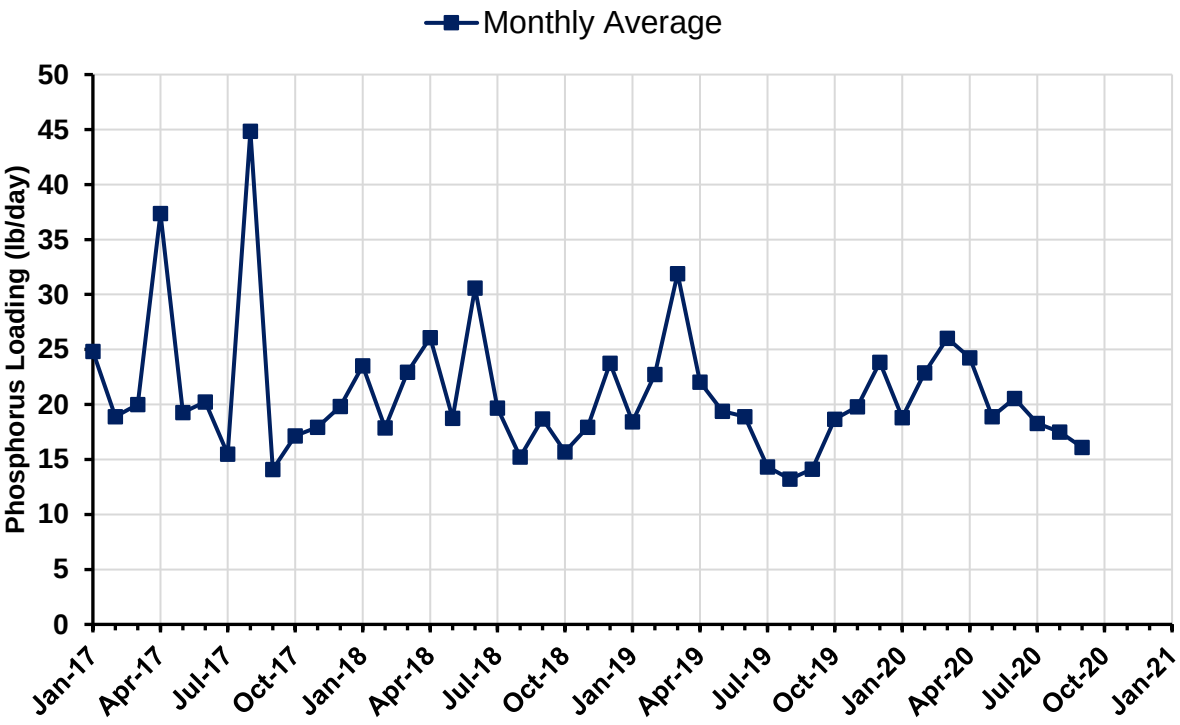


Figure 2.6: Influent Phosphorus Concentrations and Mass Loadings

E. Summary of Design Parameters

The design average monthly flow and $CBOD_5$ wastewater loading will not change from current capacity of the facility. The Average Wet Weather design flow is 1.321 MGD and the design $CBOD_5$ loading is 171 mg/L.

F. Biosolids

The Redwood Falls facility does not generate biosolids. Solids are removed from the raw wastewater settle in the ponds and remain in-place.

G. Existing Effluent Limits

The existing effluent limits for Redwood Falls wastewater treatment system are described in NPDES permit No. MN0020401. A copy of the permit is included in Appendix A. A summary of existing effluent limits is found in Table 2.4.

Table 2.4: NPDES Discharge Limits – Redwood Falls, MN

Parameter	Season	Limit Type	Limits
$CBOD_5$	Yearly	Monthly Ave.	25 mg/L (125 kg/day)
	Yearly	Max Week Ave.	40 mg/L (200 kg/day)
TSS	Yearly	Monthly Ave.	45 mg/L (225 kg/day)
	Yearly	Max Week Ave.	65 mg/L (324 kg/day)
Fecal Coliform	Apr. – Oct.	Monthly Ave. (Geometric)	200 #/100 mL
Total Chlorides	Yearly	Monthly Ave.	873 mg/L
	Yearly	Daily Max	1,720 mg/L
NH_3-N	Dec. – Mar.	Monthly Ave.	94.0 mg/L (469 kg/day)
	Apr. – May	Monthly Ave.	64.0 mg/L (319 kg/day)
	June – Sept.	Monthly Ave.	7.5 mg/L (37.4 kg/day)
	Oct. – Nov.	Monthly Ave.	9.7 mg/L (48.4 kg/day)
NH_3-N (Unionized)	Yearly	Daily Max	1.0 mg/L
pH	Yearly	Monthly Min.	6.0
	Yearly	Monthly Max	9.0
Total Phosphorus	Yearly	12-month Total	1,460 kg/yr*

*This is the limit identified in the NPDES permit. The limit with all phosphorus trading credits is 2,844 kg/yr

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III. EVALUATION OF EXISTING FACILITY

A. Overview

The City of Redwood Falls' existing wastewater treatment system consists of the following components:

- Redwood Falls Treatment Center
  - One (1) Manual bar screen
  - One (1) Grit removal system
  - One (1) Aerated Primary Pond (4.03 acres)
  - Two (2) Aerated Secondary Ponds (3.82 acres each)
  - Submerged fixed-film nitrification process (not used)
  - Control structures
  - Blower building
  - One (1) Effluent lift station
  - 10,500 LF 12-inch forcemain to Regional Facility
- Regional Treatment Center
  - Three (3) Aerated Tertiary Ponds (1.43 acres each)
  - (12) 7.5 HP surface aerators (4 per cell)
  - Control structures
  - 1,000 LF 18-inch PVC outfall to Minnesota River

This section evaluates the condition and capacity of existing wastewater infrastructure to meet current and future needs of the City of Redwood Falls. Figure 3.1 illustrates a process flow diagram of the existing treatment system.

B. Treatment Facilities

1. Facility Description – Redwood Falls Treatment Center

The existing Redwood Falls Treatment Center consists of a three-cell aerated pond system that treats raw wastewater generated in the City of Redwood Falls. The facility was originally constructed in 1966 and was expanded in 1988 to include additional Primary Pond area, new pretreatment, and aeration equipment. The facility also had a submerged media fixed film nitrification process, which is no longer in use.

The aerated pond system is designed to treat an average wet weather flow of 1.321 MGD with a five-day CBOD of 171 mg/L. The facility has a existing design average dry weather flow of 0.824 MGD. The pond system provides a detention time of 29

days at design flow. The Primary Pond is 4.03 acres at average operating depth, while both Secondary Ponds are 3.82 acres at average operating depth. All ponds have a total depth of 13 feet (from floor to top of dike), with a maximum operating depth of 10 feet. The combined storage capacity is 38 million gallons.

The pond system has a continuous discharge to the effluent lift station, which pumps treated effluent approximately 10,500 feet to the Regional Treatment Center for blending with Central Bi-Products pre-treated industrial wastewater.

2. Facility Description – Regional Treatment Center

The existing Regional Treatment Center consists of a three-cell aerated pond system that provides blending and further stabilization of pre-treated wastewater from Central Bi-Products and the Redwood Falls facility. The facility was originally constructed in 1996 and has not received any major renovations.

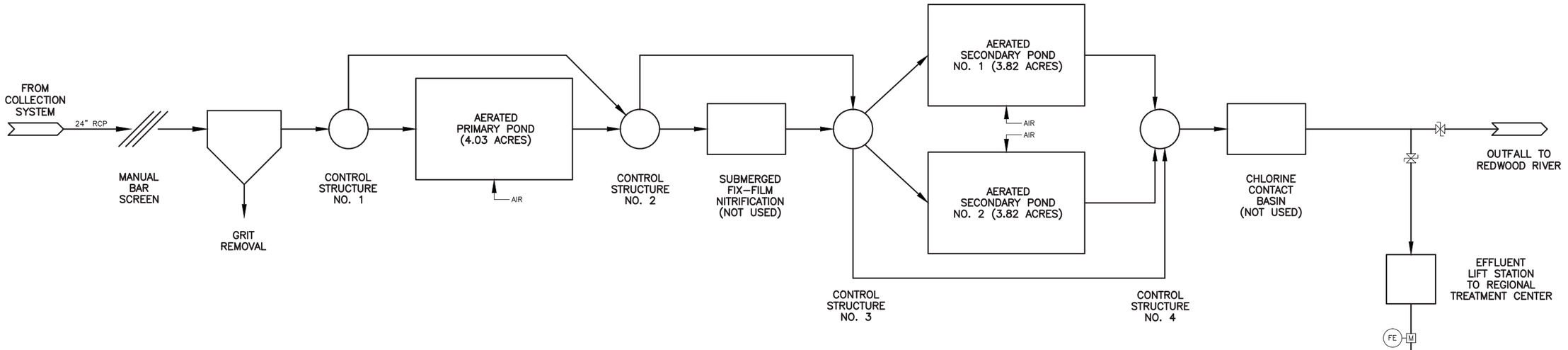
The aerated pond system was originally designed to dilute Central Bi-Products effluent for the purpose of meeting effluent ammonia limits. Each of the tertiary ponds are 1.43 acres at average operating depth, with an operating depth ranging from 2 to 13 feet. The pond system has 15 million gallons of combined storage capacity and 11 days of detention time at design flow.

Effluent from the pond system is discharged to the Minnesota River via Outfall SD002, which consists of approximately 1,000 feet of 18-inch PVC gravity sewer.

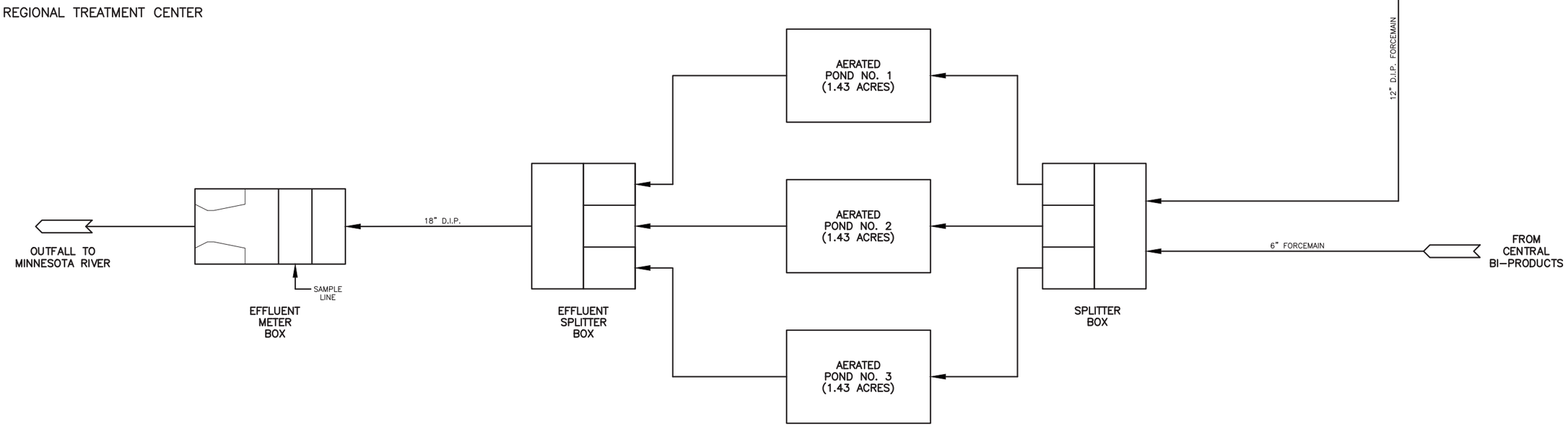
3. Treatment Performance

The City of Redwood Falls' NPDES permit specifies discharge limits for $CBOD_5$, TSS, NH_3-N, total chlorides, total phosphorus, and un-ionized ammonia. Figures 3.2 – 3.7 illustrate the past three years of discharge for each of these pollutants, respectively. Over the past four years, the treatment system has met discharge limits for all pollutants other than total phosphorus.

REDWOOD FALLS TREATMENT CENTER



REGIONAL TREATMENT CENTER



SCALES SHOWN ON DRAWINGS ARE FOR 24"x36" SIZE SHEETS ONLY. DRAWINGS PLOTTED ON ANY OTHER SIZE SHEETS NEED TO HAVE SCALES ADJUSTED ACCORDINGLY

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BOLTON & MENK, INC.
Consulting Engineers & Surveyors
MANKATO, MN FAIRMONT, MN SLEEPY EYE, MN BURNSVILLE, MN WILLMAR, MN
CHASKA, MN RAMSEY, MN MAPLEWOOD, MN BAXTER, MN ROCHESTER, MN
AMES, IA SPENCER, IA DES MOINES, IA FARGO, ND

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REDWOOD FALLS, MINNESOTA
WASTEWATER TREATMENT FACILITY
FLOW SCHEMATIC
WASTEWATER FACILITY PLAN

FIGURE 3.1

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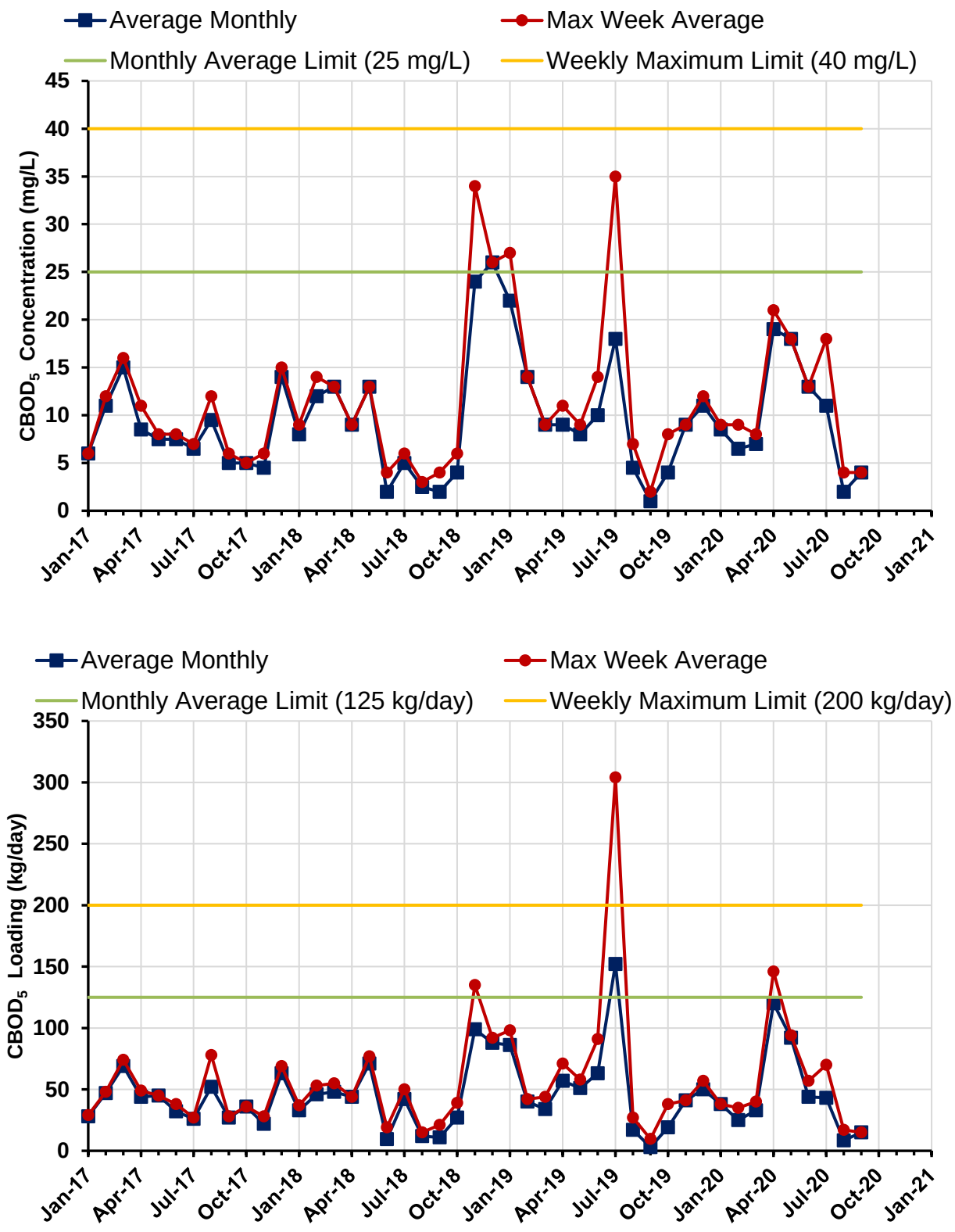


Figure 3.2: Historical CBOD Effluent Discharge

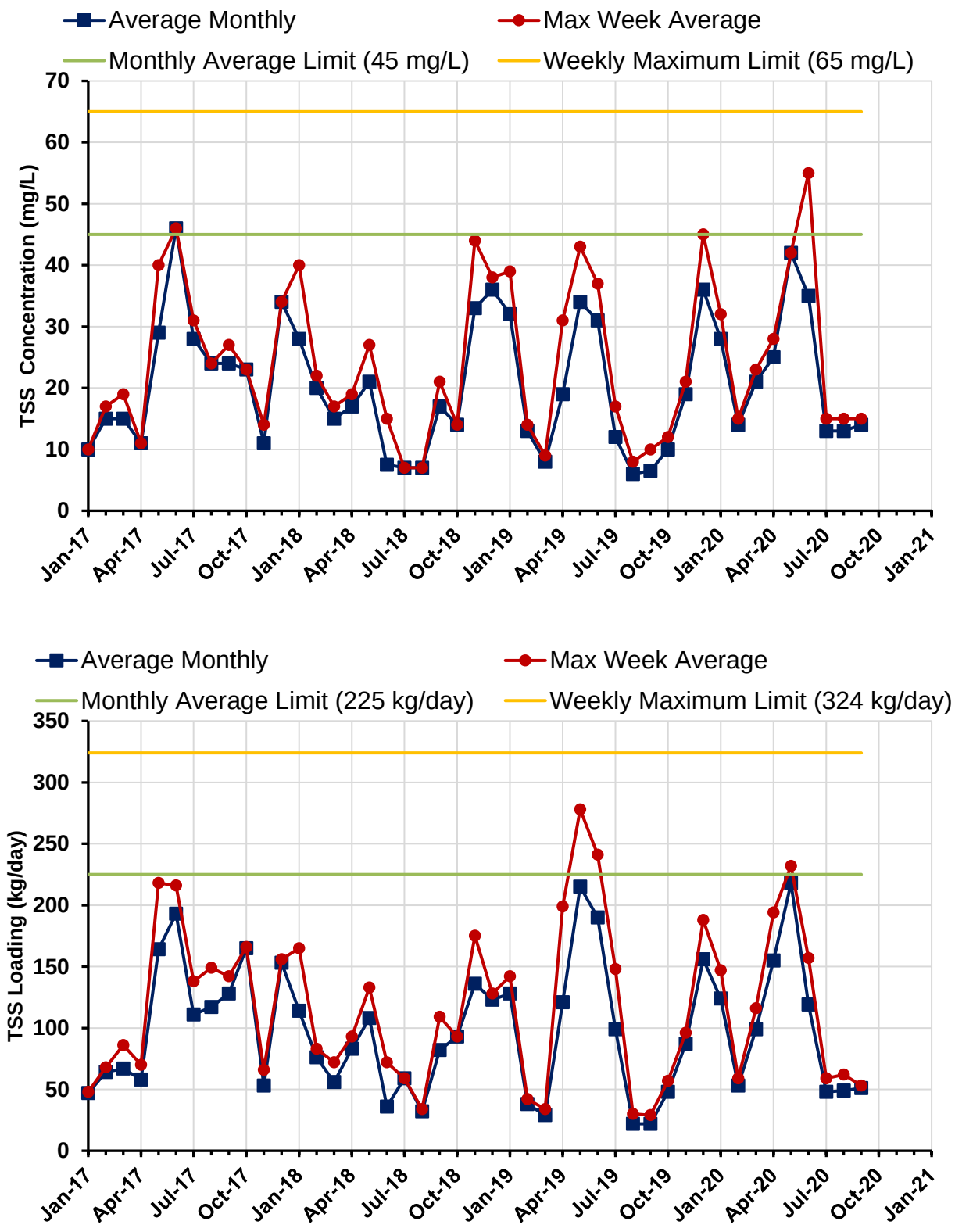


Figure 3.3: Historical TSS Effluent Discharge

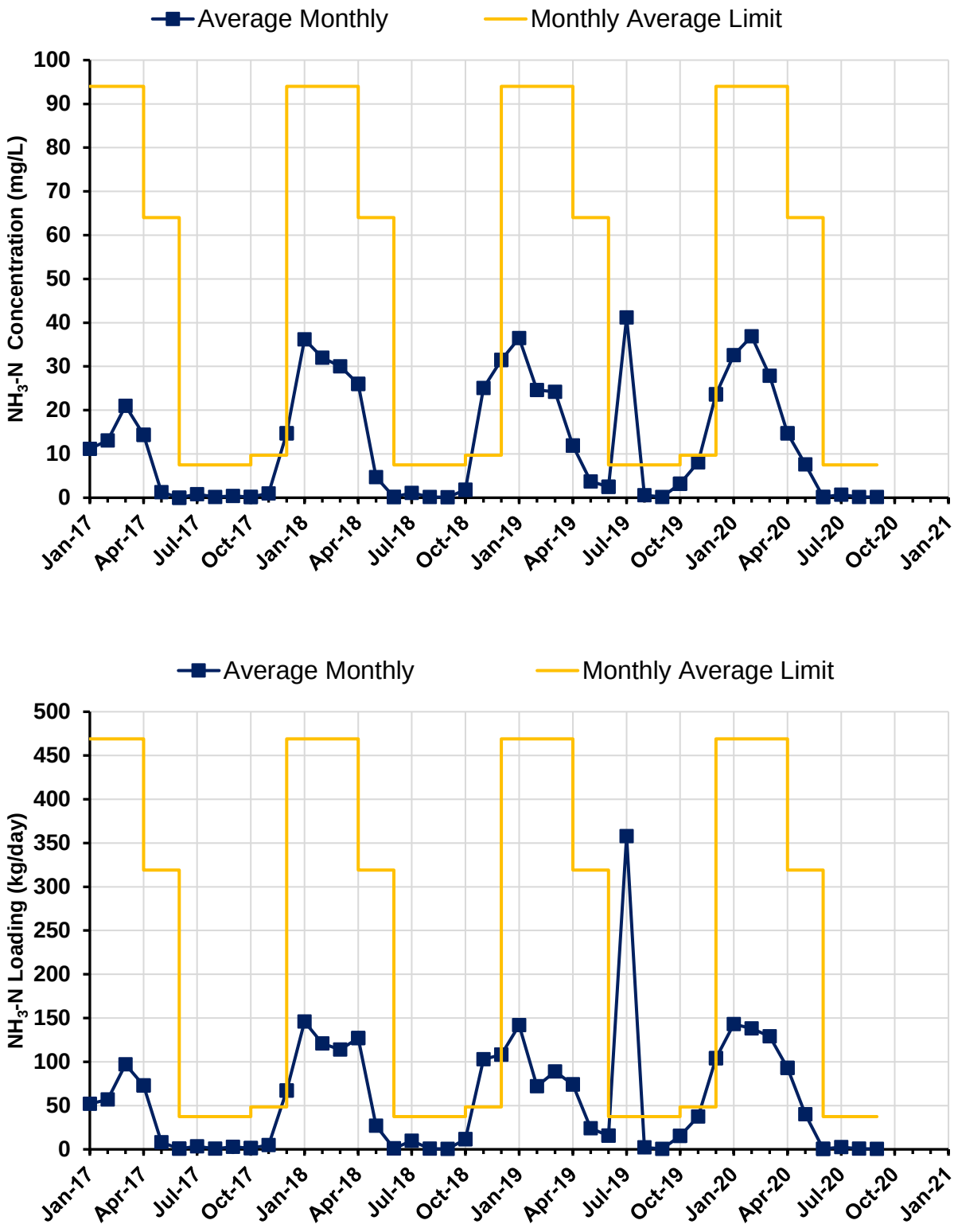


Figure 3.4: Historical NH3-N Effluent Discharge

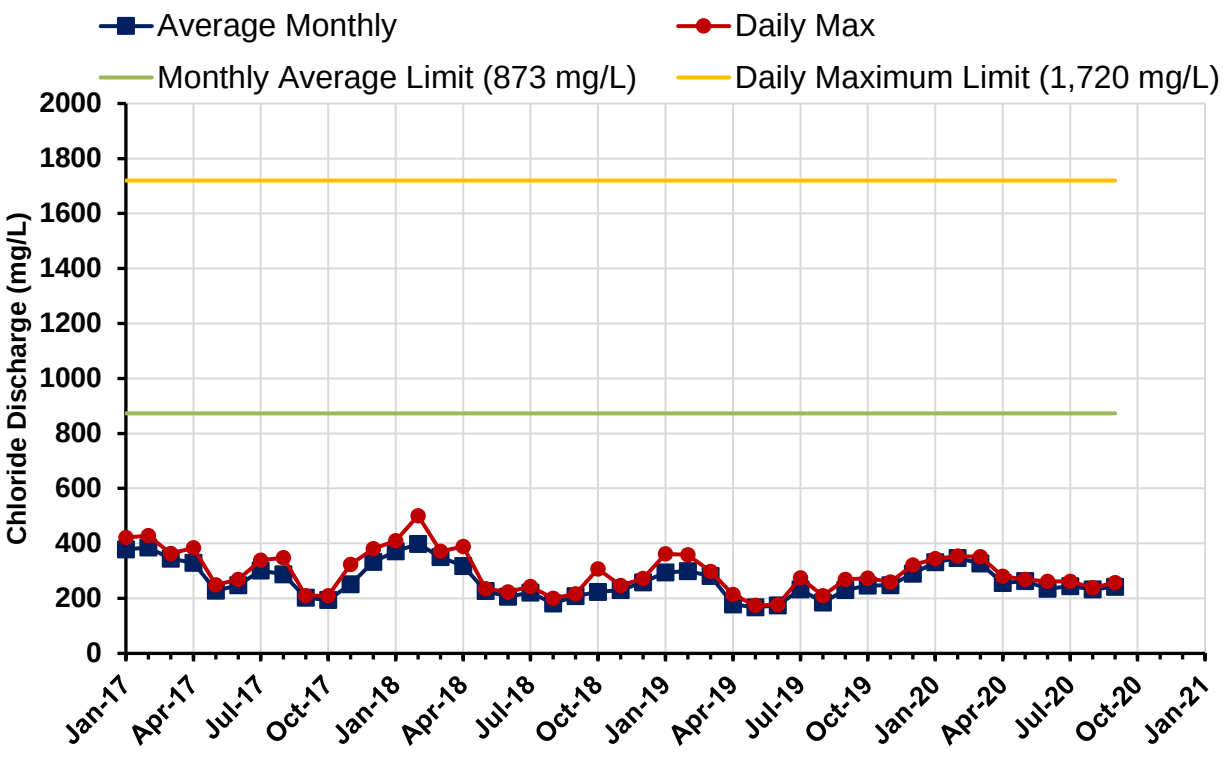


Figure 3.5: Historical Total Chloride Effluent Discharge

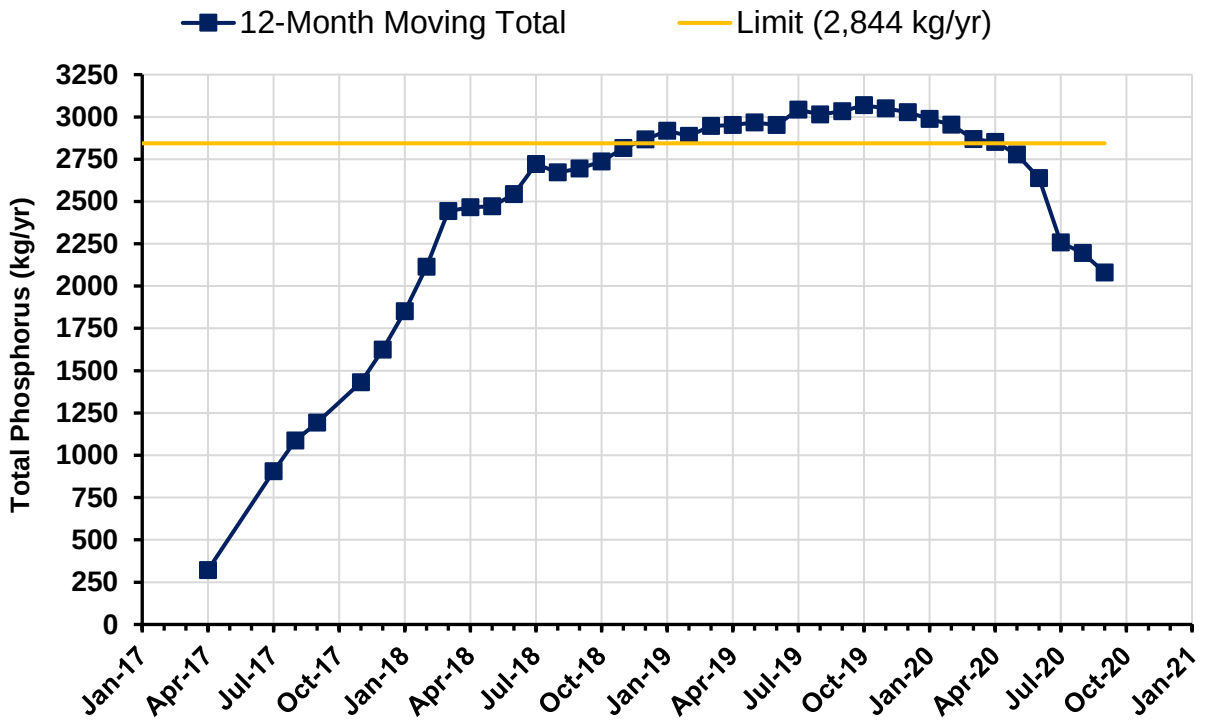


Figure 3.6: Historical Total Phosphorus Effluent Discharge

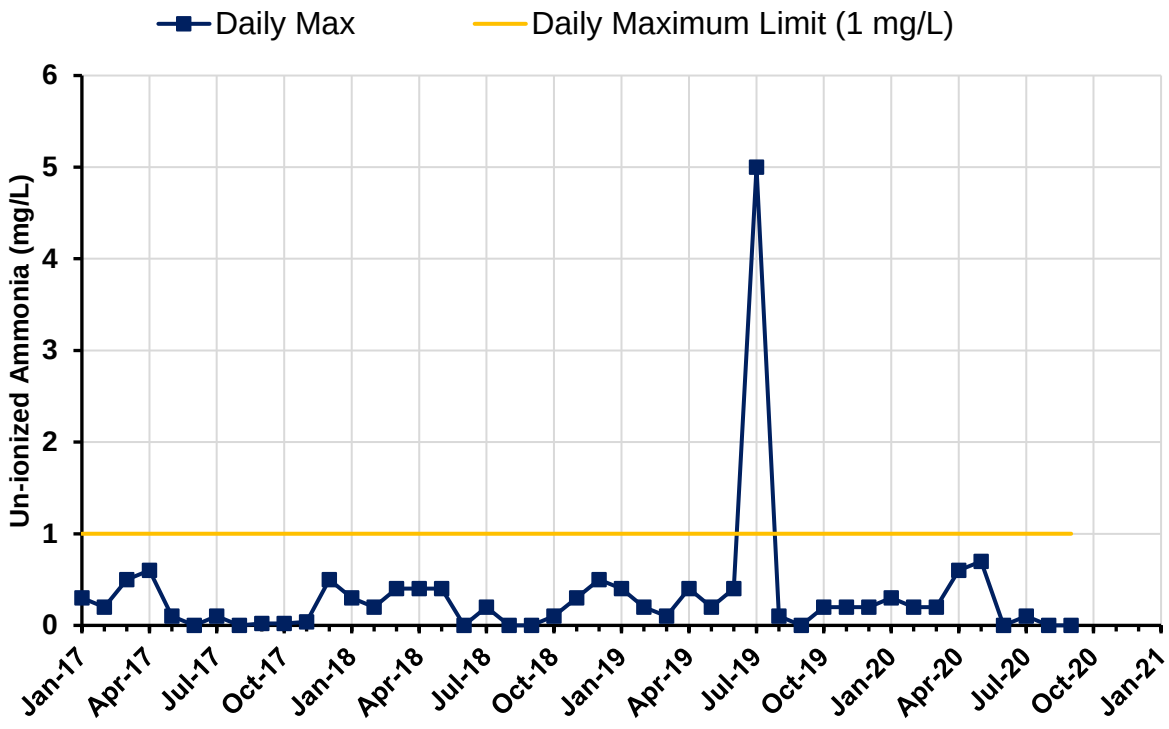


Figure 3.7: Historical Un-Ionized Ammonia Effluent Discharge

C. Facility Condition

1. Redwood Falls Treatment Center

The Redwood Fall Treatment Center last received major infrastructure improvements in 1988 – nearly 32 years ago. The following bullet points highlight potential deficiencies with the system:

- The ponds have not been dredged since the last improvements. Accumulated sludge appears to be blocking some of the aeration header piping. This reduces the pond treatment capacity.
- The blowers are original to 1988 and are at the end of their useful lives.
- The aerators are in poor condition and should be replaced.
- The submerged media fixed film nitrification process has not been used in over 10 years – although treatment performance has not been affected.
- The ponds could use miscellaneous rehab along the dikes, solids removal, and aeration system upgrades.

Overall, the facility is in decent condition and has performed well over the years. A major deficiency of the existing facility is the inability to remove phosphorus to below permit requirements. The facility would also not be able to meet total nitrogen limits if/when imposed in the future. All other issues are attributed to old age and the need for upgrades in the future.

2. Regional Treatment Center

The Regional Treatment Center was constructed in 1996 and has not received major improvements since. The facility is 20 years old and appears to be in decent operating condition. The following bullet points highlight potential deficiencies with the system:

- The ponds have not been dredged since their original construction. Ponds typically require dredging every 15-25 years. Since the Regional facility accepts mostly treated wastewater effluent, solids accumulation is likely not a major issue, but it should be investigated further.
- The mechanical surface aerators are nearly 20 years old. Typical useful life is 20-30 years.

Overall, the facility appears to be in good operating condition and should have another 5-10 years of useful life before improvements are necessary. Like the Redwood Falls facility, a major deficiency of the system is the inability to remove phosphorus to below permit requirements. The facility would also not be able to meet total nitrogen limits if/when imposed in the future. No improvements are planned for this facility in this Facility Plan.

IV. EVALUATION OF ALTERNATIVES

A. General

To achieve compliance for total phosphorus discharge, the City of Redwood Falls entered into an agreement with New Ulm to purchase phosphorus credits. Due to downstream exceedance of RES water quality standards, it is anticipated that downstream sellers of phosphorus credits will become unavailable once the new standards are implemented. The City of Redwood Falls has still exceeded the phosphorus limits even after purchasing credits with New Ulm. Since there are no upstream sellers that would cover the City's credit needs, the City is forced to explore alternatives to remove phosphorus from their treated effluent to meet mass limits for the Lake Pepin TMDL, prior to more facility expansion for the RES standards.

This section provides a detailed discussion of various treatment alternatives for removing phosphorus from the City's wastewater. The purpose of evaluating multiple alternatives is to provide a range of options that consider both the short-term and long-term treatment needs as well as considering current treatment processes in the City.

Previous engineering reports have considered a completely new mechanical activated sludge facility. The City anticipates this may be a future improvement, but is focusing on lower cost improvements at this stage, based on life cycle cost analysis.

B. Alternatives

To provide a broad range of options for the City of Redwood Falls, four (4) alternatives have been developed to achieve compliance for total phosphorus discharge. Table 4.1 provides a summary of each alternative as well as sub-alternatives. Details of each alternative are described throughout the rest of this section. These improvements are specific for the Redwood Falls Treatment Center

Table 4.1: Proposed Alternatives for Wastewater Treatment Facility Improvements

Alternative	Description
Alternative No. 1	Construct Circular Clarifiers
Alternative No. 2	Construct Rectangular Clarifiers
Alternative No. 3	Construct Tertiary Gravity Filters
Alternative No. 4	Construct Tertiary Disk/Cloth Filters - New Infrastructure
4a.	Construct Tertiary Disk/Cloth Filters - Re-Use Existing Infrastructure

1. Alternative No. 1 – Circular Clarifiers

Circular tertiary clarifiers are used at many wastewater treatment facilities and can be successfully integrated with existing infrastructure to accomplish various treatment objectives, such as phosphorus removal. The main principal of operation for a clarifier is that a particle enters and has a settling velocity greater than the uplift velocity of the water thus allowing the particle to settle to the bottom of the clarifier where a mechanical arm with a suction header removes the excess settled sludge. The sludge, that contains phosphorus, can then be pumped to a storage tank for disposal.

The preliminary design for circular clarifiers utilizes design parameters identified in previous sections and the values noted in the Table below. Final design would be done during the design phase on the recommended project. The values noted for each

alternative are preliminary. The proposed clarifier is designed and sized to treat AWW flows. Clarifiers can be sized to handle future growth and can be incorporated into a future mechanical facility, increasing the value of the investment now into tertiary clarifiers. However, a final location of a future mechanical facility is unknown so the proposed infrastructure may not be connected to a future mechanical facility. Without knowing if a mechanical facility will be constructed within the next 5 – 10 years on the same site, adding a clarifier sized to handle the AWW flow and loading is one alternative for phosphorus removal. Additional infrastructure required with the clarifier is discussed below.

Table 4.2: Preliminary Design of Circular Clarifiers

Item	Preliminary Design Parameter
No. of Clarifiers Required to Treat AWW Flow	1
Design AWW Flow (1)	1.321 MGD
Surface Overflow Rate (SOR)(2)	Must not exceed 900 gpm/ft^2
Solids Loading Rate (SLR)(2)	Must not exceed 35 lb/day/ft^2
Diameter of Clarifier	55 feet
Sidewater Depth	12 ft
Volume of clarifier (approximate)	227,000 gallons
Hydraulic Retention Time @ AWW	4.12 hours

(1) Facility Design Flow
(2) Denotes values from Ten States Standards

Wastewater will flow by gravity from the existing aerated secondary ponds through a new rapid mixer system where chemical addition with metal salts for phosphorus treatment will be added. The water would then flow to the clarifier via gravity through a new control structure designed to split the flow evenly to the clarifiers (control structure is designed for one additional future clarifier). The scum on the water surface of the clarifier is removed by the clarifier equipment and flows by gravity to a new manhole before it is pumped to the sludge storage tank for disposal. The effluent water from the clarifier will flow to a new lift station where it is pumped to the Redwood Falls Facility discharge point.

To house the chemical feed equipment, new electrical equipment, and sludge transfer pumps (only need to have pumps to pump the sludge produced in the clarifier to the proposed aerated sludge storage tank), a new control building will be constructed next to the clarifier. The controls building would be sized to house the chemical feed equipment and new electrical equipment (control panels, VFD's etc.). The sludge transfer pumps convey accumulated solids from the clarifiers to a new aerated sludge storage tank designed to hold 250,000 – 300,000 gallons of sludge. Final size of the tank would be determined during design.

Clarifiers following chemical addition with metal salts is an effective way to remove phosphorus from the wastewater. Instead of in-pond settling, the solids that are generated settle inside a clarifier and are continuously removed and stored. This has advantages in terms of avoiding solids accumulations in the ponds and the associated need for frequent pond dredging. This option has some operational control of phosphorus removal. However, clarifiers may not meet discharge limits of total nitrogen if this limit is enforced in the future.

One limiting factor with clarifiers is the potential for slow settling during cold water conditions. The common reagents used for phosphorus treatment (alum and ferric

chloride) both tend to have inhibited settling characteristics in cold water. Jar testing with alum and other aluminum-based reagents have resulted in light floc and poor settling characteristics. This would be a seasonal issue and may be address with the fact that the current limit is an annual mass, allowing more aggressive treatment in warmer times to offset the colder less efficient conditions.

This alternative also includes replacing the existing aeration system in the ponds with a new system. The capital cost for this is included at the end of this report.

a) Summary of Improvements – Circular Clarifiers

A summary of the improvements is listed below.

- New circular concrete clarifier with sludge and scum removal mechanisms
- New control building with:
  - Chemical feed equipment
  - Electrical Gear (VFD's etc.)
  - Sludge Transfer Pumps
- New Aerated Sludge Storage Tank with associated blowers and aeration system
- Replace existing aeration system including:
  - Blowers
  - Air piping and diffusers
  - Electrical equipment and variable frequency drives (VFD's)
- Miscellaneous:
  - Site piping work including new lift station to convey water across the site
  - Rapid mix structure for chemical feed prior to the clarifier
  - Electrical work

b) Site Concept

Figure 4.1 shows the conceptual site concept for the proposed improvements for this alternative. The rapid mix manhole, clarifier, and operations building are shown on the south side of the primary pond near the entrance to the facility. This area was chosen for the preliminary site layout due to the relatively flat grade. Other areas around the site have significant grade changes that make adding infrastructure more challenging and can become costly. To avoid high sitework costs and due to availability of adequate land at this location to build the improvements the south side of the primary pond is the preferred location.

The disadvantage of this site plan is the location of the current discharge is in the northwest corner of the secondary aerated ponds. The water from those ponds will need to be piped to the proposed clarifier, then pumped back to the current discharge point so the water can be pumped to the Regional Treatment Facility. This alternative adds a lift station to pump the water to the discharge lift station.

The proposed aerated sludge storage tank is shown near the entrance of the facility. The purpose of this is to allow access for sludge loadout.

2. Alternative 2 – Tertiary Rectangular Clarifiers

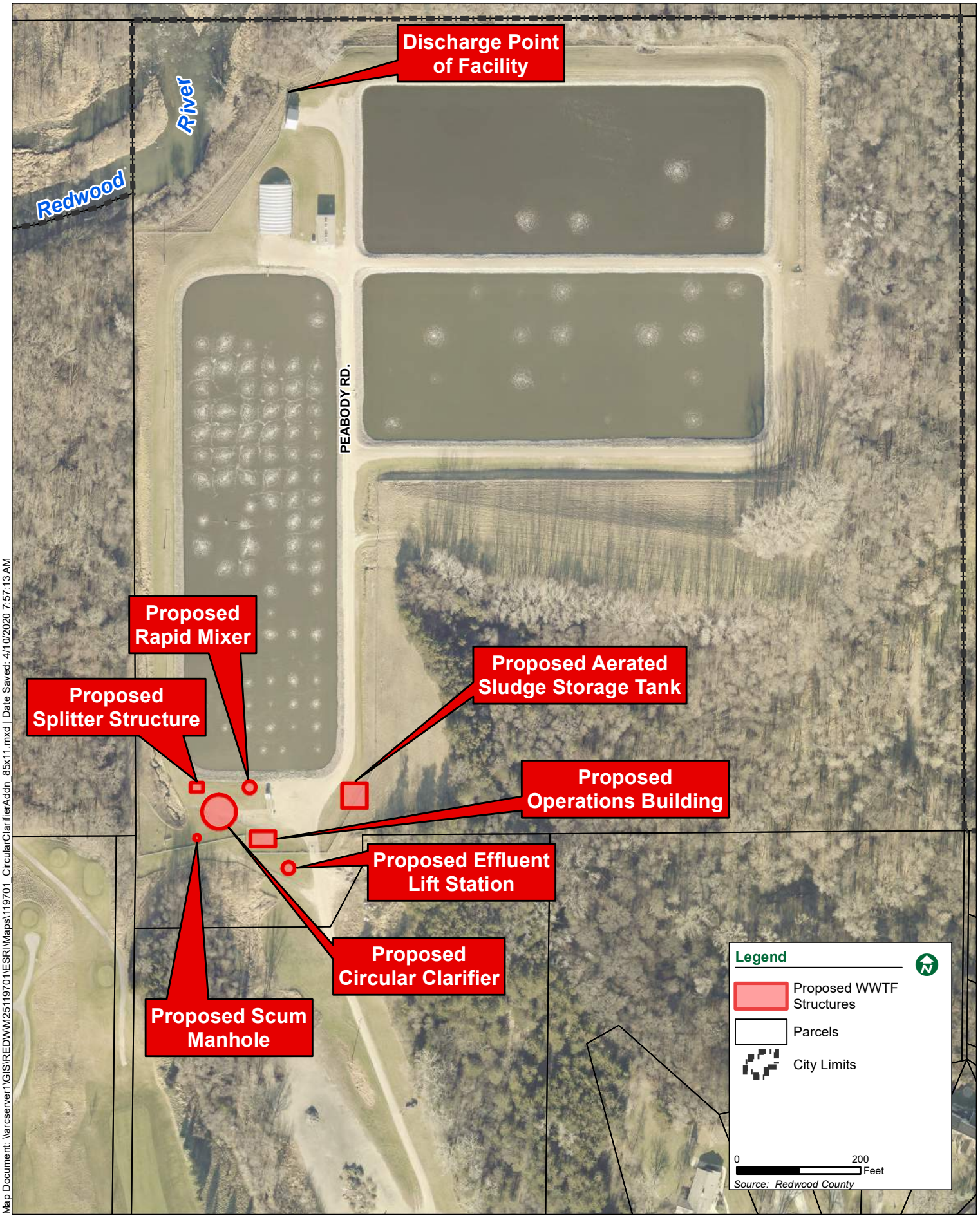
The second design for tertiary clarifiers is rectangular clarifiers. The principal behind the operation is the same as circular clarifiers, to settle out particles in the water so they can be removed. The design of rectangular clarifiers also includes design parameters set forth in this Facility Plan and are sized for the AWW flows. Like circular clarifiers, these can be sized to handle future flows and can be incorporation into a future mechanical facility. However, a final location of a future mechanical facility is unknown so the proposed infrastructure may not be connected to a future mechanical facility. Without knowing if a mechanical facility will be constructed within the next five to ten years, adding four rectangular cells to handle the AWW flow will reduce total phosphorus loading. Additional infrastructure required is discussed below.

Table 4.3: Preliminary Design of Rectangular Clarifiers

Item	Preliminary Design Parameter
No. of clarifiers required to treat AWW flow	4
Design AWW Flow (1)	1.321 MGD
Surface Overflow Rate (SOR)(2)	Must not exceed 900 gpm/ft^2 @ AWW flow
Solids Loading Rate (SLR)(2)	Must not exceed 35 lb/day/ft^2 @ AWW flow
Weir Loading Rate (WLR) (2)	Must not exceed 20,000 gpd/ft @ AWW flow
Length of Each Clarifier	35 ft
Width of Each Clarifier	12 ft
Side Water Depth of Each Clarifier	10 ft
Weir Length per Clarifier	240 ft
Volume of each clarifier	31,416 gallons
Hydraulic Retention Time @ AWW	0.57 hours/clarifier

(1) Facility Design Flow
(2) Denotes values from Ten States Standards

When compared to the circular tertiary clarifiers, two (2) additional basins are required with a rectangular design to provide the volume and surface area to meet the design standards for a design based around treating the AWW flow. It shall be noted that these numbers are preliminary, and the exact dimension would be determined during design. The overall footprint is 29% smaller than a single circular clarifier (total square footage required for circular clarifier is 2,375 ft^2 and total square footage for the above rectangular clarifier design is 1,680 ft^2). With rectangular clarifiers, the length and width can be adjusted to meet the required design parameters. However, for this preliminary design, the intent was to maintain a length to width ratio of approximately 3:1 (L:W). Therefore, clarifiers with a 35-foot length and 12-foot width were considered for the primary size of clarifier. The actual size would be determined during design with a site survey to finalize land requirements and what will be feasible. It may be possible to have a slightly deeper clarifier with a larger length to width ratio, creating a smaller footprint. This would be explored during the design phase to evaluate the feasibility.



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The process flow for rectangular clarifiers and infrastructure required is similar to the circular clarifiers. Water flows by gravity from the aerated secondary ponds through a rapid mixer system where metal salts are added to facilitate precipitation of phosphorus and into a control structure to split the flow evenly to the four clarifier cells. The scum on the water surface of the clarifier is removed by the clarifier equipment and flows by gravity to a new manhole before it is pumped to the sludge storage tank for disposal. To house the chemical feed equipment and sludge transfer pumps (only need to have pumps to pump the sludge produced in the clarifier to the proposed aerated sludge storage tank), a new control building will be constructed next to the clarifiers. The controls building would be sized to house the chemical feed equipment and new electrical equipment (control panels, VFD's etc.). The sludge transfer pumps convey accumulated solids from the clarifiers to a new aerated sludge storage tank designed to hold 250,000 – 300,000 gallons of sludge. Final size of the tank would be determined during design.

One primary advantage of rectangular clarifiers over circular clarifiers is that rectangular clarifiers can be used in areas with space limitations and can be designed with common walls between cells to allow the basins to fit in certain areas.

This alternative also includes replacing the existing aeration system in the ponds with a new system. The capital cost for this is included in Table 5 at the end of this report.

a) Summary of Improvements – Rectangular Clarifiers

A summary of the improvements is listed below.

- New rectangular concrete clarifier with sludge and scum removal mechanisms
- New control building with:
  - Chemical feed equipment
  - Electrical Gear (VFD's etc.)
  - Sludge Transfer Pumps
- New Aerated Sludge Storage Tank with associated blowers and aeration system
- Replace existing aeration system including:
  - Blowers
  - Air piping and diffusers
  - Electrical equipment and variable frequency drives (VFD's)
- Miscellaneous:
  - Site piping work including new lift station to convey water across the site
  - Rapid mix structure for chemical feed prior to the clarifier
  - Electrical work

b) Site Concept

Figure 4.2 shows the conceptual site concept for the proposed improvements for this alternative. The rapid mix manhole, clarifiers, and operations building are shown on the south side of the primary pond near the entrance to the facility. This area was chosen for the preliminary site layout due to the relatively flat grade. Other areas around the site have significant grade changes that make adding infrastructure more

challenging and can become costly. Therefore, to avoid high sitework costs and due to availability of adequate land at this location to build the improvements the south side of the primary pond is the preferred location.

The disadvantage of this site plan is the location of the current discharge is in the northwest corner of the secondary aerated ponds. The water from those ponds will need to be piped to the proposed clarifiers, then pumped back to the current discharge point so the water can be pumped to the Regional Treatment Facility. This alternative adds a lift station to pump the water to the discharge lift station.

The proposed aerated sludge storage tank is shown near the entrance of the facility. The purpose of this is to allow access for sludge loadout.

City of Redwood Falls

Wastewater Treatment Evaluation Figure 4.2– Rectangular Clarifier Addition

City of Redwood Falls

April 2020

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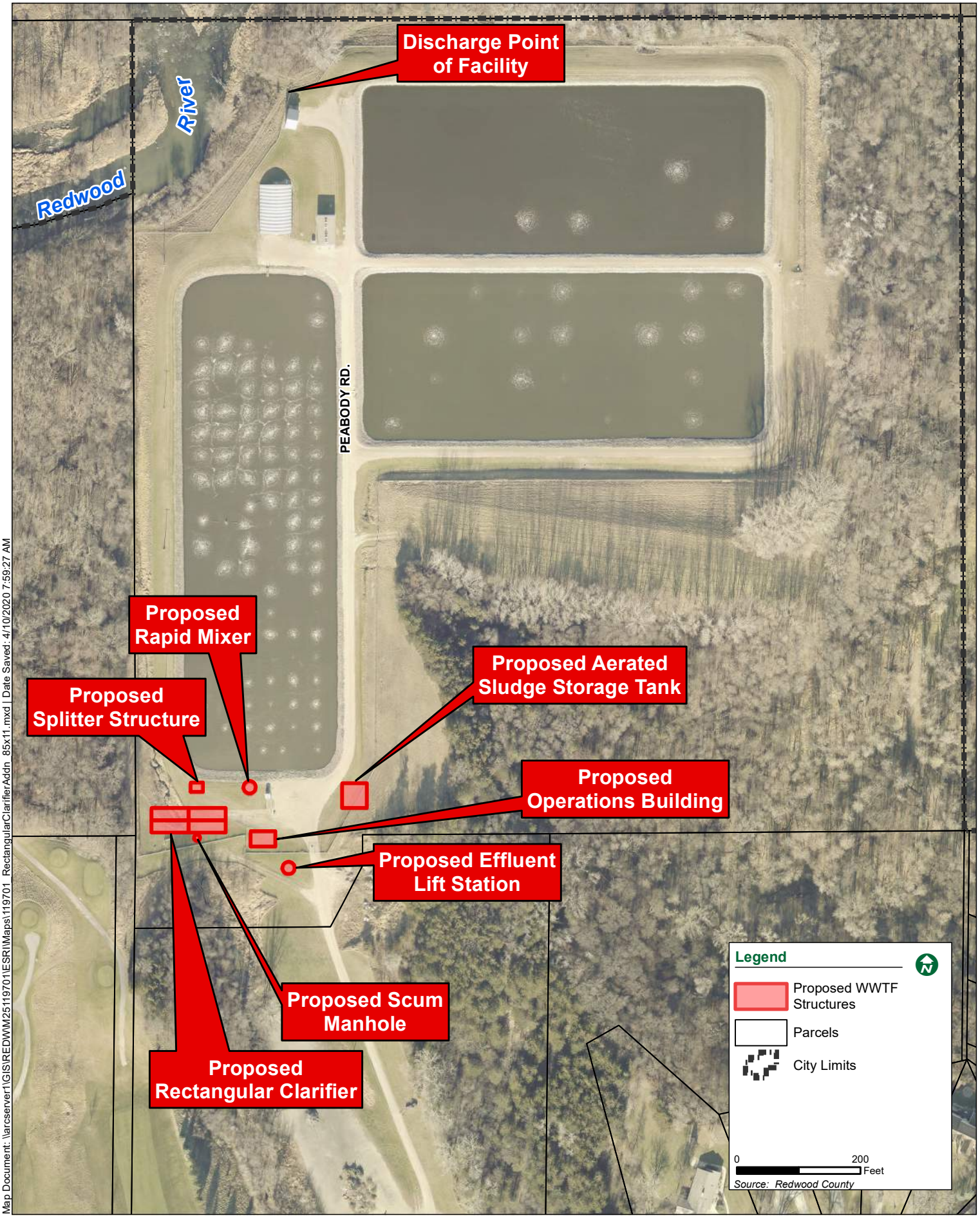

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3. Alternative No. 3 – Tertiary Gravity Filtration

Tertiary filtration can be an effective tool for removing phosphorus from the wastewater to meet total phosphorus limits. The filters are constructed after the pond system. This process involves dosing metal salts to increase the phosphorus floc size and filtering the floc from the wastewater. The filters would require backwashing to remove accumulated solids on the filter media. Filter backwash would be recycled to the pond for solids settling and periodic pond dredging. It is recommended that some in-pond phosphorus removal occur to reduce fouling of the filters and the frequency at which backwashing is required.

Tertiary gravity filters are sized to meet design flows. Design considerations for gravity filters recommend a filtration rate not to exceed 5 gpm/ft^2, with a minimum of two units for redundancy, with each unit capable of treating the facility average wet weather (AWW) design flow of 1.321 MGD. To allow for future growth, the filters are designed for a filtration rate of 2.5 gpm/ft^2 with one cell out of service. This equates to a total of 400 square feet or 4 filter cells at approximately 10 ft by 10 ft. These filters may be constructed as steel tanks or as concrete basins.

Table 4.4: Preliminary Design of Tertiary Sand Filters

Item	Preliminary Design Parameter
Type of Filter	Steel or Concrete (to be determined during design)
No. of Filter Cells required to treat AWW flow	4
Design AWW Flow (1)	1.321 MGD
Maximum Filtration Rate	Must not exceed 5 gpm/ft^2 @ AWW flows
Design Filtration Rate	2.5 gpm/ft^2 @ AWW flows
Total Square Feet (ft^2)	400 ft^2
Dimensions of Each Filter Cell	10-ft x 10-ft

(1) Denotes values from the Facility Plan
(2) Denotes values from Ten States Standards

Prior to the filters, the wastewater will flow from the aerated secondary pond through a rapid mixer system where chemical addition for phosphorus treatment will be added. The water will flow into a filter influent wet well where it will be pumped to bring the wastewater to the top of the filters.

Following filtration, the wastewater will flow to a filter effluent wet well prior to flowing by gravity to the effluent lift station to be pumped to the regional treatment facility. The filter influent wet well, and filter effluent wet well are in the same tank separated by interior walls. This allows only one tank to be constructed versus two separate tanks. The effluent water from the filter in the wet well is used to backwash the filters using submersible pumps. The volume of the proposed filter effluent wet well is approximately 150,000 gallons.

During a backwash, the backwash wastewater will either flow by gravity (if hydraulically acceptable) or proposed sludge pumps in a backwash wastewater collection tank will pump the backwashed wastewater to the head of the pond system. This sludge contains the filtered solids and phosphorus, requiring more frequent pond dredging.

Chemical addition of alum or ferric chloride will be utilized for phosphorus removal. A pilot study will be conducted to determine which chemical provides the most cost-effective treatment of phosphorus removal. Chemical addition will occur at the splitter box prior to the primary ponds to facilitate some in-pond phosphorus removal, thereby reducing the fouling rate of the filters; or prior to the secondary pond; or in the rapid mix system prior to the tertiary filters. Chemical feed systems will need to be installed at the splitter box and at the head of the secondary pond. A chemical room will be built in the filter building for the chemical feed system supplying the rapid mixer.

Tertiary gravity filters have more operational control of phosphorus removal than clarifiers. More infrastructure is required for tertiary filtration and the initial capital cost is significantly higher, and operations costs are higher, but gravity filters provide a long-term solution for low-level phosphorus removal. One disadvantage to filters is that they are subject to fouling if high solids enter the filter. This can create operational issues during high flows and the filters may need to be bypassed to keep water flowing through the facility. Bypassing the filters allow for potentially high phosphorus concentrations to leave the facility discharge.

Ultimately the preferred location of a new facility may be better suited closer to Central Bi-Products if they would be sending wastewater for full treatment. This is common with most industrial treatment, even after pretreatment, so the current site may be of limited future use. Tertiary filtration requires more capital investment and infrastructure over clarifiers (especially if the clarifiers are designed to treat AWW flows instead of PHWW flows) and may not be advantageous if the current site is of limited use for a future mechanical facility. Filters are a long-term solution and a filtration system for this facility would be best designed to handle future flows. Investing in filters and the required infrastructure on a site that may not have future expansion may not be advantageous.

This alternative also includes replacing the existing aeration system in the ponds with a new system. The capital cost for this is included in Table 5 at the end of this report.

a) Summary of Improvements – Tertiary Gravity Sand Filtration

A summary of the improvements is listed below.

- New concrete or steel filters
- New filter building with:
  - Chemical feed equipment and storage
  - Electrical Gear and Equipment (VFD's etc.)
- New backwash supply/filter effluent tank with backwash pumps and filter influent pumps
- Replace existing aeration system including:
  - Blowers
  - Air piping and diffusers
  - Electrical equipment and variable frequency drives (VFD's)
- Miscellaneous:
  - Site piping work including new lift station to convey water across the site
  - Rapid mix structure for chemical feed
  - Electrical work

b) Site Concept

Figure 4.3 shows the conceptual site concept for the proposed improvements for this alternative. With this alternative, a new building must be constructed to house the filters and new chemical feed rooms and equipment. Larger tanks are required due to the flow demand and storage capacity required for tertiary filtration. The area for the improvements is on the south side of the primary pond. This area was chosen for the preliminary site layout due to the relatively flat grade. Other areas around the site have significant grade changes that make adding infrastructure more challenging and can become costly.

To avoid high sitework costs and due to availability of adequate land at this location, building the improvements the south side of the primary pond is the preferred location. The backwash storage tank is located near the head of the facility allowing the sludge and discharge water to be pumped back into the ponds for solids removal and treatment of the backwash waste.

The disadvantage of this site plan is the location of the current discharge is in the northwest corner of the secondary aerated ponds. The water from those ponds will need to be piped to the proposed filter building, then pumped back to the current discharge point so the water can be pumped to the Regional Treatment Facility. This alternative adds a lift station to pump the water to the discharge lift station.

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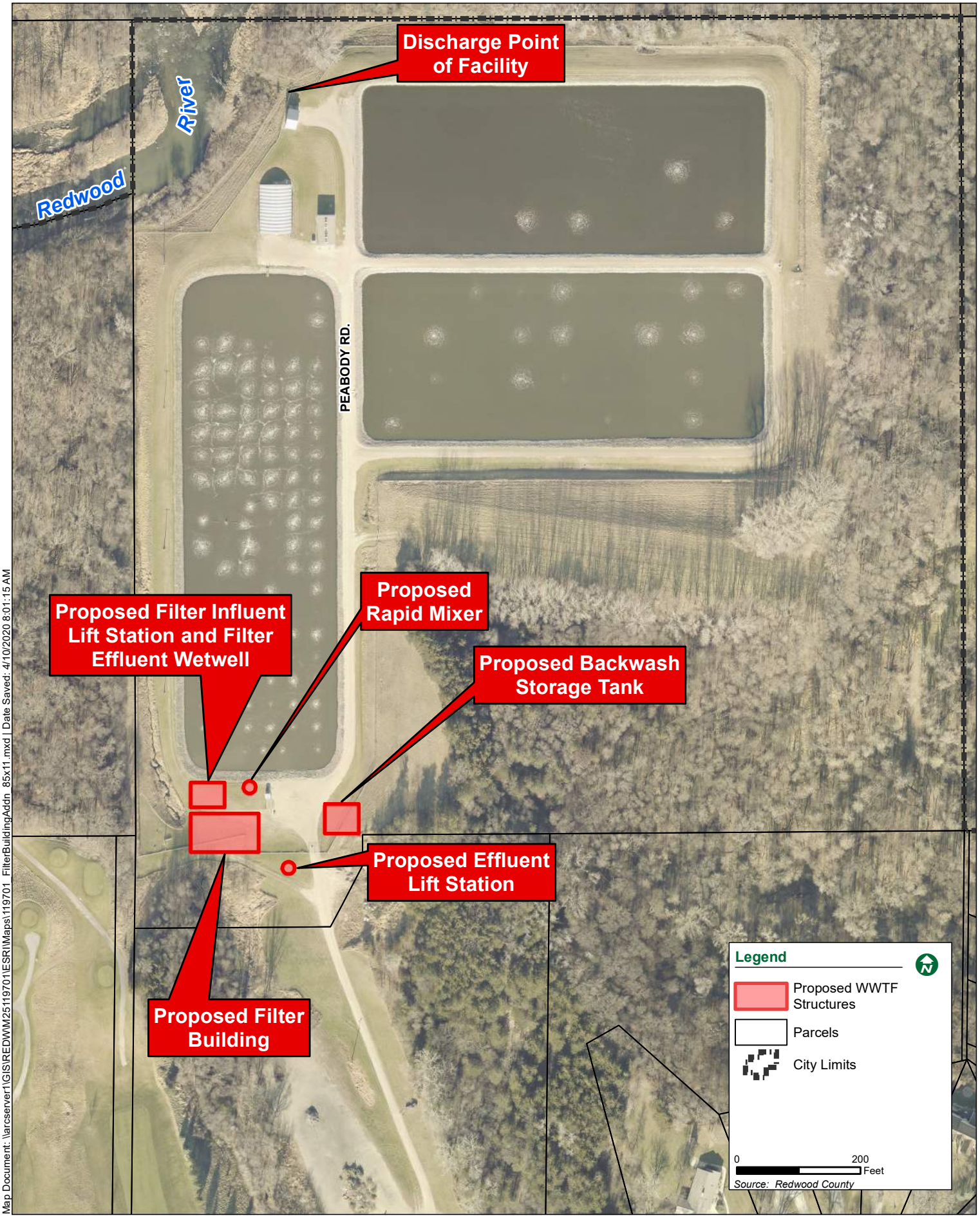

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4. Alternative No. 4 – Tertiary Disk/Cloth Filtration

The second option for tertiary filtration is disk or cloth style filters. This style of filter helps to remove solids from the wastewater. The disk style of filters can sometimes be installed into existing tanks if the geometry allows. Disk filters have been sized according to the MPCA's reliability criterion which states that at least two units shall be provided and with one unit out of service the maximum hydraulic loading rate does not exceed 5.9 gpm/ft^2 at an AWW design flow of 1.321 MGD. A preliminary design of disk filters includes 2 sets of disk filters with a filter area per unit of 160 ft^2.

Table 4.5: Preliminary Design of Disk/Cloth Filters

Item	Preliminary Design Parameter
Type of Filter	Disk/Cloth
No. of Units to treat AWW flow	2
Design AWW Flow (1)	1.321 MGD
Maximum Hydraulic Loading Rate	Must not exceed 5.9 gpm/ft^2 @ AWW flow
Design Filtration Rate	5.9 gpm/ft^2
Total Square Feet Required(ft^2)	160 ft^2
Total Sets of Disks	2

(1) Denotes values from the Facility Plan
(2) Denotes values from Ten States Standards

Prior to the filters, the wastewater will flow from the aerated secondary pond through a rapid mix system where chemical addition using metal salts for phosphorus treatment will be added. The water will then flow through the disk filters, filtering out the phosphorus from the wastewater. After filtration, the water will be diverted to a wet well where dual purpose pumps can then pump the water to the effluent lift station or use the filtered water as backwash water to clean the disk filters. The solids that are backwashed out of the filters will be pumped back to the head of the primary ponds. This sludge contains the filtered solids and phosphorus, requiring more frequent pond dredging. The effluent water will be pumped via a lift station to the discharge of the facility.

Disk filters can be advantageous because they can be incorporated into existing tanks if the tank geometry allows. They provide good operational flexibility and allow for low-level phosphorus removal. However, the filters can become plugged quickly if the water has high solids concentrations. Effective treatment upstream to remove solids and settle them out in the ponds will help improve the efficiency of the disk filters. Algae or other solids can quickly become problematic when suspended in the wastewater causing filters to become plugged more frequently. Bypass piping around the filters will need to be added to convey water in the event the filters are offline or severely plugged. This can lead to increased phosphorus concentrations leaving the facility increasing the mass load out of the facility. The same chemical feed schematic as discussed for tertiary sand filters will be utilized in this scenario.

Tertiary disk filters are designed to treat the AWW flow. The design filtration rate utilized in this scenario is the maximum allowed under MPCA reliability criteria and utilizes redundancy in the operation. By treating only AWW flow, this leaves some flexibility in the operation but limits ability for future growth. If higher flows are treated, additional filters are required. If there is no redundancy in the filtration system, then more water will need to be bypassed in the event the filters are plugged or when the system is experiencing higher flows. This would limit the total capacity of the filters for future growth and treatment efficiency at higher flows, but the Lake Pepin

TMDL is an annual mass so brief exceedances during high flows or maintenance during down time can be averaged out through the year. However, reducing the filter size slightly does not have a significant impact on the cost on smaller filtration systems. To maximize the potential for low-level phosphorus removal it will be advantageous to construct the filters sized for some future growth.

Ultimately the preferred location of a new facility may be better suited closer to Central Bi-Products if they would be sending wastewater for full treatment. This is common with most industrial treatment, even after pretreatment, so the current site may be of limited future use, especially if the existing tank cannot be used to house the filtration equipment. Tertiary filtration requires more capital investment and infrastructure over clarifiers (especially if the clarifiers are designed to treat AWW flows instead of PHWW flows) and may not be advantageous if the current site is of limited use for a future mechanical facility. Filters are a long-term solution and a filtration system for this facility would be best designed to handle future flows. Investing in filters and the required infrastructure on a site that may not have future expansion may not be advantageous.

This alternative also includes replacing the existing aeration system in the ponds with a new system. The capital cost for this is included in Table 5 at the end of this report.

a) Summary of Improvements – Tertiary Disk/Cloth Filtration

A summary of the improvements is listed below.

- New disk filters
- New filter structure for disk filters or re-use existing tank
- New operations building to include:
  - Chemical feed equipment and storage
  - Electrical Gear and Equipment (VFD's etc.)
- New backwash supply/filter effluent tank
- Replace existing aeration system including:
  - Blowers
  - Air piping and diffusers
  - Electrical equipment and variable frequency drives (VFD's)
- Miscellaneous:
  - Site piping work including new lift station to convey water across the site
  - Rapid mix structure for chemical feed prior
  - Electrical work

b) Site Concept - Figure 4.4

For this alternative, two different site concepts were evaluated. The first site concept 4a, shows a new filter structure built on the south side of the facility. This concept assumes that the existing structure that currently sits on the north end of the primary pond, is not feasible for addition of disk filters. Figure 4.5 assumes that the existing structure is suitable for disk filters, based on size and geometry. Both site concepts will need to be evaluated more during the design phase to see which concept is feasible. This will take site visits and getting equipment information from suppliers that includes size, connections, and other vital

information to determine if the existing structure will be able to incorporate disk filters or if a new structure will need to be constructed. The purpose of this report is to provide alternatives for further discussion.

Figure 4.4 shows the conceptual site concept for the proposed improvements for adding disk filters in a new structure. With this alternative, all new structures are located south of the primary pond. This area was chosen for the preliminary site layout due to the relatively flat grade. Other areas around the site have significant grade changes that make adding infrastructure more challenging and can become costly. Especially with construction of buildings. Therefore, to avoid high sitework costs and due to availability of adequate land at this location to build the improvements the south side of the primary pond is the preferred location.

The disadvantage of this site plan is the location of the current discharge is in the northwest corner of the secondary aerated ponds. The water from those ponds will need to be piped to the proposed filter building, then pumped back to the current discharge point so the water can be pumped to the Regional Treatment Facility. This alternative adds a lift station to pump the water to the discharge lift station. The size of the disk filter equipment may warrant additional space on the south end of the primary pond, which may lead to additional land being required for infrastructure.

c) Site Concept - Figure 4.5

Figure 4.5 shows the conceptual site concept for the proposed improvements for adding disk filters in the existing structure on the north side of the primary pond. With this alternative, the existing structure would be re-purposed for the addition of disk filters. The effluent wet well is located near the discharge of the facility to allow gravity flow between the processes. Hydraulically this location works for the treatment process. This limits the need to pump the treated water across the site. The only lift station proposed is to pump the backwash water and solids to the head of the facility for treatment.

This area was chosen for the preliminary site layout due to the relatively flat grade. Other areas around the site have significant grade changes that make adding infrastructure more challenging and can become costly. Especially with construction of buildings. Therefore, to avoid high sitework costs and due to availability of adequate land at this location to build the improvements the south side of the primary pond is the preferred location.

The disadvantage of this site plan is that the existing structure may not work for re-purposing for disk filter installation. The existing geometry and size of the structure will need to be extensively evaluated to determine if the design will meet the design standards. If the tank is not sized properly, additional infrastructure may need to be added making the site layout complicated. Overall, this alternative is the least feasible because disk filter equipment varies for each manufacturer. It would take site visits, surveys, and obtaining drawings of the equipment to determine if the existing structure can be re-purposed.

C. Summary of Clarifiers and Filters

Tertiary clarifiers, either circular or rectangular, can both be designed to meet future demands, and can both be incorporated into a future mechanical facility with options for additional infrastructure. They provide excellent operational flexibility and phosphorus control and provide a long-term solution for phosphorus management. One limitation of tertiary clarifiers after aerated ponds is winter performance issues. In addition to the cold-water conditions discussed above, when the wastewater sits in ponds with ambient temperatures less than 32°F, the water approaches the freezing point. Once the water enters a clarifier, the water can flash freeze creating ice accumulation in the clarifier and on the weirs. This can significantly reduce the performance of the clarifier if the ice accumulation continues to increase. Pilot testing with different coagulants could be an option if clarifiers are chosen as the preferred alternative to determine the flash freezing potential in the winter and clarifier performance during cold weather months.

Filters also provide a solution to remove phosphorus to low levels. The capital cost for construction is higher due to the extra infrastructure required for the filter building. Filters provide more operation control for phosphorus removal but can become plugged with excessive loading of solids. Filters provide a long-term solution for phosphorus management and unlike clarifiers, they do not experience winter performance issues. Chemical addition can be added to aid in filter performance.

Ultimately the preferred location of a new facility may be better suited closer to Central Bi-Products if they would be sending wastewater for full treatment. This is common with most industrial treatment, even after pretreatment, so the current site may be of limited future use. Keeping the size and investment in temporary clarifiers minimal may be advantageous.

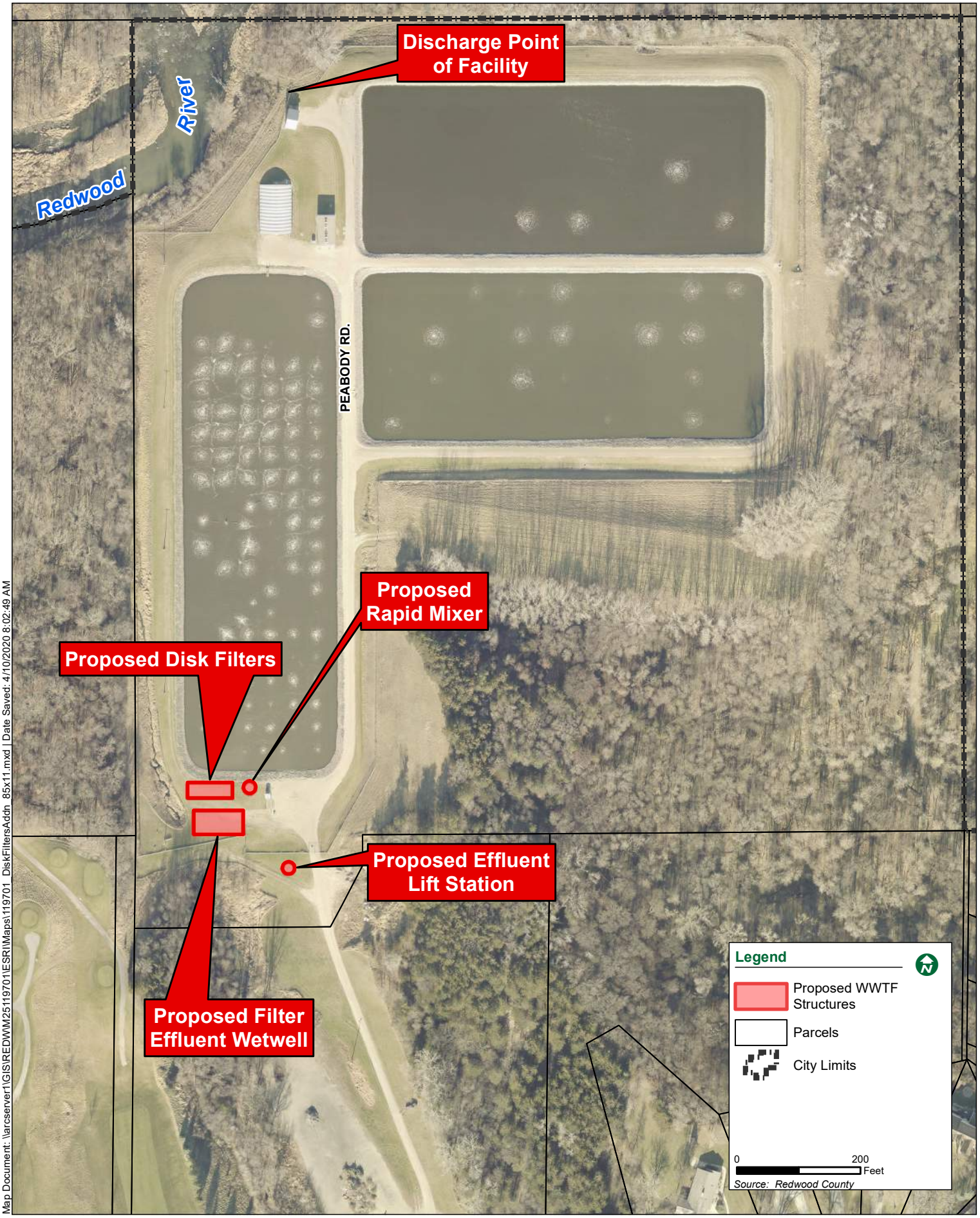

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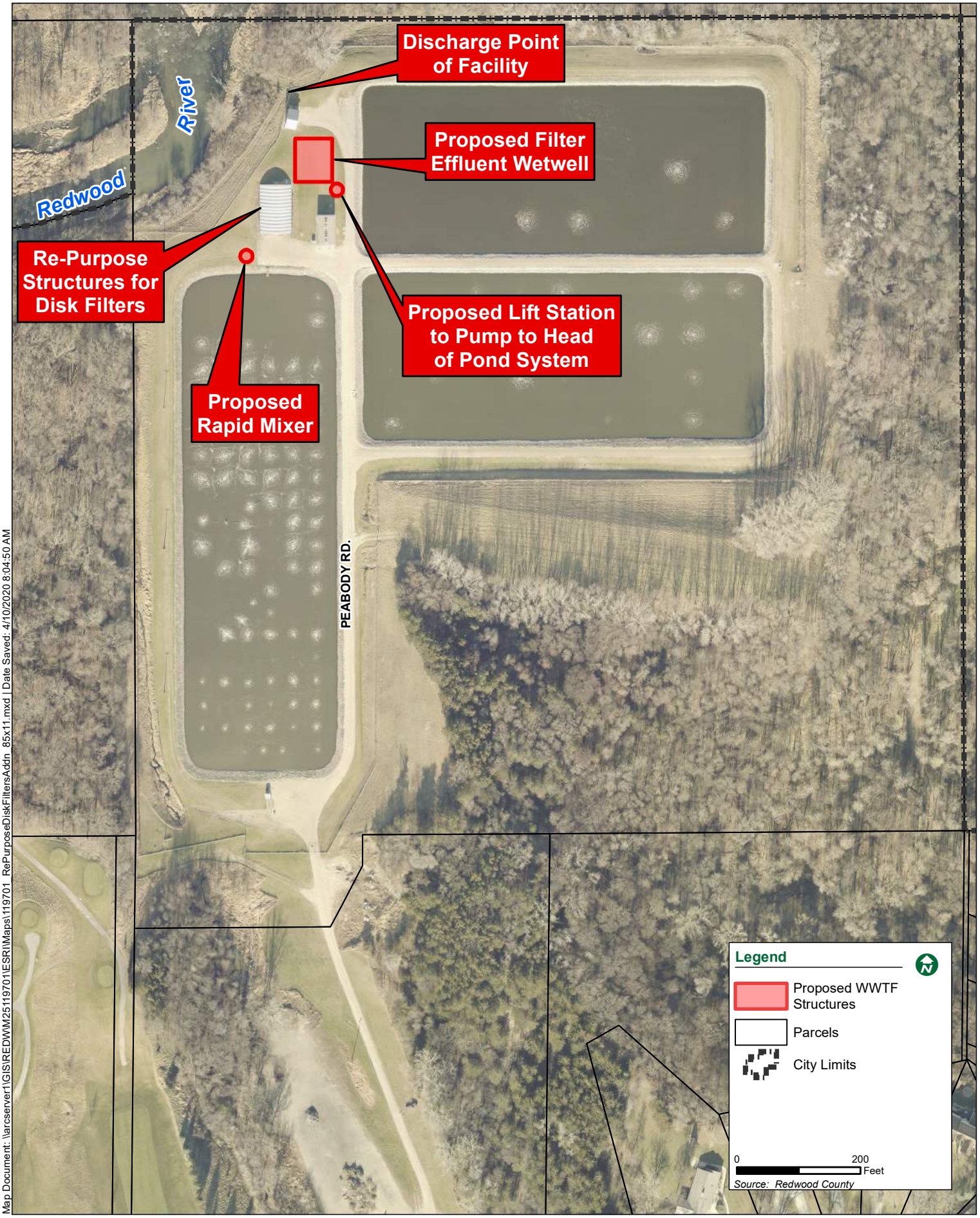
Figure 4.5 – Re-Purposed Structure for Disk Filters Addition



Map Document: \\arcserver1\GIS\REDWM25119701\ESRI\Maps\119701_RePurposeDiskFiltersAddn_85x11.mxd | Date Saved: 4/10/2020 8:04:50 AM

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V. OPINION OF PROBABLE COSTS

A. General

This section presents cost opinions for the wastewater treatment facility improvements discussed in Section IV. Costs were developed through the use of contractor pay estimates and obtaining budgetary pricing numbers in 2020 dollars. Adjustment for inflation may be necessary if these estimates are used at times other than in the immediate future.

The costs opinions presented herein are meant to be used as a guideline in the decision-making process. The accuracy of these cost opinions should be considered within +/- 30% of actual project cost. If the City decides to move forward with one of these proposed alternatives, a more refined cost estimate of the selected alternative will be available during the design phase of the selected project.

B. Capital Costs

Capital cost estimates for the alternatives are presented below. Preliminary costs for engineering, construction contingency, administration, and legal are included.

1. Essential Project Components Percentage Calculation (PSIG Eligible Costs)

Included in each opinion of capital costs table below is a breakdown of the estimated eligible costs for PSIG for the Redwood Falls WWTF improvements. The phosphorus related costs are the costs related to improvements necessary to remove phosphorus at the treatment facility. The PSIG eligible costs are totaled in the table and the total grant eligible costs, 80% of eligible phosphorus related costs, are included at the bottom. The remaining portion of the cost (difference between total capital costs and grant eligible cost) is the City cost portion.

These costs are derived from the need for additional phosphorus related improvements as discussed in previous sections in this Facility Plan.

Table 5.1: Opinion of Probable Costs for Alternative No. 1 – Circular Clarifiers			
Item	**Probable Cost**	**Phosphorus Allocation (PSIG %)**	**PSIG Eligible Cost**
Mobilization, Bonds and Insurance	$350,000	100%	$350,000
Control Structure	$150,000	100%	$150,000
Rapid Mix MH and Mixer	$120,000	100%	$120,000
Scum Manhole and Pumps	$120,000	100%	$120,000
Transfer Lift Station	$500,000	100%	$500,000
Operations Building	$750,000	100%	$750,000
Sludge Transfer Pumps	$200,000	100%	$200,000
Clarifiers and Equipment (one 55' clarifier) Installed with Cover	$1,500,000	100%	$1,500,000
Sludge Storage Tank with Blowers, Piping, and Aeration System			
Sludge Storage Tank Concrete/Excavation	$1,250,000	100%	$1,250,000
Blowers (x2)	$175,000	100%	$175,000
Coarse Bubble Aeration System and Piping	$125,000	100%	$125,000
Site Work	$225,000	100%	$225,000
Chemical Feed Equipment	$150,000	100%	$150,000
Misc. Process Piping and Valves	$290,000	100%	$290,000
Electrical and Controls	$250,000	100%	$250,000
New Pond Aeration Equipment	$750,000	0%	$0
HVAC, Plumbing, Painting	$120,000	100%	$120,000
Sub-Total	**$7,025,000**	**--**	**$6,275,000**
Phosphorus Related Component (%)			89%
Construction Contingency (25%)	$1,756,250	$960,000	89%
Engineering Design, Construction, Admin., Legal (15%)	$1,053,750	$576,000	89%
Total	**$9,835,000**	**$5,376,000**	89%
PSIG Eligible Phosphorus Related Costs	**$8,785,000**		
PSIG Grant Eligible Costs (80% of phosphorus related costs)	**$7,028,000**		
City Cost	**$2,807,000**		

Table 5.2: Opinion of Probable Costs for Alternative No. 2 – Rectangular Clarifiers			
Item	**Cost Range**	**Phosphorus Allocation (PSIG %)**	**PSIG Eligible Cost**
Mobilization, Bonds and Insurance	$350,000	100%	$350,000
Control Structure	$150,000	100%	$150,000
Rapid Mix MH and Mixer	$120,000	100%	$120,000
Scum Manhole and Pumps	$120,000	100%	$120,000
Transfer Lift Station	$500,000	100%	$500,000
Operations Building	$750,000	100%	$750,000
Sludge Transfer Pumps	$200,000	100%	$200,000
Clarifiers and Equipment (four clarifiers each 12'x35') Installed	$1,250,000	100%	$1,250,000
Sludge Storage Tank with Blowers, Piping, and Aeration System			
Sludge Storage Tank Concrete/Excavation	$1,250,000	100%	$1,250,000
Blowers (x2)	$175,000	100%	$175,000
Coarse Bubble Aeration System and Piping	$125,000	100%	$125,000
Site Work	$225,000	100%	$225,000
Chemical Feed Equipment	$150,000	100%	$150,000
Misc. Process Piping and Valves	$290,000	100%	$290,000
Electrical and Controls	$250,000	100%	$250,000
New Aeration Equipment (blowers, electrical upgrades, replace air headers and diffusers)	$750,000	0%	$0
HVAC, Plumbing, Painting	$120,000	100%	$120,000
Sub-Total	**$6,775,000**		**$6,025,000**
Phosphorus Related Component (%)		89%	
Construction Contingency (25%)	$1,693,750	89%	$1,506,250
Engineering Design, Construction, Admin., Legal (15%)	$1,016,250	89%	$903,750
Total	**$9,485,000**	89%	**$8,435,000**
PSIG Eligible Phosphorus Related Costs	**$8,435,000**		
PSIG Grant Eligible Costs (80% of phosphorus related costs)	**$6,748,000**		
City Cost	**$2,737,000**		

Table 5.3: Opinion of Probable Costs for Alternative No. 3 – Tertiary Sand Filters			
Item	**Cost Range**	**Phosphorus Allocation (PSIG %)**	**PSIG Eligible Cost**
Mobilization, Bonds and Insurance	$350,000	100%	$350,000
Rapid Mix MH and Mixer	$120,000	100%	$120,000
Control Structure	$150,000	100%	$150,000
Operations/Filter Building Structure	$1,800,000	100%	$1,800,000
Chemical Feed Equipment	$150,000	100%	$150,000
Filter Influent/Backwash Wet Well	$900,000	100%	$900,000
Tertiary Sand Filter System	$1,500,000	100%	$1,500,000
Filter Influent/Backwash Pumps	$350,000	100%	$350,000
Site Work	$250,000	100%	$250,000
Misc. Process Piping and Valves	$325,000	100%	$325,000
Electrical and Controls	$275,000	100%	$275,000
New Aeration Equipment (blowers, electrical upgrades, replace air headers and diffusers)	$750,000	0%	$0
HVAC, Plumbing, Painting	$150,000	100%	$150,000
Sub-Total	$7,070,000	--	**$6,320,000**
Phosphorus Related Component (%)		89%	
Construction Contingency (25%)	$1,767,500	89%	$1,580,000
Engineering Design, Construction, Admin., Legal (15%)	$1,060,500	89%	$948,000
Total	**$9,898,000**	**89%**	**$8,848,000**
PSIG Eligible Phosphorus Related Costs	**$8,848,000**		
PSIG Grant Eligible Costs (80% of phosphorus related costs)	**$7,078,400**		
City Cost	**$2,819,600**		

Table 5.4: Opinion of Probable Costs for Alternative No. 4a – Tertiary Disk Filters			
Item	**Cost Range**	**Phosphorus Allocation (PSIG %)**	**PSIG Eligible Cost**
Mobilization, Bonds and Insurance	$350,000	100%	$350,000
Rapid Mix MH and Mixer	$120,000	100%	$120,000
Control Structure	$150,000	100%	$150,000
Operations/Filter Building Structure	$1,900,000	100%	$1,900,000
Chemical Feed Equipment	$150,000	100%	$150,000
Filter Effluent Wet Well	$900,000	100%	$900,000
Disk Filtration System (2 filters)	$1,400,000	100%	$1,400,000
Site Work	$225,000	100%	$225,000
Misc. Process Piping and Valves	$290,000	100%	$290,000
Electrical and Controls	$300,000	100%	$300,000
New Aeration Equipment	$750,000	0%	$0
HVAC, Plumbing, Painting	$200,000	100%	$200,000
Sub-Total	**$6,735,000**		**$5,985,000**
Phosphorus Related Component (%)		89%	
Construction Contingency (25%)	$1,683,750	89%	$1,496,250
Engineering Design, Construction, Admin., Legal (15%)	$1,010,250	89%	$897,750
Total	**$9,429,000**	**89%**	**$8,379,000**
PSIG Eligible Phosphorus Related Costs	**$8,379,000**		
PSIG Grant Eligible Costs (80% of phosphorus related costs)	**$6,703,200**		
City Cost	**$2,725,800**		

Table 5.5: Opinion of Probable Costs for Alternative No. 4b – Tertiary Disk Filters			
Item	**Cost Range**	**Phosphorus Allocation (PSIG %)**	**PSIG Eligible Cost**
Mobilization, Bonds and Insurance	$350,000	100%	$350,000
Rapid Mix MH and Mixer	$120,000	100%	$120,000
Control Structure	$150,000	100%	$150,000
Re-Purpose Existing Structure	$1,100,000	100%	$1,100,000
Chemical Feed Equipment	$150,000	100%	$150,000
Filter Effluent Wet Well	$900,000	100%	$900,000
Disk Filtration System (2 filters)	$1,400,000	100%	$1,400,000
Site Work	$225,000	100%	$225,000
Misc. Process Piping and Valves	$325,000	100%	$325,000
Electrical and Controls	$300,000	100%	$300,000
New Aeration Equipment	$750,000	0%	$0
HVAC, Plumbing, Painting	$275,000	100%	$275,000
Sub-Total	**$6,045,000**		**$5,295,000**
Phosphorus Related Component (%)		**88%**	
Construction Contingency (25%)	$1,511,250	88%	$1,323,750
Engineering Design, Construction, Admin., Legal (15%)	$906,750	88%	$794,250
Total	**$8,463,000**		**$7,413,000**
PSIG Eligible Phosphorus Related Costs	**$7,413,000**		
PSIG Grant Eligible Costs (80% of phosphorus related costs)	**$5,930,400**		
City Cost	**$2,532,600**		

C. Operation and Maintenance Costs

Operation and maintenance (O&M) costs have a significant impact on the overall cost to finance a wastewater treatment facility. Major components of annual O&M costs include employee salaries and benefits, equipment repair and replacement, chemical usage, biosolids handling and disposal, utilities, and other non-capital related expenditures. Current budget and projected O&M costs for each alternative are included in Table 5.6. Appendix F includes budget information for the 2021 wastewater budget.

Projected O&M costs use a 3% annual inflation rate on the city's current budget items plus any additional expenses anticipated with each alternative. The sand filtration alternative has higher O&M expenses as this facility would require additional infrastructure and more operational staff hours to maintain the equipment.

D. Annual Project Cost

Determination of total annual project costs is a useful measure to evaluate the economic impact each alternative will have on the City of Redwood Falls after the project is complete. Total annual project cost is calculated by summing the annualized capital costs of each alternative, projected O&M cost, and existing debt service expenses. Annualized capital costs represent the yearly sum of money needed to finance a capital expenditure over a

specific period and interest rate (i.e., capital recovery). Total annual project costs for each alternative are presented in Table 5.7 below. Annualized costs are calculated based on a 20-year financing period at 2.5% nominal interest rate per annum.

E. User Costs

The City of Redwood Falls' currently charges a flat rate $10.33 per connection plus a usage rate of $3.34 per 100 cubic feet of water used. This rate structure applies to both residential and commercial users. Assuming the average household connection uses 4,000 gallons per month, the typical monthly average user rate is in the range of $28 per connection. Table 5.8 presents estimated monthly average user rates for each alternative based on the number of ERU's in the community. This analysis does not consider any grant eligibility and assumes that project costs are financed solely through user rates of both residential ERU's and commercial ERU's.

Table 5.9 presets the proposed increase to the base fee of $10.33 per connection and usage rate of $3.34/100 ft^3 based on the annual cost increase for each alternative. The table shows the annual cost increase (expense) from the 2021 budgeted expenses for each alternative. This increase does not assume any grant eligibility and assumes that the projects are funded through user rates.

Table 5.6: O&M Expenses						
Item	**2021 Budget**	**O&M Costs Projected to 2023 (End of Construction)**				
		Alternative No. 1	**Alternative No. 2**	**Alternative No. 3**	**Alternative No. 4a**	**Alternative No. 4b**
Employee Salaries & Benefits	$351,132	$383,416	$383,416	$426,637	$412,416	$412,416
Supplies & Equipment	$18,350	$21,149	$21,149	$22,977	$23,077	$23,077
Chemical Usage	$25,000	$30,535	$30,535	$38,049	$38,049	$38,049
Repairs & Maintenance	$25,000	$26,546	$26,546	$30,928	$28,928	$28,928
Lab Testing	$20,000	$21,237	$21,237	$23,000	$23,000	$23,000
Professional Services	$6,778	$7,197	$7,197	$8,950	$7,950	$7,950
Utility Expenses	$170,600	$181,149	$181,149	$221,874	$191,874	$191,874
Insurance	$16,200	$17,202	$17,202	$17,202	$17,202	$17,202
Permit Fees	$9,000	$9,557	$9,557	$9,557	$9,557	$9,557
Ponds Dredging Finance Budget	$0	$0	$0	$20,000	$20,000	$20,000
Biosolids Hauling	$0	$30,000	$30,000	$10,000	$10,000	$10,000
Miscellaneous Expenses	$39,053	$41,468	$41,468	$41,468	$41,468	$41,468
Total O&M Expenses	**$681,113**	**$769,456**	**$769,456**	**$870,641**	**$823,520**	**$823,520**

Table 5.7: Total Annual Project Cost – No Grant						
Item	**2021 Budget**	**Alternative No. 1**	**Alternative No. 2**	**Alternative No. 3**	**Alternative No. 4a**	**Alternative No. 4b**
Total Project Capital Cost	$0	$9,835,000	$9,485,000	$9,898,000	$9,429,000	$8,463,000
Annualized Capital Cost[(1)]	$0	$630,887	$608,436	$634,928	$604,843	$542,877
Projected O&M Cost	$681,113	$769,300	$769,300	$870,600	$823,500	$823,500
Existing Annual Debt Service	$45,373	$45,373	$45,373	$45,373	$45,373	$45,373
Transfers to City	$0	$0	$0	$0	$0	$0
Total Annual Expenses	**$726,486**	**$1,445,560**	**$1,423,109**	**$1,550,901**	**$1,473,716**	**$1,411,750**
Depreciation Expense	$335,859	$335,859	$335,859	$335,859	$335,859	$335,859
Total Annual Expenses (w/ Depreciation)	**$1,062,345**	**$1,781,419**	**$1,758,967**	**$1,886,760**	**$1,809,575**	**$1,747,609**
[(1)] 20-year financing at 2.5% interest						

Table 5.8: Total Annual Project Cost – PSIG Grant						
Item	**2021 Budget**	**Alternative No. 1**	**Alternative No. 2**	**Alternative No. 3**	**Alternative No. 4a**	**Alternative No. 4b**
Total Project Capital Cost	$0	$2,807,000	$2,737,000	$2,819,600	$2,725,800	$2,532,600
Annualized Capital Cost[(1)]	$0	$180,061	$175,571	$180,869	$174,852	$162,459
Projected O&M Cost	$681,113	$769,300	$769,300	$870,600	$823,500	$823,500
Existing Annual Debt Service	$45,373	$45,373	$45,373	$45,373	$45,373	$45,373
Transfers to City	$0	$0	$0	$0	$0	$0
Total Annual Expenses	**$726,486**	**$994,734**	**$990,244**	**$1,096,842**	**$1,043,725**	**$1,031,332**
Depreciation Expense	$335,859	$335,859	$335,859	$335,859	$335,859	$335,859
Total Annual Expenses (w/ Depreciation)	**$1,062,345**	**$1,330,593**	**$1,326,103**	**$1,432,701**	**$1,379,584**	**$1,367,191**
[(1)] 20-year financing at 2.5% interest						

Table 5.9: Monthly Average User Costs – No Grant						
Item	**2021 Budget**	**Alternative No. 1**	**Alternative No. 2**	**Alternative No. 3**	**Alternative No. 4a**	**Alternative No. 4b**
Annualized Capital Cost[(1)]	$0	$630,887	$608,436	$634,928	$604,843	$542,877
Projected O&M Cost	$681,113	$769,300	$769,300	$870,600	$823,500	$823,500
Existing Annual Debt Service	$45,373	$45,373	$45,373	$45,373	$45,373	$45,373
Existing Depreciation Expense	$335,859	$335,859	$335,859	$335,859	$335,859	$335,859
Transfers to City	$0	$0	$0	$0	$0	$0
Total Annual Expenses (w/ Depreciation)	**$1,062,345**	**$1,781,419**	**$1,758,967**	**$1,886,760**	**$1,809,575**	**$1,747,609**
Residential EDUs	1,831	1,831	1,831	1,831	1,831	1,831
Commercial EDUs	2,313	2,313	2,313	2,313	2,313	2,313
Total EDUs	**4,144**	**4,144**	**4,144**	**4,144**	**4,144**	**4,144**
Monthly Average User Cost based on residential and commercial ERU's	**$21.36**	**$35.82**	**$35.37**	**$37.94**	**$36.39**	**$35.14**

(1) 20-year financing at 2.5% interest

Table 5.10: Monthly Rate Increase – No Grant						
Item	**2021 Budget**	**Alternative No. 1**	**Alternative No. 2**	**Alternative No. 3**	**Alternative No. 4a**	**Alternative No. 4b**
Current Budgeted Expenses	$1,090,047	--	--	--	--	--
Total Annual Expenses (w/ Depreciation)	$1,090,047	$1,781,419	$1,758,967	$1,886,760	$1,809,575	$1,747,609
Monthly Rate Increase to Base Fee and Volume Usage Charge		63%	61%	73%	66%	60%

Table 5.11: Monthly Rate Increase – PSIG Grant						
Item	**2021 Budget**	**Alternative No. 1**	**Alternative No. 2**	**Alternative No. 3**	**Alternative No. 4a**	**Alternative No. 4b**
Current Budgeted Expenses	$1,090,047	--	--	--	--	--
Total Annual Expenses (w/ Depreciation)	$1,090,047	$1,330,593	$1,326,103	$1,432,701	$1,379,584	$1,367,191
Monthly Rate Increase to Base and Volume Fee		22%	22%	31%	27%	25%

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VI. RECOMMENDATION AND IMPLEMENTATION

A. Recommended Improvements

Based on the evaluation of alternatives and their respective costs presented in Sections 4 and 5, it is recommended that the City of Redwood Falls select Alternative No. 4 – construct new disk filters to treat AWW flow. This alternative also includes new aeration equipment for the pond system.

This alternative has a probable cost of $9.4 million and will provide a high quality of treatment to meet effluent limits for phosphorus. This system provides a long-term solution for phosphorus removal to meet future discharge limits for the Minnesota River. This alternative was selected because the performance of filters can be optimized for ultra-low level phosphorus removal and filters do not have

A summary of anticipated costs for Alternative 3 is provided in Table 6.1 below.

Table 6.1: Cost Summary (No Grant)

Item	Cost
Total Project Capital Cost	$9,429,000
Annualized Project Cost	$605,000
Projected O&M Cost	$823,000
Depreciation and Existing Debt Service	$381,000
Total Annual Costs	$1,809,000

B. Project Funding

It will be important to explore as many options as possible for funding the recommended project. There are several funding options the City of Redwood Falls can explore to help finance these improvements:

1. Bonding

   The City could sell general obligation, local improvement, or revenue bonds in order to raise the capital costs to improve the treatment facility. The proceeds of the bonds would need to be repaid, through either property taxes, assessments, or user charges to the system.

2. Assessment

   A portion of the capital costs of the project can be assessed to local property owners under Minnesota Statute 429. Using this method, a one-time assessment could be levied and repaid over a period of 10 to 20 years. This cost could help offset some monthly increases in user fees and permit use of general obligation bonding.

3. State Revolving Fund Loan (through the PFA)

   The Clean Water Revolving Fund (CWRF) loan program was created under the State Revolving Fund (SRF) provisions in the Federal Clean Water Act to provide financial assistance for water pollution control projects. Minnesota's revolving loan program provides loans to municipalities for planning, design, and construction of wastewater treatment projects. The loans are typically for a 20-year period at an interest rate of two to four percent. The loan monies are administered through the Public Facilities

Authority. To be eligible for PFA funding, the City must submit this Facilities Plan for review and approval by the Minnesota Pollution Control Agency.

Revenue for loan repayment is typically generated by user rates, availability charges, or assessment. In recent years, interest rates have been approximately one percent, and this has proven to be an excellent funding source for this type of project.

4. Rural Development (RD) Loan

The City may be eligible to secure a loan or grant through the USDA Office of Rural Development to help finance wastewater system improvements. Repayment could be through an increase in local property tax rates, user fees, or assessments. A portion of the project costs may be eligible for grant funding as a part of this program depending on the economic status of the residents in the City.

In order to be considered for Rural Development monies, a Preliminary Engineering Report (PER) must be completed and submitted to RD. This provides specific treatment and financial information for RD to consider.

Rural Development uses an Equivalent Dwelling Unit (EDU) calculation for assisting in determining the amount and type of funding for which a community is eligible. Rural Development financing is a 40-year term. While this term is favorable from an annual cost basis, typically, wastewater facilities require a significant upgrade after 20 or 30 years. Since the life expectancy of the facility is shorter than the loan term, it is generally not advisable to consider paying for wastewater treatment facilities with this method. Additionally, the interest rate on this type of loan has typically been higher when compared to the CWRF.

5. Small Cities Development Program

The Small Cities Development Program provides federal grants from the US Department of Housing and Urban Development (HUD) to local units of the government on a competitive basis for a variety of community development projects. Eligible applicants include cities and townships with populations under 50,000 and counties with populations under 200,000.

The proposed project must meet one of the three national objectives:

1. Benefit to low and moderate low-income persons
2. Elimination of slum and blight conditions; or
3. Elimination of an urgent threat to public health or safety.

In addition, the proposed activities must be eligible for funding, project needs must be documented, and the public must be involved in the application preparation.

Under this program, Small Cities Development Public Facility grants are available for wastewater treatment projects, including collection systems and treatment plants; freshwater projects, including wells, water towers, and distribution systems; storm sewer projects; flood control projects; and occasionally street projects. The maximum grant award for Public Facility project is $600,000.

6. Wastewater Infrastructure Funding Program

Supplemental assistance to municipalities is currently available through the wastewater infrastructure (WIF) program. The Public Facilities Authority (PFA) administers the WIF program to those communities what are applying for funding under the clean water revolving fund loan program or the United States Department of Agriculture

Rural Economic and Community Development's (USDA/RECD) Water and Waste Disposal Loans and Grants Program.

Assistance is in the form of zero percent loans, which may be forgiven upon receipt of the notice from MPCA that the project operational performance standards have been met.

This program is income based. The City of Redwood Falls median household income (MHI) is $51,232 (2015 - 2019 estimation by American Community Survey). The project cost with O&M would need to exceed 1.4% of the MHI or $59.77 per month for the average household. This is potential that this funding source may apply.

7. Economic Development Administration

The Economic Development Administration (EDA) has a grant program, which is used to help communities develop the infrastructure required to attract or maintain businesses or industries. Grant sizes vary depending upon the community's need and the impact the project would have on the community. If the City of Redwood Fall's expects to get an industry that provides jobs to its residents and has wastewater treatment need, the City may be eligible for an EDA Grant, or by leveraging existing industries, it could also be eligible. The current concepts do not provide additional capacity however, so the recommended alternative would need to be modified to allow industrial growth.

8. Point Source Implementation Grant

The Point Source Implementation Grant (PSIG) is a grant program to assist and encourage communities to make infrastructure improvements in order to comply with new stringent NPDES permit limits, such as TMDL waste load requirements, phosphorus reduction requirements, and water quality based effluent limits. The program is funded through the Clean Water Legacy Program and is competitive based on scoring from the MPCA under the same criteria as the CWRF.

The grant program provides 80% grant on eligible portions of the project up to a maximum of $7 million dollars. This project is primarily to meet a new phosphorus limit, and the majority of costs are eligible.

C. Implementation Schedule

Table 6.2: Project Implementation Schedule – City of Redwood Falls

Item	Date
Review with City / Finalize Report	March 2022
Public Hearing / Council Approval of Facility Plan	March 2022
Submit Funding Applications (IUP and PPL) and Facility Plan to MPCA	March 4, 2022 (no later)
Design Period	August 2022 – March 2023
Submit Plans and Specifications to MPCA	March 2023
Advertise to Receive Construction Bids	July 2023
Begin Construction	September 2023
Finish Construction and Initiate New Facilities	September 2025

This is the most aggressive schedule. It may be necessary to pause bidding once plans are certified to match timing with PSIG availability. Pending legislative action, money would be expected in two to three years out, but financing and grants are not guaranteed.

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Appendix A: Redwood Falls Wastewater Treatment Facility NPDES/SDS Discharge Permit

Redwood Falls
LOWTF Study

Minnesota Pollution Control Agency

Marshall Office | 504 Fairgrounds Road | Suite 200 | Marshall, MN 56258-1688 | 507-537-7146

800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us | Equal Opportunity Employer

February 27, 2014

Mr. Keith Muetzel
Administrator, City of Redwood Falls
P.O. Box 526
Redwood Falls, MN 56283

RE: Final Minor Modified NPDES/SDS Permit Number MN0020401
Redwood Falls Wastewater Treatment Facility
T113N, R35W, Section 30, Redwood Falls, Redwood County, Minnesota

Dear Mr. Muetzel:

Enclosed is the final minor modified National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) permit for your facility. This permit supersedes an earlier NPDES/SDS permit that was issued on January 24, 2014. This permit has been minor modified to correct an administrative error. The interim limits and monitoring requirements were not included in the printed version of the final permit. This minor modified permit contains both the interim and final limits and monitoring requirements. This error was contained to the paper version of the permit and has not affected the Discharge Monitoring Reports or any other required submittals.

It is the responsibility of the Permittee to maintain compliance with all of the terms and conditions of this permit. We apologize for any inconvenience this may have caused you.

Questions about your permit should be directed to the appropriate staff contacts listed on the first page of your permit.

Sincerely,

Randall M. Hukriede for

Gene M. Soderbeck, P.E.
Supervisor, Southwest Regional & SSTS Policy and Planning Unit
SSTS Section
Municipal Division

GMS/AW:cb

Enclosures: Final Minor Modified Reissued Permit, Submittals and Actions Checklist

cc: Thomas A Stough, City of Redwood Falls (w/enclosures)
James Doering, City of Redwood Falls (w/enclosures)
Lillie Davis, US EPA Region 5, Chicago (w/enclosures)

Submittals and Actions Checklist
Redwood Falls Wastewater Treatment Facility

This checklist is intended to assist you in tracking the reporting requirements of your permit. However, it is only an aid. PLEASE CONSULT YOUR PERMIT FOR THE EXACT REQUIREMENTS.

Please note: This checklist only details submittal requirements for the next five years. DMRs, Annual Reports, and many other submittals are required even after the expiration date of this permit, and continue to be due until the permit is either reissued or terminated.

Submit eDMRs:
Submit eDMRs via the MPCA Online Services Portal at: https://netweb.pca.state.mn.us/private/

Submit other WQ reports to:
Attention: Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Rd N
St. Paul, MN 55155

MPCA Staff Contacts:
For eDMR-related questions:
Tamara Dahl at (507)476-4252
For other questions:
Paul Kimman at (507)476-4270

2014

- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] submit a report (due before Apr 24) {Permit Req't. 1.1.2}
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit a Mercury Pollutant Minimization Plan (due before Jul 23) {Permit Req't. 4.1.3}
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)

2015

- [ ] Submit DMR (due before Jan 22)
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] submit a plan (due before Aug 5) {Permit Req't. 1.1.3}
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)
- [ ] Submit the results of the first priority pollutant sampling event (due before Dec 31) {Permit Req't. 2.8.2}

2016

- [ ] Submit DMR (due before Jan 22)
- [ ] Submit a progress report (due before Jan 24) {Permit Req't. 1.2.2}
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)
- [ ] Submit the results of the second priority pollutant sampling event (due before Dec 30) {Permit Req't. 2.8.3}

Submittals and Actions Checklist
Redwood Falls Wastewater Treatment Facility

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Submit other WQ reports to:
Attention: Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Rd N
St. Paul, MN 55155

MPCA Staff Contacts:
For eDMR-related questions:
Tamara Dahl at (507)476-4252
For other questions:
Paul Kimman at (507)476-4270

2017

- [ ] Submit DMR (due before Jan 22)
- [ ] Submit plans and specifications (due before Jan 23) {Permit Req't. 1.2.3}
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)
- [ ] Submit the results of the third priority pollutant sampling event (due before Dec 30) {Permit Req't. 2.8.4}

2018

- [ ] Submit DMR (due before Jan 22)
- [ ] Submit notice to proceed (due before Jan 23) {Permit Req't. 1.2.4}
- [ ] Submit DMR (due before Feb 22)
- [ ] Submit DMR (due before Mar 22)
- [ ] Submit DMR (due before Apr 22)
- [ ] Submit DMR (due before May 22)
- [ ] Submit DMR (due before Jun 22)
- [ ] Submit an application for permit reissuance (due before Jul 4) {Permit Req't. 9.1.52}
- [ ] Submit DMR (due before Jul 22)
- [ ] Submit DMR (due before Aug 22)
- [ ] Submit DMR (due before Sep 22)
- [ ] Submit DMR (due before Oct 22)
- [ ] Submit DMR (due before Nov 22)
- [ ] Submit DMR (due before Dec 22)
- [ ] Initiate operation (due before Dec 30) {Permit Req't. 1.2.6}

Other Submittals

- [ ] Submit Final Technical Documents. The Permittee must submit the following to the MPCA within one year after the initiation of operation date:

  a. An MPCA-approved certification form that is signed by a professional engineer registered in the state of Minnesota stating that the project meets the performance standards

  b. A revised operation and mainttenance manual or a maintenance plan; or a certificate of completion of an operation and maintenance manual on a form prescribed by the MPCA. At a minimum, this plan must inlcude a detailed discussion of operation and controls, maintenance, sampling and analysis, problem mitigation, VOC management, personnel records and reporting, and safety. This plan must be maintained and updated regularly and made available to the MCPA staff upon request.

  c. One copy of "as-built" plans and specifications, also known as record drawings, must be submitted in a format approved by the MPCA. The factsheet titled: "Wasteweater Treatment Facility Construction Record Documents, As-built Submittal Requirements" contains specific information regarding the required format of the submittal. The document is located on the MPCA webpage at: http://www.pca.state.mn.us/index.php/view-document.html?gid=15492. {Permit Req't. 1.2.9}

- [ ] The Permittee must notify the MPCA 14 days prior to the planned initiation of operation. Following MPCA staff's concurrence that the facility is adequately prepared, MPCA will notify the Permittee that it may begin operation of the upgraded facility. {Permit Req't. 1.2.5}
- [ ] The Permittee shall attain compliance with the final effluent limits by 180 days after initiation of operation. {Permit Req't. 1.2.7}

Submittals and Actions Checklist
Redwood Falls Wastewater Treatment Facility

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Attention: Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Rd N
St. Paul, MN 55155

MPCA Staff Contacts:

For eDMR-related questions:
Tamara Dahl at (507)476-4252
For other questions:
Paul Kimman at (507)476-4270

Other Submittals

☐ Within 180 days of the written notice to follow Track 2, the Permittee shall submit to the MPCA a Facility Plan utilizing the results of the "Wastewater Treatment Study" conducted in the first year of the permit. (Permit Req't. 1.2.1)

STATE OF MINNESOTA

Minnesota Pollution Control Agency

Municipal Division

National Pollutant Discharge Elimination System (NPDES)/ State Disposal System (SDS) Permit MN0020401

PERMITTEE:	City of Redwood Falls
FACILITY NAME:	Redwood Falls Wastewater Treatment Facility
RECEIVING WATER:	Minnesota River (Class 2B, 3C, 4A, 4B, 5, 6 Water) [ORVW]

CITY OR TOWNSHIP:	Honner	**COUNTY:**	Redwood
ISSUANCE DATE:	January 24, 2014	**EXPIRATION DATE:**	December 31, 2018
MODIFICATION DATE:			

The state of Minnesota, on behalf of its citizens through the Minnesota Pollution Control Agency (MPCA), authorizes the Permittee to operate a disposal system at the facility named above and to discharge from this facility to the receiving water named above, in accordance with the requirements of this permit.

The goal of this permit is to reduce pollutant levels in point source discharges and protect water quality in accordance with Minnesota and US statutes and rules, including Minn. Stat. chs. 115 and 116, Minn. R. chs. 7001, 7049, 7050, 7053, 7060, 7090, and the U.S. Clean Water Act.

This permit is effective on the issuance date identified above, as modified on. This permit expires at midnight on the expiration date identified above.

Signature: Randall S. Hitchcock for

Gene M. Soderbeck, P.E.
Supervisor, Southwest Regional and
SSTS Policy and Planning Unit
SSTS Section
Municipal Division

for The Minnesota Pollution Control Agency

Submit eDMRs
Submit via the MPCA Online Services Portal at
https://netweb.pca.state.mn.us/private/

Submit Other WQ Reports to:
Attention: WQ Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Road North
St Paul, Minnesota 55155-4194

Questions on this permit?

- For eDMR and other permit reporting issues, contact: Tamara Dahl, 507-476-4252.
- For specific permit requirements or permit compliance status, contact: Paul H. Kimman, 507-476-4270.
- General permit or NPDES program questions, contact: MPCA, 651-282-6143 or 1-800-657-3938.

Table of Contents

Facility Description

The Redwood Falls Wastewater Treatment Facility (Facility) is a Class C facility designed to treat an average wet weather (AWW) flow of 1.321 million gallons a day (MGD) with a 5-day carbonaceous biochemical oxygen demand ($CBOD_5$) strength of 171 milligrams per liter (mg/L). The Facility has a continuous discharge (SD002) to the Minnesota River (Class 2B, 3B, 3C, 4A, 4B, 5, 6 water).

The application and plans indicate that the existing Facility consists of two separate treatment centers. The Redwood Falls Treatment Center receives the flow from the city of Redwood Falls (WS001). The Regional Treatment Center receives both the pretreated effluent from Central Bi-Products (WS004) and from the Redwood Falls Treatment Center effluent.

Treated flow from the Redwood Falls Treatment Center may be discharged to the Minnesota River through SD002, or it may be diverted to the Regional Treatment Center and further treated with flow from Central Bi-Products before discharge through SD002.

The Redwood Falls Treatment Center is a 3-celled aerated pond system located in NW ¼ of Section 31, Township 113 North, Range 35 West, Honner Township, Redwood County, Minnesota, and treats the flows from the city of Redwood Falls. The system consists of a manual bar screen, grit removal, three aerated ponds, and a submerged media fixed film nitrification process. This system was built in 1966 and the primary pond was expanded in 1988. The system was designed for 38.0 million gallons of storage operated from the 0-foot level to the 10-foot level and 29 days of detention time at AWW flow. The primary pond is 4.03 acres at the average operating depth and each of the 2 secondary ponds are 3.82 acres at the average operating depth.

The Regional Treatment Center is a 3-cell tertiary aerated pond system located in the SW ¼ of Section 19, Township 113 North, Range 35 West, Honner Township, Redwood County, Minnesota. The system receives pretreated flow from both the city of Redwood Falls and from Central Bi-Products. The Regional Treatment Center was constructed in 1996, and consists of 3 tertiary aerated ponds with 15.0 MG of storage operated from the two-foot to 13-foot level and 11 days detention time at AWW flow. Each of the three tertiary ponds is 1.43 acres at the average operating depth.

The location of the Facility is shown on the map on page 5 and the location of designated monitoring stations is specified on the "Summary of Stations" on page 6.

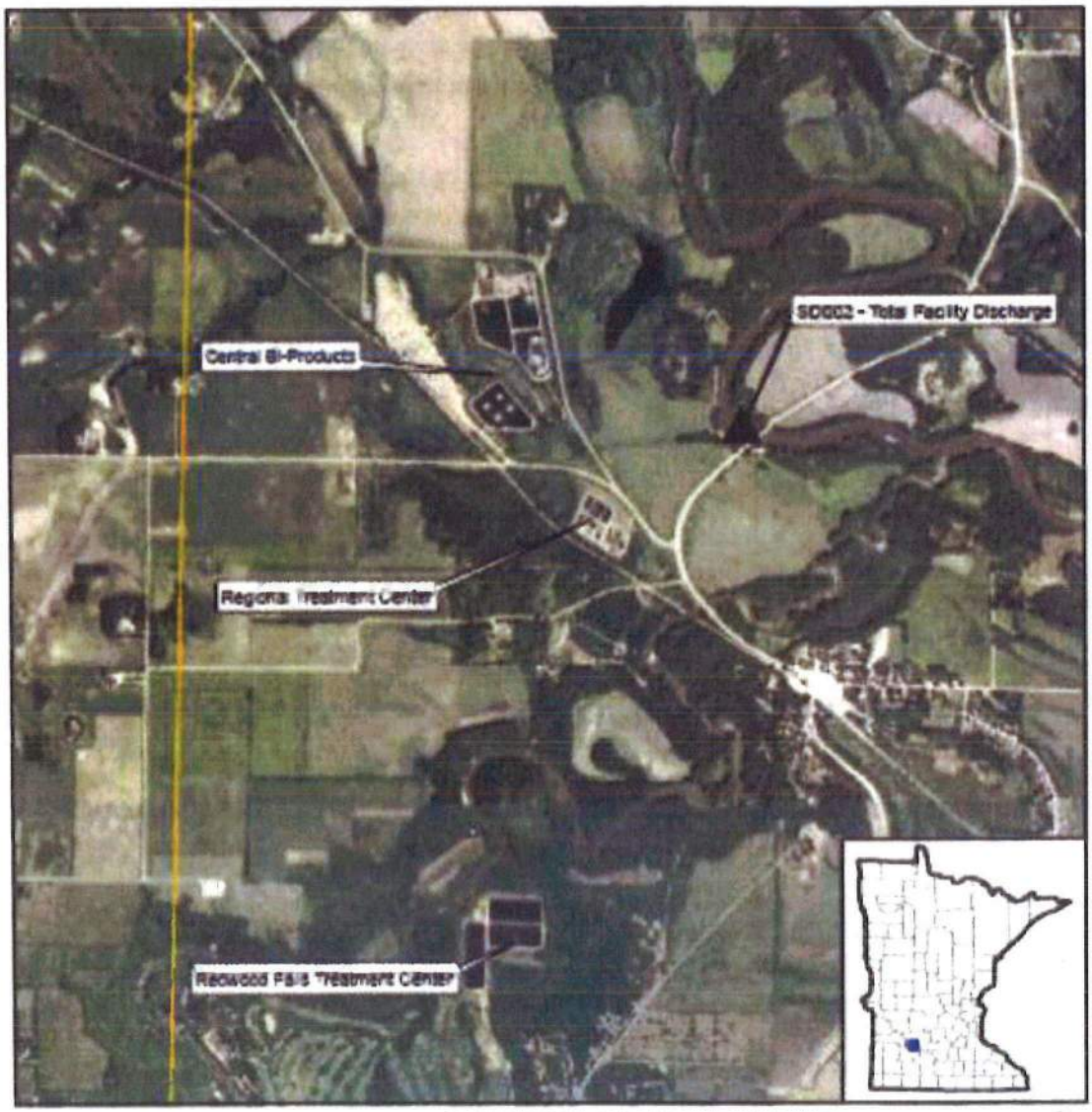
The Minnesota River was designated an Outstanding Resource Value Water (ORVW) on November 5, 1984. The design AWW flow of this facility on the date of ORVW designation is 0.510 mgd.

In accordance with the MPCA rules regarding nondegradation for ORVWs, nondegradation review is required for any new or expanded discharge (Minn. R. 7050.0180). A new discharge is a discharge that was not in existence on the effective date the ORVW was designated as described in Minn. R. 7050.0460 and 7050.0470. An expanded discharge is a discharge that changes in volume, quality, location, or any other manner after the effective date the outstanding resource value water was designated as described in Minn. R. 7050.0460 and 7050.0470, such that an increased loading of one or more pollutants results. Any change that results in an increased mass loading of one or more pollutants is subject to nondegradation review in accordance with Minn. R. 7050.0180.

This Permit also complies with Minn. R. 7053.0275 regarding anti-backsliding.
Any point source discharger of sewage, industrial, or other wastes for which a NPDES permit has been issued by the MPCA that contains effluent limits more stringent than those that would be established by parts 7053.0215 to 7053.0265 shall continue to meet the effluent limits established by the permit, unless the permittee establishes that less stringent effluent limits are allowable pursuant to federal law, under section 402(o) of the Clean Water Act, United States Code, title 33, section 1342.

Map of Permitted Facility

MN0020401 Redwood Falls Wastewater Treatment Facility
T113N, R35W, Sections 19 and 31
Hopper Township, Redwood County, Minnesota



Map produced by: MPCA Staff, 10/21/2013
Source: USGS Quad
Scale: 1:31,343

Redwood Falls Wastewater Treatment Facility
Summary of Stations

Surface Discharge Stations

Station	Type of Station	Local Name	PLS Location
SD002	Effluent To Surface Water	Main Discharge	SE Quarter of the SE Quarter of Section 19, Township 113 North, Range 35 West

Waste Stream Stations

Station	Type of Station	Local Name	PLS Location
WS001	Influent Waste	Influent waste stream to Redwood Falls Facility	Section 31, Township 113 North, Range 35 West
WS004	Internal Waste Stream	Effluent from Central Bi-Products	Section 31, Township 113 North, Range 35 West

Redwood Falls Wastewater Treatment Facility
Limits and Monitoring Requirements

The Permittee shall comply with the limits and monitoring requirements as specified below.

Period: ***Limits Applicable in the Interim Period***

SD 002: Main Discharge

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
BOD, Carbonaceous 05 Day (20 Deg C)	125	kg/day	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	25	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	200	kg/day	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	40	mg/L	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Calcium, Total (as Ca)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Chloride, Total	873	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Week	
Chloride, Total	1720	mg/L	Daily Maximum	Jan-Dec	24-Hour Flow Composite	2 x Week	
Fecal Coliform, MPN or Membrane Filter 44.5C	200	#100ml	Calendar Month Geometric Mean	Apr-Oct	Grab	2 x Month	
Flow	Monitor Only	mgd	Calendar Month Average	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	mgd	Calendar Month Maximum	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Month Total	Jan-Dec	Measurement, Continuous	1 x Day	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Magnesium, Total (as Mg)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Mercury, Dissolved (as Hg)	Monitor Only	ng/L	Calendar Month Maximum	Jan-Jun, Jul-Dec	Grab	1 x Half Year	2
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Maximum	Jan-Jun, Jul-Dec	Grab	1 x Half Year	2
Nitrite Plus Nitrate, Total (as N)	Monitor Only	mg/L	Calendar Month Average	Apr, Sep	24-Hour Flow Composite	1 x Month	
Nitrogen, Ammonia, Total (as N)	469	kg/day	Calendar Month Average	Dec-Mar	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	94.0	mg/L	Calendar Month Average	Dec-Mar	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	319	kg/day	Calendar Month Average	Apr-May	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	64.0	mg/L	Calendar Month Average	Apr-May	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	37.4	kg/day	Calendar Month Average	Jun-Sep	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	7.5	mg/L	Calendar Month Average	Jun-Sep	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	48.4	kg/day	Calendar Month Average	Oct-Nov	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	9.7	mg/L	Calendar Month Average	Oct-Nov	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Un-ionized (as N)	1.0	mg/L	Daily Maximum	Jan-Dec	Calculation	2 x Month	
Nitrogen, Kjeldahl, Total	Monitor Only	mg/L	Calendar Month Average	Apr, Sep	24-Hour Flow Composite	1 x Month	
Oxygen, Dissolved	Monitor Only	mg/L	Calendar Month Minimum	Jan-Dec	Grab	2 x Month	1

Redwood Falls Wastewater Treatment Facility
Limits and Monitoring Requirements

The Permittee shall comply with the limits and monitoring requirements as specified below.

Period: ***Limits Applicable in the Interim Period***

SD 002: Main Discharge

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
pH	9.0	SU	Calendar Month Maximum	Jan-Dec	Grab	2 x Month	1
pH	6.0	SU	Calendar Month Minimum	Jan-Dec	Grab	2 x Month	1
Phosphorus, Total (as P)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Phosphorus, Total (as P)	Monitor Only	kg/mo	Calendar Month Total	Jan-Dec	24-Hour Flow Composite	2 x Month	
Potassium, Total (as K)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Sodium, Total (as Na)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Solids, Total Suspended (TSS)	225	kg/day	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	45	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	324	kg/day	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	65	mg/L	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS), grab (Mercury)	Monitor Only	mg/L	Calendar Month Maximum	Jan-Jun, Jul-Dec	Grab	1 x Half Year	2
Specific Conductance	Monitor Only	umh/cm	Calendar Month Maximum	Jan-Dec	Measurement	1 x Month	2
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2

WS 001: Influent waste stream to Redwood Falls Facility

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
BOD, Carbonaceous 05 Day (20 Deg C)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	Monitor Only	mg/L	Calendar Month Maximum	Jan-Dec	24-Hour Flow Composite	2 x Month	
Flow	Monitor Only	mgd	Calendar Month Average	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	mgd	Calendar Month Maximum	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Month Total	Jan-Dec	Measurement, Continuous	1 x Day	
pH	Monitor Only	SU	Calendar Month Maximum	Jan-Dec	Grab	2 x Month	1
pH	Monitor Only	SU	Calendar Month Minimum	Jan-Dec	Grab	2 x Month	1
Phosphorus, Total (as P)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Precipitation	Monitor Only	in	Calendar Month Total	Jan-Dec	Measurement	1 x Day	
Solids, Total Suspended (TSS)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	Monitor Only	mg/L	Calendar Month Maximum	Jan-Dec	24-Hour Flow Composite	2 x Month	

Redwood Falls Wastewater Treatment Facility
Limits and Monitoring Requirements

The Permittee shall comply with the limits and monitoring requirements as specified below.

Period: ***Limits Applicable in the Interim Period***

WS 004: Effluent from Central Bi-Products

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
Flow	Monitor Only	mgd	Calendar Month Average	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Month Total	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Year To Date Total	Jan-Dec	Measurement, Continuous	1 x Day	
Nitrogen, Ammonia, Total (as N)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	

Period: ***Limits Applicable in the Final Period***

SD 002: Main Discharge

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
Bicarbonates (HCO3)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
BOD, Carbonaceous 05 Day (20 Deg C)	125	kg/day	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	25	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	200	kg/day	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	40	mg/L	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Calcium, Total (as Ca)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Chloride, Total	873	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Week	
Chloride, Total	1720	mg/L	Daily Maximum	Jan-Dec	24-Hour Flow Composite	2 x Week	
Fecal Coliform, MPN or Membrane Filter 44.5C	200	#/100ml	Calendar Month Geometric Mean	Apr-Oct	Grab	2 x Month	
Flow	Monitor Only	mgd	Calendar Month Average	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	mgd	Calendar Month Maximum	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Month Total	Jan-Dec	Measurement, Continuous	1 x Day	
Hardness, Calcium & Magnesium, Calculated (as CaCO3)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Magnesium, Total (as Mg)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Mercury, Dissolved (as Hg)	Monitor Only	ng/L	Calendar Month Maximum	Jan-Jun, Jul-Dec	Grab	1 x Half Year	2
Mercury, Total (as Hg)	Monitor Only	ng/L	Calendar Month Maximum	Jan-Jun, Jul-Dec	Grab	1 x Half Year	2
Nitrite Plus Nitrate, Total (as N)	Monitor Only	mg/L	Calendar Month Average	Apr, Sep	24-Hour Flow Composite	1 x Month	
Nitrogen, Ammonia, Total (as N)	469	kg/day	Calendar Month Average	Dec-Mar	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	94.0	mg/L	Calendar Month Average	Dec-Mar	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	319	kg/day	Calendar Month Average	Apr-May	24-Hour Flow Composite	2 x Month	

Redwood Falls Wastewater Treatment Facility
Limits and Monitoring Requirements

The Permittee shall comply with the limits and monitoring requirements as specified below.

Period: ***Limits Applicable in the Final Period***

SD 002: Main Discharge

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
Nitrogen, Ammonia, Total (as N)	64.0	mg/L	Calendar Month Average	Apr-May	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	37.4	kg/day	Calendar Month Average	Jun-Sep	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	7.5	mg/L	Calendar Month Average	Jun-Sep	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	48.4	kg/day	Calendar Month Average	Oct-Nov	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Total (as N)	9.7	mg/L	Calendar Month Average	Oct-Nov	24-Hour Flow Composite	2 x Month	
Nitrogen, Ammonia, Un-ionized (as N)	1.0	mg/L	Daily Maximum	Jan-Dec	Calculation	2 x Month	
Nitrogen, Kjeldahl, Total	Monitor Only	mg/L	Calendar Month Average	Apr, Sep	24-Hour Flow Composite	1 x Month	
Oxygen, Dissolved	Monitor Only	mg/L	Calendar Month Minimum	Jan-Dec	Grab	2 x Month	1
pH	9.0	SU	Calendar Month Maximum	Jan-Dec	Grab	2 x Month	1
pH	6.0	SU	Calendar Month Minimum	Jan-Dec	Grab	2 x Month	1
Phosphorus, Total (as P)	1460	kg/yr	12 Month Moving Total	Jan-Dec	Calculation	2 x Month	2
Phosphorus, Total (as P)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Phosphorus, Total (as P)	Monitor Only	kg/mo	Calendar Month Total	Jan-Dec	24-Hour Flow Composite	2 x Month	
Potassium, Total (as K)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Sodium, Total (as Na)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Solids, Total Dissolved (TDS)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2
Solids, Total Suspended (TSS)	225	kg/day	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	45	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	324	kg/day	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	65	mg/L	Maximum Calendar Week Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS), grab (Mercury)	Monitor Only	mg/L	Calendar Month Maximum	Jan-Jun, Jul-Dec	Grab	1 x Half Year	2
Specific Conductance	Monitor Only	umh/cm	Calendar Month Maximum	Jan-Dec	Measurement	1 x Month	2
Sulfate, Total (as SO4)	Monitor Only	mg/L	Calendar Quarter Maximum	Jan-Dec	24-Hour Flow Composite	1 x Quarter	2

WS 001: Influent waste stream to Redwood Falls Facility

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
BOD, Carbonaceous 05 Day (20 Deg C)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
BOD, Carbonaceous 05 Day (20 Deg C)	Monitor Only	mg/L	Calendar Month Maximum	Jan-Dec	24-Hour Flow Composite	2 x Month	

Redwood Falls Wastewater Treatment Facility
Limits and Monitoring Requirements

The Permittee shall comply with the limits and monitoring requirements as specified below.

Period: ***Limits Applicable in the Final Period***

WS 001: Influent waste stream to Redwood Falls Facility

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
Flow	Monitor Only	mgd	Calendar Month Average	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	mgd	Calendar Month Maximum	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Month Total	Jan-Dec	Measurement, Continuous	1 x Day	
pH	Monitor Only	SU	Calendar Month Maximum	Jan-Dec	Grab	2 x Month	1
pH	Monitor Only	SU	Calendar Month Minimum	Jan-Dec	Grab	2 x Month	1
Phosphorus, Total (as P)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Precipitation	Monitor Only	in	Calendar Month Total	Jan-Dec	Measurement	1 x Day	
Solids, Total Suspended (TSS)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	
Solids, Total Suspended (TSS)	Monitor Only	mg/L	Calendar Month Maximum	Jan-Dec	24-Hour Flow Composite	2 x Month	

WS 004: Effluent from Central Bi-Products

Parameter	Limit	Units	Limit Type	Effective Period	Sample Type	Frequency	Notes
Flow	Monitor Only	mgd	Calendar Month Average	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Month Total	Jan-Dec	Measurement, Continuous	1 x Day	
Flow	Monitor Only	MG	Calendar Year To Date Total	Jan-Dec	Measurement, Continuous	1 x Day	
Nitrogen, Ammonia, Total (as N)	Monitor Only	mg/L	Calendar Month Average	Jan-Dec	24-Hour Flow Composite	2 x Month	

Notes:
1 -- Analyze immediately.
2 -- See Surface Discharge Stations Chapter for additional information.

Chapter 1. Special Requirements

1. Compliance Schedule

Phosphorus

1.1 The Permittee may choose to pursue either Track 1 or Track 2 to attain compliance with the final phosphorus water quality based effluent limit (WQBEL) of 1,460 kilograms per year (kg/yr) as soon as possible, but no later than June 1, 2020 (5.5 years after permit issuance). Any changes to this compliance schedule must meet the requirements of Minn R 7001.0190 Subp. 3 and Minn R 7001.170.

1.2 By 90 days after permit reissuance, the Permittee will have completed a qualification based selection to retain a consultant to develop a "Wastewater Treatment Study" of the present day regional facility consisting of hydraulic analysis, wasteload assessment, current treatment system design efficiencies/limitations, alternate evaluations of Track 1 vs. Track 2 in general, including alternate constructed treatment scenarios under Track 2 and effectiveness on: permitted parameters, meeting the WQBEL, significant industrial users and cost including financing.

1.3 By 1.5 years after permit issuance, the Permittee shall provide the MPCA with a regional wastewater treatment report and written notice on following Track 1 (phosphorus trading) or Track 2 (construction modification).

Track 1 - Phosphorus Trading

1.4 Within 180 days of the date of the written notice to follow Track 1, the Permittee shall submit to the MPCA a final Phosphorus Trading Agreement that ensures compliance with the final Total Phosphorus limit of 1,460 kg/year. Content and terms coinciding with applicable special requirements, margin of safety in trade ratios, contingency planning, amendment provisions and terms that coincide and overlap the NPDES/SDS permit to maintain compliance between permits.

1.5 A Phosphorus Trade Agreement is a signed, contractual agreement between the Permittee and Seller and should include, but is not limited to, the method used to determine the level of phosphorus requiring removal, a description of fluctuations in the Permittee's and/or Seller's discharge (if applicable), how any increased mass will be accounted for, and a contingency plan in the event the Seller withdraws from the program or otherwise fails to remove the equivalent mass of phosphorus. The MPCA recommends an Agreement term that coincides with the NPDES/SDS permit term and the ability to amend this Agreement should either party require it.

1.6 Within the same 180 days of the written notice to follow Track 1, the Permittee shall submit to the MPCA a "Pre-TMDL Phosphorus Trading Application to Trade Form." The permit may be modified based on this application form and the Phosphorus Trading Agreement.

Chapter 1. Special Requirements

1. Compliance Schedule

1.7 The Permittee's discharge shall not cause a net increase in the Total Phosphorus permitted mass load to the Lake Pepin Basin. The mass of phosphorus discharged from the facility may be offset by removal of an equivalent mass of phosphorus from another discharger discharging treated wastewater upstream of Lake Pepin, resulting in no net increase in phosphorus to Lake Pepin. A reduction of the permitted mass of phosphorus to the water body will be achieved when the trade ratio is applied. Trade ratios, applicable to each point source trade, require buyers to purchase phosphorus in excess of the exact amount needed to meet permit limits. Trade ratios for point source facilities in the same major watershed are 1.2 to 1.0 for new facilities and 1.1 to 1.0 for expanding facilities. Trade ratios for point source facilities in different major watersheds but the same basin and the seller is closer in river miles to the impaired water are 1.2 to 1.0 for new facilities and 1.1 to 1.0 for expanding facilities. The trade ratio for point source facilities in different major watersheds in the same basin and the buyer is closer in river miles to the impaired water than the seller is 1.4 to 1.0. Both the buyer and seller must discharge upstream of the identified impaired water. The MPCA will not approve trades that will make worse the violation of a water quality standard. All trades are reviewed by the MPCA on a case-by-case basis.

The MPCA will also consider trades that involve pollutant load reductions made by non-point sources (agricultural operations, stormwater discharges, and other non-point sources), but these situations would require additional review.

Additional Phosphorus Trading guidance can be found on MPCA's Pre-TMDL Phosphorus Trading webpage at: http://www.pca.state.mn.us/nwqh9ee.

2. Construction Schedule

Track 2 - Construction Schedule

2.1 Within 180 days of the written notice to follow Track 2, the Permittee shall submit to the MPCA a Facility Plan utilizing the results of the "Wastewater Treatment Study" conducted in the first year of the permit.

2.2 By two years after permit issuance, the Permittee shall submit a progress report detailing actions taken to comply with the final schedule completion date outlining Facility Plan negotiations/approval, cost analysis of compliance, rate study effects, Environmental Committee and Council Recommendations.

2.3 By three years after permit issuance, the Permittee shall submit the Plans and Specifications for the identified improvements for MPCA review and approval.

2.4 By four years after permit issuance, the Permittee shall issue a notice to proceed with the awarded contractor.

2.5 The Permittee must notify the MPCA 14 days prior to the planned initiation of operation. Following MPCA staff's concurrence that the facility is adequately prepared, MPCA will notify the Permittee that it may begin operation of the upgraded facility.

2.6 The Permittee must initiate operation of the upgraded facility no later than one day prior to permit expiration. The Permittee must notify the MPCA in writing 14 days after actual initiation of operation.

2.7 The Permittee shall attain compliance with the final effluent limits by 180 days after initiation of operation.

2.8 The Permittee must notify the MPCA in writing at least 14 days before the planned completion of construction date. The MPCA may complete a final inspection.

Chapter 1. Special Requirements

2. Construction Schedule

2.9 Submit Final Technical Documents. The Permittee must submit the following to the MPCA within one year after the initiation of operation date:

a. An MPCA-approved certification form that is signed by a professional engineer registered in the state of Minnesota stating that the project meets the performance standards.

b. A revised operation and mainttenance manual or a maintenance plan; or a certificate of completion of an operation and maintenance manual on a form prescribed by the MPCA. At a minimum, this plan must inlcude a detailed discussion of operation and controls, maintenance, sampling and analysis, problem mitigation, VOC management, personnel records and reporting, and safety. This plan must be maintained and updated regularly and made available to the MCPA staff upon request.

c. One copy of "as-built" plans and specifications, also known as record drawings, must be submitted in a format approved by the MPCA. The factsheet titled: "Wasteweater Treatment Facility Construction Record Documents, As-built Submittal Requirements" contains specific information regarding the required format of the submittal. The document is located on the MPCA webpage at: http://www.pca.state.mn.us/index.php/view-document.html?gid=15492.

Definitions

2.10 "Initiation of operation" means the date that MPCA determines all components of the the wastewater treatment system are complete and functioning and the project begins operating for the purposes for which it was planned, designed, and built.

2.11 "Completion of construction" means all the construction is complete except for minor weather-related components and conforms to the approved plans and specifications and change orders.

2.12 "Notice to proceed" means a written notice given by the Permittee to the contractor that affixes the contract effective date and the date that the contractor begins performing the work specified in the contract documents.

Chapter 2. Surface Discharge Stations

1. Requirements for Specific Stations

1.1 SD 002: Submit a monthly DMR by 21 days after the end of each calendar month following permit issuance.

2. Special Requirements

Salty Discharge Monitoring

2.1 If monitoring results indicate a reasonable potential for any of the parameters, the Permittee will be required to submit an application for a permit modification. If necessary, a compliance schedule will be added to the permit to ensure progress towards meeting the water quality standards.

2.2 The Permittee may request a reduction in monitoring after 2 years of sampling results, if the monitoring does not indicate a reasonable potential to exceed a water quality standard limit.

3. Sampling Location

3.1 Samples for Station SD002 shall be taken at a point representative of the total flow discharged from the system.

3.2 Samples and measurements required by this permit shall be representative of the monitored activity.

4. Surface Discharges

4.1 Floating solids or visible foam shall not be discharged in other than trace amounts.

Chapter 2. Surface Discharge Stations

4. Surface Discharges

4.2 Oil or other substances shall not be discharged in amounts that create a visible color film.

4.3 The Permittee shall install and maintain outlet protection measures at the discharge stations to prevent erosion.

5. Winter Sampling Conditions

5.1 The Permittee shall sample flows at the designated monitoring stations including when this requires removing ice to sample the water. If the station is completely frozen throughout a designated sampling month, the Permittee shall check the "No Discharge" box on the Discharge Monitoring Report (DMR) and note the ice conditions in Comments on the DMR.

6. Phosphorus Limits and Monitoring Requirements

6.1 Phosphorus limits are to be calculated as follows.

6.2 "12-Month Moving Total" is a rolling total. For the first 11 months after this limit is effective, report the mass phosphorus discharged by calculating each month's kg/month, then adding each month's kg/month from the first month the new limit is effective through the 11th month after this limit became effective. This value should be reported on the eDMR in the 12-Month Moving Total field. If using the eDMR calculator tool, replace the calculated value with this value. Starting the 12th month after this limit became effective and thereafter, calculate each kg/month then add all of the monthly values (kg/mo) during the last twelve months, starting with the monthly total for the month of the current reporting period. Calculate kg/month for each month by multiplying the total volume of effluent flow (MG) by the monthly average concentration and by a 3.785 conversion factor to get kg/month. Starting the 12th month after this limit became effective and thereafter, the eDMR calculator tool will provide the correct value for this limit.

7. Mercury Limits and Monitoring Requirements

7.1 Permittees are required to sample for TSS (grab sample) at the same time that Total/Dissolved Mercury samples are taken. Total Mercury, Dissolved Mercury, and TSS (grab sample) samples must be collected via grab samples. All results must be recorded on DMRs.

7.2 Total and Dissolved Mercury samples must be analyzed using the most current versions of EPA Method 1631 with clean techniques method 1669. Should another mercury analytical method that has a reportable quantitation level of <0.5 ng/L that allows for low-level sample characterization be approved by the EPA and certified by an MPCA recognized accreditation body, the method may be used in place of 1631/1669.

8. Priority Pollutants - Monitoring Requirements

8.1 The Permittee shall monitor the effluent three times in the life of the permit for the following specified priority pollutants. Sampling events shall not be less than one year apart.

Monitoring shall be for the organic priority pollutants identified under the volatile, acid, base/neutral, and pesticide fractions using EPA methods 624, 625 and 608 (40 CFR Part 136, October 25, 1984) as listed in Table II of 40 CFR Part 122, Appendix D.

The following priority pollutant total metals shall also be monitored using either EPA method 200.8 or their corresponding graphite furnace method found in Table IB of 40 CFR Part 136: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc. In addition, the Permittee shall monitor for Total Cyanide (EPA method 335), Total Phenolic Compounds (EPA method 420), and Hardness (total as CaCO3) (EPA method 130). Total Mercury shall be monitored by EPA method 1631, if not already required by the permit.

8.2 Submit the results of the first sampling event no later than three years prior to the expiration date of this permit.

Chapter 2. Surface Discharge Stations

8. Priority Pollutants - Monitoring Requirements

8.3 Submit the results of the second sampling event no later than two years prior to the expiration date of this permit.

8.4 Submit the results of the third or final sampling event no later than one year prior to the expiration date of this permit.

9. Discharge Monitoring Reports

9.1 The Permittee shall submit monitoring results for discharges in accordance with the limits and monitoring requirements for this station. If no discharge occurred during the reporting period, the Permittee shall check the "No Discharge" box on the Discharge Monitoring Report (DMR).

Chapter 3. Waste Stream Stations

1. Requirements for Specific Stations

1.1 WS 001: Submit a monthly DMR by 21 days after the end of each calendar month following permit issuance.

1.2 WS 004: Submit a monthly DMR by 21 days after the end of each calendar month following permit issuance.

2. Sampling Location

2.1 Samples for Station WS004 shall be taken at a point representative of the total influent flow from Central Bi-Products into the Regional Treatment Center.

2.2 Samples for Station WS001 shall be taken at a point representative of the total influent flow into the Redwood Falls Treatment Center.

Chapter 4. Mercury Minimization Plan

1. Mercury Pollutant Minimization Plan

1.1 The Permittee is required to complete and submit a Mercury Pollutant Minimization Plan (MMP) to the MPCA as detailed in this section. If the Permittee has previously submitted a MMP, it must update its MMP and submit the updated MMP to the MPCA. The purpose of the MMP is to evaluate collection and treatment systems to determine possible sources of mercury as well as potential mercury reduction options. Guidelines for developing a MMP are detailed in this section.

1.2 The specific mercury monitoring requirements are detailed in the limits and monitoring section of this permit. Information gained through the MMP process can be used to reduce mercury concentrations. As part of its mercury control strategy, the Permittee should consider selecting activities based on the potential of those activities to reduce mercury loadings to the wastewater treatment facility.

Chapter 4. Mercury Minimization Plan

1. Mercury Pollutant Minimization Plan

1.3 The Permittee shall submit a Mercury Minimization Plan by 180 days after permit issuance. At a minimum, the MMP must include the following:

a) A summary of mercury influent and effluent concentrations and biosolids monitoring data using the most recent five years of monitoring data, if available.
b) Identification of existing and potential sources of mercury concentrations and/or loading to the facility. As appropriate for your facility, you should consider residential, institutional, municipal, and commercial sources (such as dental clinics, hospitals, medical clinics, nursing homes, schools, laundries, and industries with potential for mercury contributions). You should also consider other influent mercury sources, such as stormwater inputs, ground water (inflow & infiltration) inputs, lift station components, and waste streams or sewer tributaries to the wastewater treatment facility.
c) An evaluation of past and present WWTF operations to determine those operating procedures that maximize mercury removal.
d) A summary of any mercury reduction activities implemented during the last five years.
e) A plan to implement mercury management and reduction measures during the next five years.

Chapter 5. Whole Effluent Toxicity (WET) Testing - Chronic

1. General Requirements

1.1 This permit does not include a chronic whole effluent toxicity limit; however the facility is required to conduct chronic toxicity tests for Outfall SD002. Results of chronic toxicity tests will be evaluated against a monitoring threshold value of 20.3 TUc.

1.2 Annual chronic test batteries shall be conducted in each succeeding year for the remainder of the permit. The first annual results are due one year from the due date of the final quarter results and annually thereafter.

1.3 The Permittee shall conduct annual chronic toxicity test batteries on Outfall SD002 beginning with the first full calendar year quarter following the issuance date of the permit. An annual chronic WET test battery is required for each year of the permit, for the life of the permit. The first set of annual chronic WET battery results are due on the last day of the first full calendar quarter following permit issuance. Each of the other annual chronic WET battery tests is due on an annual basis within the same quarter the first chronic WET test was submitted. (For example, if the permit is issued April, 28, the first test battery is due by September 30th and each annual test battery is due by September 30th of each of the proceeding years for the life of the permit.)

1.4 Any test that exceeds 20.3 TUc shall be re-tested according to the Positive Toxicity Results requirement(s) that follow to determine if toxicity is still present above 20.3 TUc (RWC< 4.9%).

2. Species and Procedural Requirements

2.1 Any test that is begun with an effluent sample that exceeds a total ammonia concentration of 5 mg/l shall use the carbon dioxide-controlled atmosphere technique to control pH drift.

2.2 Test organisms for each test battery shall include the fathead minnow (Pimephales promelas)-Method 1000.0 and Ceriodaphnia dubia-Method 1002.0.

2.3 Static renewal chronic serial dilution tests of the effluent shall consist of a control, 6%, 12%, 25%, 50% and 100% effluent. A 5% Receiving Water Concentration (RWC) may be substituted for the 4.9% effluent concentration or provided in addition to the above dilution series.

Chapter 5. Whole Effluent Toxicity (WET) Testing - Chronic

2. Species and Procedural Requirements

2.4 All effluent samples shall be flow proportioned, 24-hour composite samples. Test solutions shall be renewed daily. Testing of the effluent shall begin within 36 hours of sample collection. Receiving water collected outside of the influence of discharge shall be used for dilution and controls. Chronic toxicity tests shall be conducted in accordance with procedures outlined in EPA-821-R-02-013 "Short-term Methods for Measuring the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" - Fourth Edition (Chronic Manual) and any revisions to the Manual.

2.5 Any other circumstances not addressed in the previous requirements or that require deviation from that specified in the previous requirements shall first be approved by the MPCA.

3. Quality Control and Report Submittals

3.1 Any test that does not meet quality control measures, or results which the Permittee believes reflect an artifact of testing shall be repeated within two (2) weeks. These reports shall contain information consistent with the report preparation section of the Chronic Manual. The MPCA shall make the final determination regarding test validity.

4. Positive Toxicity Result for WET

4.1 Should a test exceed 20.3 TUc for whole effluent toxicity based on results from the most sensitive test species, the Permittee shall conduct two repeat test batteries on all species. The repeat tests are to be completed within forty-five (45) days after completion of the positive test. These tests will be used to determine if toxicity exceeding 20.3 TUc remains present for any test species. For both retests, if no toxicity is present above 20.3 TUc for any test species, the Permittee shall return to the test frequency specified by the permit. If either of the repeat test batteries indicate toxicity above 20.3 TUc for any test species, the Permittee shall submit for MPCA review a plan for conducting a Toxicity Reduction Evaluation (TRE), including the Facility Performance Review (to be submitted to the MPCA WQ Submittals Center within 60 days after toxicity discovery date) and, at a minimum, provide quarterly reports starting from the date of TRE submittal, regarding progress towards the identity, source, and any plans for the removal of the toxicity. The TRE shall be consistent with EPA guidance or subsequent procedures approved by the MPCA in attempting to identify and remove the source of the toxicity. Routinely scheduled chronic toxicity test batteries required in this permit section shall be suspended for the duration of the TRE.

4.2 Following successful completion of the TRE the Permittee shall conduct one year of quarterly testing, with the results of the first quarterly test due the first full calendar quarter following TRE completion (For example, if the TRE is completed on April 28, the first quarterly results are due on or before September 30.) Following completion of one year of quarterly testing the return to routine annual acute toxicity testing is subject to the discretion of the MPCA. Amendments to the initial TRE shall be approved by MPCA staff and the schedules identified therein.

5. WET Data and Test Acceptability Criteria (TAC) Submittal

5.1 All WET test data and TAC must be submitted to the MPCA by the dates required by this section of the permit using the Minnesota Pollution Control Agency Ceriodaphnia dubia Chronic Toxicity Test Report and/or Minnesota Pollution Control Agency Fathead Minnow Chronic Toxicity Test Report and associated instruction forms. Data not submitted on the correct form(s), or submitted incomplete, will be returned to the permittee and deemed incomplete until adequately submitted on the designated form (identified above). Data should be submitted to:

MPCA
Attn: WQ Submittals Center
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Chapter 5. Whole Effluent Toxicity (WET) Testing - Chronic

6. Permit Re-opening for WET

6.1 Based on the results of the testing, the permit may be modified to include additional toxicity testing and a whole effluent toxicity limit.

7. Whole Effluent Toxicity Requirement Definitions

7.1 "Chronic Whole Effluent Toxicity (WET) Test is a static renewal test conducted on an exponentially diluted series of effluent. The purpose is to calculate appropriate biological effect endpoints (NOEC or IC25), specified in the referenced chronic manual. A statistical effect level less than the Receiving Water Concentration (RWC) constitutes a positive test for chronic toxicity. The RWC equals the 4.9 percent effluent concentration or 20.3 TUc.

7.2 "Chronic toxic unit (TUc)" is the reciprocal of the effluent dilution that causes no unacceptable effect on the test organisms by the end of the chronic exposure period. For example, a TUc equals [7Q10flow (mgd) + effluent average dry weather flow (mgd)]/[effluent average dry weather flow (mgd)].

7.3 "Test" refers to an individual species.

7.4 "Test Battery" consists of WET testing of all test species for the specified test. For chronic WET testing, all test species includes Fathead minnows and ceriodaphnia dubia.

Chapter 6. Domestic Wastewater -- Aerated Pond System

1. Reporting

1.1 The Permittee shall inspect the aerated pond system weekly, and shall take measurements of the pond water depth, estimate the coverage of aquatic plants, floating mats and ice cover on the surface of the ponds, and note odors, the condition of the dikes and the presence of muskrats.

2. Records

2.1 The Permittee shall maintain records of these weekly inspections for the last three (3) years, and submit the results on a Discharge Monitoring Report (DMR) Supplemental Form.

3. General Requirements

3.1 All structures capable of bypassing the treatment system shall be manually controlled and kept locked at all times.

3.2 The Permittee may be required to obtain a Sanitary Sewer Extension Permit from the MPCA for any addition, extension or replacement to the sanitary sewer. If a sewer extension permit is required, construction may not begin until plans and specifications have been submitted and a written permit is granted except as allowed in Minn. Stat. 115.07, Subd. 3(b).

3.3 The Permittee shall notify the MPCA within 30 days of a change in operator certification or contract status.

3.4 If the Permittee chooses to meet operator certification requirements through a contractual agreement, the Permittee shall provide a copy of the contract to the MPCA, WQ Submittals Center. The contract shall include the certified operator's name, certificate number, company name if appropriate, the period covered by the contract and provisions for renewal; the duties and responsibilities of the certified operator; the duties and responsibilities of the permittee; and provisions for notifying the MPCA 30 days in advance of termination if the contract is terminated prior to the expiration date.

3.5 The Permittee shall provide a Class C state certified operator who is in direct responsible charge of the operation, maintenance and testing functions required to ensure compliance with the terms and conditions of this permit.

Chapter 7. Domestic Wastewater -- Pretreatment

1. Pretreatment - Definitions

1.1 An "Individual Control Mechanism" is a document, such as an agreement or permit, that imposes limitations or requirements on an individual industrial user of the POTW.

1.2 "Significant Industrial User" (SIU) means any industrial user that:

a. discharges 25,000 gallons per day or more of process wastewater;

b. contributes a load of five (5) % or more of the capacity of the POTW; or

c. is designated as significant by the Permittee or the MPCA on the basis that the SIU has a reasonable potential to adversely impact the POTW, or the quality of its effluent or residuals. (Minn. R. 7049.0120, Subp. 24)

2. Pretreatment - Permittee Responsibility to Control Users

2.1 It is the Permittee's responsibility to regulate the discharge from users of its wastewater treatment facility. The Permittee shall prevent any pass through of pollutants or any inhibition or disruption of the Permittee's facility, its treatment processes, or its sludge processes or disposal that contribute to the violation of the conditions of this permit or any federal or state law or regulation limiting the release of pollutants from the POTW. (Minn. R. 7049.0600)

2.2 The Permittee shall prohibit the discharge of the following to its wastewater treatment facility:

a. pollutants which create a fire or explosion hazard, including any discharge with a flash point less than 60 degrees C (140 degrees F);

b. pollutants which would cause corrosive structural damage to the POTW, including any waste stream with a pH of less than 5.0;

c. solid or viscous pollutants which would obstruct flow;

d. heat that would inhibit biological activity, including any discharge that would cause the temperature of the waste stream at the POTW treatment plant headworks to exceed 40 degrees C (104 degrees F);

e. pollutants which produce toxic gases, vapors, or fumes that may endanger the health or safety of workers; or

f. any pollutant, including oxygen demanding pollutants such as biochemical oxygen demand, released at a flow rate or pollutant concentration that will cause interference or pass through. (Minn. R. 7049.0140)

2.3 The Permittee shall prohibit new discharges of non-contact cooling waters unless there is no cost effective alternative. Existing discharges of non-contact cooling water to the Permittee's wastewater treatment facility shall be eliminated, where elimination is cost-effective, or where an infiltration/inflow analysis and sewer system evaluation survey indicates the need for such removal.

2.4 If the Permittee accepts trucked-in wastes, the Permittee shall evaluate the trucked in wastes prior to acceptance in the same manner as it monitors sewered wastes. The Permittee shall accept trucked-in wastes only at specifically designated points. (Minn. R. 7049.0140, Subp. 4)

2.5 Pollutant of concern means a pollutant that is or may be discharged by an industrial user that is, or reasonably should be of concern on the basis that it may cause the permittee to violate any permit limits on the release of pollutants. The following pollutants shall be evaluated to determine if they should be pollutants of concern: pollutants limited in this permit, pollutants for which monitoring is required in this permit, pollutants that are likely to cause inhibition of the Permittee's POTW, pollutants which may interfere with sludge disposal, and pollutants for which the Permittee's treatment facility has limited capacity. (Minn. R. 7049.0120, Subp. 13)

Chapter 7. Domestic Wastewater -- Pretreatment

3. Control of Significant Industrial Users

3.1 The Permittee shall impose pretreatment requirements on SIUs which will ensure compliance with all applicable effluent limitations and other requirements set forth in this permit or any federal or state law or regulation limiting the release of pollutants from the POTW. These requirements shall be applied to SIUs by means of an individual control mechanism. (Minn. R. 7049.0600)

3.2 The Permittee shall not knowingly enter into an individual control mechanism with any user that would allow the user to contribute an amount or strength of wastewater that would cause violation of any limitation or requirement in the permit, or any applicable federal, state or local law or regulation. (Minn. R. 7049.0600 Subp. 3)

4. Monitoring of Significant Industrial Users

4.1 The Permittee shall obtain from SIUs specific information on the quality and quantity of the SIU's discharges to the Permittee's POTW. Except where specifically requested by the Permittee and approved by the MPCA, this information shall be obtained by means of representative monitoring conducted by the Permittee or by the SIU under requirements imposed by the Permittee in the SIU's individual control mechanism. Monitoring performed to comply with this requirement shall include all pollutants for which the SIU is significant and shall be done at a frequency commensurate with the significance of the SIU. (Minn. R. 7049.0710)

5. Reporting and Notification

5.1 If a SIU discharges to the POTW during a given calendar year, the Permittee shall submit a Pretreatment Annual Report for that calendar year, due by January 31 of the following year. The Pretreatment Annual Report shall be submitted on forms provided by the agency or shall provide equivalent information.

The Permittee shall submit the pre-treatment report to the following address:

MPCA
Attn: WQ Submittals Center
520 Lafayette Road North
St. Paul, Minnesota 55155-4194 (Minn. R. 7049.0720)

5.2 The Permittee shall notify the MPCA in writing of any:

a. SIU of the Permittee's POTW which has not been previously disclosed to the MPCA;

b. anticipated or actual changes in the volume or quality of discharge by an industrial user that could result in the industrial user becoming an SIU as defined in this chapter; or

c. anticipated or actual changes in the volume or quality of discharges by a SIU that would require changes to the SIU's required local limits.

This notification shall be submitted within 30 days of identifying the IU as a SIU. Where changes are proposed, they must be submitted prior to changes being made. (Minn. R. 7049.0700, Subp. 1)

Chapter 7. Domestic Wastewater -- Pretreatment

5. Reporting and Notification

5.3 Upon notifying the MPCA of a SIU or change in a SIU discharge as required above, the Permittee shall submit the following information on forms provided by the agency or in a comparable format:

a. the identity of the SIU and a description of the SIU's operation and process;

b. a characterization of the SIU's discharge;

c. the required local limits that will be imposed on the SIU;

d. a technical justification of the required local limits; and

e. a plan for monitoring the SIU which is consistent with monitoring requirements in this chapter. (Minn. R. 7049.0700)

5.4 In addition, the Permittee shall, upon request, submit the following to the MPCA for approval:

a. additional information on the SIU, its processes and discharge;

b. a copy of the individual control mechanism used to control the SIU;

c. the Permittee's legal authority to be used for regulating the SIU; and

d. the Permittee's procedures for enforcing the requirements imposed on the SIU. (Minn. R. 7049.0700, Subp. 3)

5.5 The permittee shall notify MPCA of any of its industrial users that may be subject to national categorical pretreatment standards.

5.6 This permit may be modified in accordance with Minnesota Rules, ch. 7001 to require development of a pretreatment program approvable under the Federal General Pretreatment Regulation (40 CFR 403).

Chapter 8. Industrial Stormwater -- No Exposure Exclusion

1. Conditional Exclusion for No Exposure

1.1 No exposure means all industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snow melt, and/or runoff. Industrial activities or materials include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products, or waste products.

1.2 The conditional exclusion for No Exposure is available on a facility-wide basis in accordance with Minn. R. 7090.3060, subp. 5(B).

1.3 The no exposure certification is non-transferrable in accordance with Minn. R. 7090.3060, subp. 5(D). In the event that the facility operator changes, then the new operator must submit written notification of the change to the MPCA, Attn: WQ Submittal Center, 520 Lafayette Road North, St Paul, Minnesota 55155-4194.

1.4 The MPCA retains the authority to require the facility operator to apply for a permit modification to this permit for stormwater coverage or to apply for coverage under the Industrial Stormwater General Permit (MNR050000), even when an industrial operator certifies No Exposure, if the MPCA has determined that the discharge is contributing to the violation of, or interfering with the attainment or maintenance of water quality standards, including designated uses.

Chapter 8. Industrial Stormwater -- No Exposure Exclusion

1. Conditional Exclusion for No Exposure

1.5 Any facility that has previously obtained a conditional exclusion for No Exposure shall recertify for the exclusion no later than five years from the effective date of the most recent No Exposure certificate issued to the facility by the Agency.

1.6 The No Exposure exclusion is conditional. The facility must maintain a condition of No Exposure at the facility in order for the No Exposure exclusion to remain applicable. In the event of any change or circumstance that causes exposure of industrial activities or materials to stormwater, the facility must comply with the stormwater requirements of this chapter.

1.7 Based on the information submitted with the permit application, the Agency has determined the Permittee meets the exclusion criteria for "No Exposure" in accordance with Minnesota Rules Chapter 7090.3060.

Chapter 9. Total Facility Requirements

1. General Requirements

General Requirements

1.1 Incorporation by Reference. The following applicable federal and state laws are incorporated by reference in this permit, are applicable to the Permittee, and are enforceable parts of this permit: 40 CFR pts. 122.41, 122.42, 136, 403 and 503; Minn. R. pts. 7001, 7041, 7045, 7050, 7052, 7053, 7060, and 7080; and Minn. Stat. Sec. 115 and 116.

1.2 Permittee Responsibility. The Permittee shall perform the actions or conduct the activity authorized by the permit in compliance with the conditions of the permit and, if required, in accordance with the plans and specifications approved by the Agency. (Minn. R. 7001.0150, subp. 3, item E)

1.3 Toxic Discharges Prohibited. Whether or not this permit includes effluent limitations for toxic pollutants, the Permittee shall not discharge a toxic pollutant except according to Code of Federal Regulations, Title 40, sections 400 to 460 and Minnesota Rules 7050, 7052, 7053 and any other applicable MPCA rules. (Minn. R. 7001.1090, subp.1, item A)

1.4 Nuisance Conditions Prohibited. The Permittee's discharge shall not cause any nuisance conditions including, but not limited to: floating solids, scum and visible oil film, acutely toxic conditions to aquatic life, or other adverse impact on the receiving water. (Minn. R. 7050.0210 subp. 2)

1.5 Property Rights. This permit does not convey a property right or an exclusive privilege. (Minn. R. 7001.0150, subp. 3, item C)

1.6 Liability Exemption. In issuing this permit, the state and the MPCA assume no responsibility for damage to persons, property, or the environment caused by the activities of the Permittee in the conduct of its actions, including those activities authorized, directed, or undertaken under this permit. To the extent the state and the MPCA may be liable for the activities of its employees, that liability is explicitly limited to that provided in the Tort Claims Act. (Minn. R. 7001.0150, subp. 3, item O)

1.7 The MPCA's issuance of this permit does not obligate the MPCA to enforce local laws, rules, or plans beyond what is authorized by Minnesota Statutes. (Minn. R. 7001.0150, subp.3, item D)

1.8 Liabilities. The MPCA's issuance of this permit does not release the Permittee from any liability, penalty or duty imposed by Minnesota or federal statutes or rules or local ordinances, except the obligation to obtain the permit. (Minn. R. 7001.0150, subp.3, item A)

1.9 The issuance of this permit does not prevent the future adoption by the MPCA of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards, or orders against the Permittee. (Minn. R. 7001.0150, subp.3, item B)

Chapter 9. Total Facility Requirements

1. General Requirements

1.10 Severability. The provisions of this permit are severable and, if any provisions of this permit or the application of any provision of this permit to any circumstance are held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

1.11 Compliance with Other Rules and Statutes. The Permittee shall comply with all applicable air quality, solid waste, and hazardous waste statutes and rules in the operation and maintenance of the facility.

1.12 Inspection and Entry. When authorized by Minn. Stat. Sec. 115.04; 115B.17, subd. 4; and 116.091, and upon presentation of proper credentials, the agency, or an authorized employee or agent of the agency, shall be allowed by the Permittee to enter at reasonable times upon the property of the Permittee to examine and copy books, papers, records, or memoranda pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit; and to conduct surveys and investigations, including sampling or monitoring, pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit. (Minn. R. 7001.0150, subp.3, item I)

1.13 Control Users. The Permittee shall regulate the users of its wastewater treatment facility so as to prevent the introduction of pollutants or materials that may result in the inhibition or disruption of the conveyance system, treatment facility or processes, or disposal system that would contribute to the violation of the conditions of this permit or any federal, state or local law or regulation.

Sampling

1.14 Representative Sampling. Samples and measurements required by this permit shall be conducted as specified in this permit and shall be representative of the discharge or monitored activity. (40 CFR 122.41 (j)(1))

1.15 Additional Sampling. If the Permittee monitors more frequently than required, the results and the frequency of monitoring shall be reported on the Discharge Monitoring Report (DMR) or another MPCA-approved form for that reporting period. (Minn. R. 7001.1090, subp. 1, item E)

1.16 Certified Laboratory. A laboratory certified by the Minnesota Department of Health and/or registered by the MPCA shall conduct analyses required by this permit. Analyses of dissolved oxygen, pH, temperature, specific conductance, and total residual oxidants (chlorine, bromine) do not need to be completed by a certified laboratory but shall comply with manufacturers specifications for equipment calibration and use. (Minn. Stat. Sec. 144.97 through 144.98 and Minn. R. 4740.2010 and 4740.2050 through 4740.2120) (Minn. R. 4740.2010 and 4740.2050 through 2120)

1.17 Sample Preservation and Procedure. Sample preservation and test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and Minn. R. 7041.3200.

1.18 Equipment Calibration: Flow meters, pumps, flumes, lift stations or other flow monitoring equipment used for purposes of determining compliance with permit shall be checked and/or calibrated for accuracy at least twice annually. (Minn. R. 7001.0150, subp. 2, items B and C)

Chapter 9. Total Facility Requirements

1. General Requirements

1.19 Maintain Records. The Permittee shall keep the records required by this permit for at least three years, including any calculations, original recordings from automatic monitoring instruments, and laboratory sheets. The Permittee shall extend these record retention periods upon request of the MPCA. The Permittee shall maintain records for each sample and measurement. The records shall include the following information (Minn. R. 7001.0150, subp. 2, item C):

a. The exact place, date, and time of the sample or measurement;

b. The date of analysis;

c. The name of the person who performed the sample collection, measurement, analysis, or calculation; and

d. The analytical techniques, procedures and methods used; and

e. The results of the analysis.

1.20 Completing Reports. The Permittee shall submit the results of the required sampling and monitoring activities on the forms provided, specified, or approved by the MPCA. The information shall be recorded in the specified areas on those forms and in the units specified. (Minn. R. 7001.1090, subp. 1, item D; Minn. R. 7001.0150, subp. 2, item B)

Required forms may include:

DMR Supplemental Form
Individual values for each sample and measurement must be recorded on the DMR Supplemental Form which, if required, will be provided by the MPCA. DMR Supplemental Forms shall be submitted with the appropriate DMRs. You may design and use your own supplemental form; however it must be approved by the MPCA. Note: Required summary information MUST also be recorded on the DMR. Summary information that is submitted ONLY on the DMR Supplemental Form does not comply with the reporting requirements.

Chapter 9. Total Facility Requirements

1. General Requirements

1.21 Submitting Reports. Discharge Monitoring Reports (DMRs), DMR supplemental forms, and related attachments shall be submitted electronically via the MPCA Online Services Portal after authorization is approved. Authorization must be applied for and approved prior to submittal via the Online Services Portal.

DMRs and DMR Supplemental Forms shall be electronically submitted by the 21st day of the month following the monitoring period end or as otherwise specified in this permit. Electronic DMR submittal must be complete on or before 11:59 PM of the 21st day of the month following the end of the monitoring period or as otherwise specified in this permit. A DMR shall be submitted for each required station even if no discharge occurred during the monitoring period. (Minn. R. 7001.0150, subps. 2.B and 3.H)

If electronic submittal is not possible, the Permittee must apply for an exception to electronic submittal. Exceptions requests for extreme conditions (no computer on-site is not an extreme condition) must at a minimum contain the extreme reason for the exception, actions to be taken, and date the facility will submit eDMR. All exception requests, and paper DMRs, DMR supplemental forms, and related attachments must be submitted by the 21st day of the month following the monitoring period end to:

MPCA
Attn: Discharge Monitoring Reports
520 Lafayette Road North
St. Paul, Minnesota 55155-4194.

Other reports required by this permit shall be submitted on or before the due date specified in the permit to:

MPCA
Attn: WQ Submittals Center
520 Lafayette Road North
St. Paul, Minnesota 55155-4194.

1.22 Incomplete or Incorrect Reports. The Permittee shall immediately submit an electronically amended report or DMR to the MPCA upon discovery by the Permittee or notification by the MPCA that it has submitted an incomplete or incorrect report or DMR. The amended report or DMR shall contain the missing or corrected data along with a cover letter explaining the circumstances of the incomplete or incorrect report. If it is impossible to electronically amend the report or DMR, the Permittee shall immediately notify the MPCA and the MPCA will provide direction for the amendment submittals. (Minn. R. 7001.0150 subp. 3, item G)

1.23 Required Signatures. All DMRs, forms, reports, and other documents submitted to the MPCA shall be signed by the Permittee or the duly authorized representative of the Permittee. Minn. R. 7001.0150, subp. 2, item D. The person or persons that sign the DMRs, forms, reports or other documents must certify that he or she understands and complies with the certification requirements of Minn. R. 7001.0070 and 7001.0540, including the penalties for submitting false information. Technical documents, such as design drawings and specifications and engineering studies required to be submitted as part of a permit application or by permit conditions, must be certified by a registered professional engineer. (Minn. R. 7001.0540)

Chapter 9. Total Facility Requirements

1. General Requirements

1.24 Detection Level. The Permittee shall report monitoring results below the reporting limit (RL) of a particular instrument as "<" the value of the RL. For example, if an instrument has a RL of 0.1 mg/L and a parameter is not detected at a value of 0.1 mg/L or greater, the concentration shall be reported as "<0.1 mg/L." "Non-detected," "undetected," "below detection limit," and "zero" are unacceptable reporting results, and are permit reporting violations. (Minn. R. 7001.0150, subp. 2, item B)

Where sample values are less than the level of detection and the permit requires reporting of an average, the Permittee shall calculate the average as follows:

a. If one or more values are greater than the level of detection, substitute zero for all nondetectable values to use in the average calculation.

b. If all values are below the level of detection, report the averages as "<" the corresponding level of detection.

c. Where one or more sample values are less than the level of detection, and the permit requires reporting of a mass, usually expressed as kg/day, the Permittee shall substitute zero for all nondetectable values. (Minn. R. 7001.0150, subp. 2, item B)

1.25 Records. The Permittee shall, when requested by the Agency, submit within a reasonable time the information and reports that are relevant to the control of pollution regarding the construction, modification, or operation of the facility covered by the permit or regarding the conduct of the activity covered by the permit. (Minn. R. 7001.0150, subp. 3, item H)

1.26 Confidential Information. Except for data determined to be confidential according to Minn. Stat. Sec. 116.075, subd. 2, all reports required by this permit shall be available for public inspection. Effluent data shall not be considered confidential. To request the Agency maintain data as confidential, the Permittee must follow Minn. R. 7000.1300.

Noncompliance and Enforcement

1.27 Subject to Enforcement Action and Penalties. Noncompliance with a term or condition of this permit subjects the Permittee to penalties provided by federal and state law set forth in section 309 of the Clean Water Act; United States Code, title 33, section 1319, as amended; and in Minn. Stat. Sec. 115.071 and 116.072, including monetary penalties, imprisonment, or both. (Minn. R. 7001.1090, subp. 1, item B)

1.28 Criminal Activity. The Permittee may not knowingly make a false statement, representation, or certification in a record or other document submitted to the Agency. A person who falsifies a report or document submitted to the Agency, or tampers with, or knowingly renders inaccurate a monitoring device or method required to be maintained under this permit is subject to criminal and civil penalties provided by federal and state law. (Minn. R. 7001.0150, subp.3, item G., 7001.1090, subps. 1, items G and H and Minn. Stat. Sec. 609.671)

1.29 Noncompliance Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (40 CFR 122.41(c))

Chapter 9. Total Facility Requirements

1. General Requirements

1.30 Effluent Violations. If sampling by the Permittee indicates a violation of any discharge limitation specified in this permit, the Permittee shall immediately make every effort to verify the violation by collecting additional samples, if appropriate, investigate the cause of the violation, and take action to prevent future violations. If the permittee discovers that noncompliance with a condition of the permit has occurred which could endanger human health, public drinking water supplies, or the environment, the Permittee shall within 24 hours of the discovery of the noncompliance, orally notify the commissioner and submit a written description of the noncompliance within 5 days of the discovery. The written description shall include items a. through e., as listed below. If the Permittee discovers other non-compliance that does not explicitly endanger human health, public drinking water supplies, or the environment, the non-compliance shall be reported during the next reporting period to the MPCA with its Discharge Monitoring Report (DMR). If no DMR is required within 30 days, the Permittee shall submit a written report within 30 days of the discovery of the noncompliance. This description shall include the following information:

a. a description of the event including volume, duration, monitoring results and receiving waters;

b. the cause of the event;

c. the steps taken to reduce, eliminate and prevent reoccurrence of the event;

d. the exact dates and times of the event; and

e. steps taken to reduce any adverse impact resulting from the event. (Minn. R. 7001.0150, subp. 3k)

1.31 Upset Defense. In the event of temporary noncompliance by the Permittee with an applicable effluent limitation resulting from an upset at the Permittee's facility due to factors beyond the control of the Permittee, the Permittee has an affirmative defense to an enforcement action brought by the Agency as a result of the noncompliance if the Permittee demonstrates by a preponderance of competent evidence:

a. The specific cause of the upset;

b. That the upset was unintentional;

c. That the upset resulted from factors beyond the reasonable control of the Permittee and did not result from operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or increases in production which are beyond the design capability of the treatment facilities;

d. That at the time of the upset the facility was being properly operated;

e. That the Permittee properly notified the Commissioner of the upset in accordance with Minn. R. 7001.1090, subp. 1, item I; and

f. That the Permittee implemented the remedial measures required by Minn. R. 7001.0150, subp. 3, item J.

Release

1.32 Unauthorized Releases of Wastewater Prohibited. Except for discharges from outfalls specifically authorized by this permit, overflows, discharges, spills, or other releases of wastewater or materials to the environment, whether intentional or not, are prohibited. However, the MPCA will consider the Permittee's compliance with permit requirements, frequency of release, quantity, type, location, and other relevant factors when determining appropriate action. (40 CFR 122.41 and Minn. Stat. Sec 115.061)

Chapter 9. Total Facility Requirements

1. General Requirements

1.33 Discovery of a release. Upon discovery of a release, the Permittee shall:

a. Take all reasonable steps to immediately end the release.

b. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 or (651)649-5451 (metro area) immediately upon discovery of the release. You may contact the MPCA during business hours at 1(800)657-3864 or (651)296-6300 (metro area).

c. Recover as rapidly and as thoroughly as possible all substances and materials released or immediately take other action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If the released materials or substances cannot be immediately or completely recovered, the Permittee shall contact the MPCA. If directed by the MPCA, the Permittee shall consult with other local, state or federal agencies (such as the Minnesota Department of Natural Resources and/or the Wetland Conservation Act authority) for implementation of additional clean-up or remediation activities in wetland or other sensitive areas.

1.34 Sampling of a release. Upon discovery of a release, the Permittee shall:

a. Collect representative samples of the release. The Permittee shall sample the release for parameters of concern immediately following discovery of the release. The Permittee may contact the MPCA during business hours to discuss the sampling parameters and protocol. In addition, Fecal Coliform Bacteria samples shall be collected where it is determined by the Permittee that the release contains or may contain sewage. If the release cannot be immediately stopped, the Permittee shall consult with MPCA regarding additional sampling requirements. Samples shall be collected at least, but not limited to, two times per week for as long as the release continues.

b. Submit the sampling results on the Release Sampling Form (http://www.pca.state.mn.us/index.php/view-document.html?gid=18867). The Release Sampling Form shall be submitted to the MPCA with the next DMR or within 30 days whichever is sooner.

Bypass

1.35 Anticipated bypass. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if the bypass is for essential maintenance to assure efficient operation of the facility. The permittee shall submit prior notice, if possible at least ten days before the date of the bypass to the MPCA (40 CFR 122.41(m)(2) and 122.41(m)(3) and Minn. R. Ch. 7001.1090, subp. 1, J).

The notice of the need for an anticipated bypass shall include the following information:

a. The proposed date and estimated duration of the bypass;

b. The alternatives to bypassing; and

c. A proposal for effluent sampling during the bypass. Any bypass wastewater must enter waters of the state from outfalls specifically authorized by this permit. Therefore, samples shall be collected at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent.

Chapter 9. Total Facility Requirements

1. General Requirements

1.36 All other bypasses are prohibited. The MPCA may take enforcement action against the Permittee for a bypass, unless the specific conditions described in Minn. R. Ch. 7001.1090 subp. 1, K and 122.41(m)(4)(i) are met.

In the event of an unanticipated bypass, the permittee shall:

a. Take all reasonable steps to immediately end the bypass.

b. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 or (651)649-5451 (metro area) immediately upon commencement of the bypass. You may contact the MPCA during business hours at 1(800)657-3864 or (651)296-6300 (metro area). (Minn. Stat. Sec 115.061)

c. Immediately take action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If directed by the MPCA, the Permittee shall consult with other local, state or federal agencies for implementation of abatement, clean-up, or remediation activities.

d. Only allow bypass wastewater as specified in this section to enter waters of the state from outfalls specifically authorized by this permit. Samples shall be collected at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent. The permittee shall also follow the reporting requirements for effluent violations as specified in this permit.

Operation and Maintenance

1.37 The Permittee shall at all times properly operate and maintain the facilities and systems of treatment and control, and the appurtenances related to them which are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. The Permittee shall install and maintain appropriate backup or auxiliary facilities if they are necessary to achieve compliance with the conditions of the permit and, for all permits other than hazardous waste facility permits, if these backup or auxiliary facilities are technically and economically feasible Minn. R. 7001.0150. subp. 3, item F.

1.38 In the event of a reduction or loss of effective treatment of wastewater at the facility, the Permittee shall control production or curtail its discharges to the extent necessary to maintain compliance with the terms and conditions of this permit. The Permittee shall continue this control or curtailment until the wastewater treatment facility has been restored or until an alternative method of treatment is provided. (Minn. R. 7001.1090, subp. 1, item C)

1.39 Solids Management. The Permittee shall properly store, transport, and dispose of biosolids, septage, sediments, residual solids, filter backwash, screenings, oil, grease, and other substances so that pollutants do not enter surface waters or ground waters of the state. Solids should be disposed of in accordance with local, state and federal requirements. (40 CFR 503 and Minn. R. 7041 and applicable federal and state solid waste rules)

1.40 Scheduled Maintenance. The Permittee shall schedule maintenance of the treatment works during non-critical water quality periods to prevent degradation of water quality, except where emergency maintenance is required to prevent a condition that would be detrimental to water quality or human health. (Minn. R. 7001.0150. subp. 3, item F and Minn. R. 7001.0150. subp. 2, item B)

1.41 Control Tests. In-plant control tests shall be conducted at a frequency adequate to ensure compliance with the conditions of this permit. (Minn. R. 7001.0150. subp. 3, item F and Minn. R. 7001.0150. subp. 2, item B)

Changes to the Facility or Permit

Chapter 9. Total Facility Requirements

1. General Requirements

1.42 Permit Modifications. Except as provided under Minnesota Statutes, section 115.07, subdivisions 1 and 3, no person required by statute or rule to obtain a permit may construct, install, modify, or operate the facility to be permitted, nor shall a person commence an activity for which a permit is required by statute or rule until the agency has issued a written permit for the facility or activity. (Minn. R. 7001.0030)

Permittees that propose to make a change to the facility or discharge that requires a permit modification must follow Minn. R. 7001.0190. If the Permittee cannot determine whether a permit modification is needed, the Permittee must contact the MPCA prior to any action. It is recommended that the application for permit modification be submitted to the MPCA at least 180 days prior to the planned change.

1.43 No person required by statute or rule to obtain a permit may construct, install, modify, or operate the facility to be permitted except as provided under Minnesota Statutes, section 115.07, subdivisions 1 and 3, nor shall a person commence an activity for which a permit is required by statute or rule until the agency has issued a written permit for the facility or activity.

1.44 Plans, specifications and MPCA approval are not necessary when maintenance dictates the need for installation of new equipment, provided the equipment is the same design size and has the same design intent. For instance, a broken pipe, lift station pump, aerator, or blower can be replaced with the same design-sized equipment without MPCA approval.

If the proposed construction is not expressly authorized by this permit, it may require a permit modification. If the construction project requires an Environmental Assessment Worksheet under Minn. R. 4410, no construction shall begin until a negative declaration is issued and all approvals are received or implemented.

1.45 Report Changes. The Permittee shall give advance notice as soon as possible to the MPCA of any substantial changes in operational procedures, activities that may alter the nature or frequency of the discharge, and/or material factors that may affect compliance with the conditions of this permit. (Minn. R. 7001.0150, subp. 3, item M)

1.46 Chemical Additives. The Permittee shall receive prior written approval from the MPCA before increasing the use of a chemical additive authorized by this permit, or using a chemical additive not authorized by this permit, in quantities or concentrations that have the potential to change the characteristics, nature and/or quality of the discharge.

The Permittee shall request approval for an increased or new use of a chemical additive at least 60 days, or as soon as possible, before the proposed increased or new use.

This written request shall include at least the following information for the proposed additive:

a. The process for which the additive will be used;
b. Material Safety Data Sheet (MSDS) which shall include aquatic toxicity, human health, and environmental fate information for the proposed additive. The aquatic toxicity information shall include at minimum the results of: a) a 48-hour LC50 or EC50 acute study for a North American freshwater planktonic crustacean (either Ceriodaphnia or Daphnia sp.) and b) a 96-hour LC50 acute study for rainbow trout, bluegill or fathead minnow or another North American freshwater aquatic species other than a planktonic crustacean;
c. A complete product use and instruction label;
d. The commercial and chemical names and Chemical Abstract Survey (CAS) number for all ingredients in the additive (If the MSDS does not include information on chemical composition, including percentages for each ingredient totaling to 100%, the Permittee shall contact the supplier to have this information provided); and
e. The proposed method of application, application frequency, concentration, and daily average and maximum rates of use. (Minn. R. 7001.0170)

Chapter 9. Total Facility Requirements

1. General Requirements

1.47 Upon review of the information submitted regarding the proposed chemical additive, the MPCA may require additional information be submitted for consideration. This permit may be modified to restrict the use or discharge of a chemical additive and include additional influent and effluent monitoring requirements.

Approval for the use of an additive shall not justify the exceedance of any effluent limitation nor shall it be used as a defense against pollutant levels in the discharge causing or contributing to the violation of a water quality standard.

1.48 MPCA Initiated Permit Modification, Suspension, or Revocation. The MPCA may modify or revoke and reissue this permit pursuant to Minn. R. 7001.0170. The MPCA may revoke without reissuance this permit pursuant to Minn. R. 7001.0180.

1.49 TMDL Impacts. Facilities that discharge to an impaired surface water, watershed or drainage basin may be required to comply with additional permits or permit requirements, including additional restriction or relaxation of limits and monitoring as authorized by the CWA 303(d)(4)(A) and 40 CFR 122.44.l.2.i., necessary to ensure consistency with the assumptions and requirements of any applicable US EPA approved wasteload allocations resulting from Total Maximum Daily Load (TMDL) studies.

1.50 Permit Transfer. The permit is not transferable to any person without the express written approval of the Agency after compliance with the requirements of Minn. R. 7001.0190. A person to whom the permit has been transferred shall comply with the conditions of the permit. (Minn. R., 7001.0150, subp. 3, item N)

1.51 Facility Closure. The Permittee is responsible for closure and post-closure care of the facility. The Permittee shall notify the MPCA of a significant reduction or cessation of the activities described in this permit at least 180 days before the reduction or cessation. The MPCA may require the Permittee to provide to the MPCA a facility Closure Plan for approval.

Facility closure that could result in a potential long-term water quality concern, such as the ongoing discharge of wastewater to surface or ground water, may require a permit modification or reissuance.

The MPCA may require the Permittee to establish and maintain financial assurance to ensure performance of certain obligations under this permit, including closure, post-closure care and remedial action at the facility. If financial assurance is required, the amount and type of financial assurance, and proposed modifications to previously MPCA-approved financial assurance, shall be approved by the MPCA. (Minn. Stat. Sec. 116.07, subd. 4)

Chapter 9. Total Facility Requirements

1. General Requirements

1.52 Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for reissuance at least 180 days before permit expiration. If the Permittee does not intend to continue the activities authorized by this permit after the expiration date of this permit, the Permittee shall notify the MPCA in writing at least 180 days before permit expiration.

If the Permittee has submitted a timely application for permit reissuance, the Permittee may continue to conduct the activities authorized by this permit, in compliance with the requirements of this permit, until the MPCA takes final action on the application, unless the MPCA determines any of the following (Minn. R. 7001.0040 and 7001.0160):

a. The Permittee is not in substantial compliance with the requirements of this permit, or with a stipulation agreement or compliance schedule designed to bring the Permittee into compliance with this permit;

b. The MPCA, as a result of an action or failure to act by the Permittee, has been unable to take final action on the application on or before the expiration date of the permit;

c. The Permittee has submitted an application with major deficiencies or has failed to properly supplement the application in a timely manner after being informed of deficiencies.

Appendix B: Copy of Central Bi-Products Treatment Agreement

COPY

INDUSTRIAL WASTEWATER TREATMENT AGREEMENT

THIS AGREEMENT is made and entered into this 11 day of August, 2015, by and between the City of Redwood Falls, Minnesota, a charter city existing under the Constitution and laws of the State of Minnesota, (hereinafter referred to as the **"City"**) and Central Bi-Products, a Corporate Division of Farmers Union Industries, LLC, a limited liability company organized under the laws of the State of Minnesota (hereinafter referred to as **"Central Bi-Products"**).

RECITALS

WHEREAS, the City is the owner and operator of a Wastewater Treatment Plant (hereinafter referred to as the **"Plant"**) located within the City of Redwood Falls, County of Redwood, and State of Minnesota, which has a discharge to the Minnesota River; and

WHEREAS, the City holds a NPDES operating permit (Number MN. 0020401) for the Plant as a part of the national and state disposal permit program administered by the Minnesota State Pollution Control Agency under the Clean Water Act as amended (33 USC 1251) MSA Chapters 115 and 116, and amended by Minnesota Rules Chapter 7701; and

WHEREAS, Central Bi-Products operates a rendering facility which discharges wastewater into the City's municipal sanitary sewer system; and

WHEREAS, under definitions set forth in the NPDES operating permit for the Plant, Central Bi-Products is defined as a Significant Industrial User; and

WHEREAS, the City is required to prepare and execute an industrial wastewater treatment agreement with all Significant Industrial Users.

NOW THEREFORE in consideration of the foregoing premises and the mutual covenants and promises hereinafter set forth the parties hereto agree as follows.

ARTICLE I. DEFINITIONS

The following definitions are used in this Agreement, unless a different meaning clearly appears from the context:

A. "Act" - The Federal Water Pollution Control Act, also referred to as the Clean Water Act, as amended, 33. U.S.C. 1251 ET seq.

B. "Authorized Representative" - The person or persons designated by the City Council to represent the City on wastewater related issues.

C. "BOD" - 5-day carbonaceous biochemical oxygen demand, determined under standard laboratory procedures as set forth in the latest edition of Standard Methods for the Examination of Water and Wastewater, published jointly by the American Public Health Association, the American Water Works Association and the Water Environment Federation (herein after referred to as the **"Standard Methods"**). BOD within this Agreement shall mean the same as $CBOD_5$.

D. "Capital and Short Lived Assets" - Equipment and material assets required for the operation and maintenance of the Regional Wastewater Treatment Facility including, but not limited to: pumps, meters, aerators, samplers, valves, fittings, piping, control equipment, computer equipment, chemical feed equipment, electrical components, liners, buildings and structures along with all costs of hired labor, equipment, materials and professional services required to evaluate, procure, coordinate and perform the capital and short lived asset replacement(s) including permit fees, cleanup and disposal costs. The cost for City staff's assistance with the capital and short lived assets evaluation and replacement will be excluded from the cost for capital and short lived assets.

E. "Catastrophic Event" - Any event or occurrence, including, but not limited to, damage or destruction of the Central Bi-Products Facility, as shall interfere with and prevent the conduct of business at the Central Bi-Products Facility whether caused by fire, earthquake, explosion, flood, tornado, the elements, acts of Nature or the public enemy, actions, restrictions, limitations or interference of governmental authorities or agents, war, invasion, insurrection, rebellion, or any other cause which is beyond the reasonable control of Central Bi-Products.

F. "Central Bi-Products Allocated Share" - The following quantity, quality and composition of constituents, which Central Bi-Products will be entitled to discharge into the sewerage system:

(1)	Flow	Batch discharge of approximately 5,000,000 gallons per transfer. Discharge volume and flow rate is subject to available storage volume and the City wastewater flow being below permitted level for total flow; and blend ratios for chloride concentration and other pollutant loading.
(2)	CBOD	25 mg/L (calculated on the basis of calendar month average) Value based on current NPDES limit.

(3)	TSS	45 mg/L (calculated on the basis of calendar month average) Value based on current NPDES limit.
(4)	Nitrogen, Ammonia, Un-ionized (as N)	1.0 mg/L (Daily maximum) Value based on current NPDES limit.
(5)	Nitrogen, Ammonia, Total (as N)	December – March 94 mg/L April – May 64 mg/L June – September 7.5 mg/L October – November 9.7 mg/L (calculated on basis of calendar month average) Values based on current NPDES Permit.
(6)	P	455 kg annually (calculated on an annual basis, January 1st to December 31st) Mass loading value is based on 30,000,000 gallons annually at a concentration of 4 ppm
(7)	pH	Not less than 6.0 or greater than 9.0 year around
(8)	Chloride	1,200 mg/L (calculated on the basis of calendar month average) conditioned that the dilution with the City's wastewater must be 873 mg/L or lower. Flow volumes from Central Bi-Products will be limited or terminated as needed to maintain NPDES permit compliance.
(9)	Fecal Coliform	April – October 200 colonies per 100 ml (calculated on basis of geometric mean per month) Value based on current NPDES permit

The monthly and daily values presented above are based on production and clean-up days.

G. "City" - The area within the corporate boundaries of the City of Redwood Falls, the City Council, and its authorized representative.

H. "Flow" - Total sewage volume discharged to the sewerage system as measured by flow rate measurement equipment.

I. "Industrial User" -

(1) Any entity as defined in the Standard Industrial Manual (latest edition) that discharges wastewater to the public sewer.

Division A: Agriculture, Forestry and Fishing

Division B: Mining

Division D: Manufacturing

Division E: Transportation, Communications, Electric, Gas, and Sanitary Sewers

Division I: Services

(2) Any user whose discharges, singly or by interaction with other wastes:

- contaminate the sludge of the wastewater treatment system,
- injure or interfere with the treatment process,
- create a public nuisance or hazard,
- have an adverse effect on the waters receiving wastewater treatment plant discharges,
- exceed NDSW limitations,
- exceed normal residential unit volumes of wastewater.

J. "Industrial Waste" - Any solid, liquid or gaseous substance discharged, permitted to flow or escaping from any industrial manufacturing process, trade or business into the sewerage system, except Sanitary Sewage.

K. "Infiltration/Inflow (I/I)" - Water other than wastewater that enters the sewer system from the ground or from surface runoff, as defined in Minnesota Rules.

L. "MPCA" - Minnesota Pollution Control Agency.

M. "National Categorical Pretreatment Standards" - Federal regulations establishing pretreatment standards for introduction of pollutants in publicly owned wastewater treatment facilities. Section 307(b) of the Act.

N. "National Pollutant Discharge Elimination System (NPDES) Permit" - A permit issued by the MPCA, setting limits on pollutants that a permittee may legally discharge pursuant to Sections 402 and 405 of the Act.

O. "Non-residential User" - A user of the treatment facility whose building is not used as a private residence, and discharges NDSW.

P. "Normal Domestic Strength Waste"(NDSW) - Wastewater that is primarily introduced by residential users with BOD5 concentrations not greater than 250 mg/l and total suspended solids (TSS) concentrations not greater than 250 mg/l.

Q. "P" - Phosphorous which is contained in the wastewater. The methods for

determining phosphorous limits shall be set forth in the latest edition of Standard Methods.

R. "O&G" - Oil and grease concentration as measured by the Partition-Gravimetric Method set forth in Standard Methods.

S. "Regional Wastewater Treatment Facility" - The wastewater treatment facility located in the West half of the Northeast Quarter of Section 30, Township 113 North, Range 35 West, lying south of Redwood County State Aid Highway 25; constructed in 1996 for the purpose of blending pre-treated wastewater from Central Bi-Products with the treated wastewater effluent from the City's wastewater treatment facility.

T. "Sanitary Sewage" - A combination of water that carries wastes from personal and domestic and water uses, such as bathroom and kitchen uses, from residences, business buildings, institutions and industrial plants, together with ground, surface and storm waters as may be present.

U. "Sewage" - Industrial Waste and Sanitary Sewage.

V. "Sewerage System" - All land, buildings, machinery, interceptor and sewers and other tangible and intangible property, whether now or later owned or used by the City for collecting, transmitting, treating or disposing of Sewage, but shall not include sewer laterals connecting users to the sewer mains of the City.

W. "Significant Industrial User" - Any industrial user of the wastewater disposal system which (1) has a discharge flow of 25,000 gallons or more per average work day, or (2) has a flow or loading greater than 5 percent of the flow in the wastewater disposal system, or (3) has in its wastes toxic pollutants as defined pursuant to Section 307 of the Act or Minnesota Statutes and rules, or (4) has a significant impact, either singly or in combination with other contributing industries, on the wastewater disposal system, the quality of sludge, the system's effluent quality, or air emissions generated by the system.

X. "State Disposal System (SDS) Permit" - A permit issued by the MPCA pursuant to Minn. Stat. §115.07 for a disposal system as defined by Minn. Stat. §115.01, subd. 8.

Y. "TKN" - The Total Kjeldahl Nitrogen which is contained in the wastewater. The methods for determining TKN limits shall be set forth in the latest edition of Standard Methods.

Z. "TSS" - Total suspended solids, which are solids that either float on the surface of, or are in suspension in Sewage, and which are removable by a laboratory filtration device. The

methods for determining suspended solids shall be those set forth in the latest edition of Standard Methods.

AA. "Upset Conditions" - The wastewater treatment process has received flows, loadings or materials that causes the treatment process to not function properly and results in violations of the City's NPDES permit limits.

BB. "User" - Any person partnership, corporation or other organization or entity, public or private, which discharges Sewage into the Sewerage System.

ARTICLE II. AUTHORITY AND SCOPE

A. This Agreement is made pursuant to the City of Redwood Falls Sewer Use Ordinance No. 136, Second Series, passed July 13, 1988.

B. The language within the Articles of this Agreement shall have precedence over the language used within the Articles of the Wastewater Treatment Ordinance as long as all requirements and the intent of the Wastewater Treatment Ordinance are satisfied.

ARTICLE III. COLLECTION AND TREATMENT

A. Central Bi-Products may discharge Central Bi-Products Allocated Share of Wastewater to the Sewerage System, and the City will blend Central Bi-Products pre-treated sewage with the City of Redwood Falls treated wastewater effluent, as set forth in this Agreement.

B. The City shall receive sewage from Central Bi-Products at the Regional Wastewater Treatment Facility. Sewage will typically be received on a batch transfer basis; however, the City reserves the right to temporarily suspend receiving sewage from Central Bi-Products when the facility is hydraulically overloaded; when the addition of sewage from Central Bi-Products may result in the discharge of wastewater with pollutants exceeding the City's NPDES/SDS permitted limits; or for maintenance and repair reasons.

C. The City will utilize phosphorus credit, trading with other publicly operated wastewater treatment facilities, in order to achieve compliance with the mass load limit for phosphorus provided in the City's NPDES/SDS permit. The phosphorus credit trading shall be subject to the Minnesota Pollution Control Agency's periodic review and approval.

D. The City shall install, operate and maintain wastewater metering facilities in order to measure Central Bi-Products Sewage flow on a continuous basis. The wastewater metering facilities shall be equipped with a flow volume totalizer. The wastewater metering facilities will be installed at the City's Plant. The City shall record the daily flows and provide Central Bi-Products with a summary of the total monthly flow.

The cost for the design, permitting and installation of the metering facilities shall be shared equally (50/50 cost split) between Central Bi-Products and the City. Payment in full to the City by Central Bi-Products shall be due upon completion of the work in conjunction with the succeeding monthly sanitary sewer utility service billing.

The City shall be responsible to maintain and repair the aforementioned flow metering facilities and shall regularly calibrate said components to operate within the manufactures established limits of accuracy.

E. Prior to pre-discharge sampling and wastewater transfer, the pond from which Central Bi-Products intends to transfer shall be captive with no additional wastewater discharged into or out of the pond until after completion of the transfer of wastewater to the Regional Wastewater Treatment Facility. Central Bi-Products shall collect samples and submit such samples to be analyzed for the constituents listed in Article I.F. by a certified testing laboratory prior to the City's acceptance of any wastewater. The sampling method shall be a composite of multiple grab samples taken from various locations. Copies of all analyses and laboratory reports will be provided directly from the testing lab to the City and Central Bi-Products. The City shall have the right to observe the testing and sampling procedures utilized by Central Bi-Products at the pond site, and to split any samples collected by Central Bi-Products for the City's own analysis.

The cost for the pre-discharge sampling and analysis shall be paid for by Central Bi-Products.

F. The City will, on a regular basis, submit to Central Bi-Products a statement setting forth any violations of quality or quantity or composition of the Sewage Central Bi-Products discharged into the Sewerage System during the preceding billing report.

G. No unpolluted water or storm water shall be discharged to the sanitary sewer. Such water shall be discharged only to storm sewers or to natural outlets approved by the appropriate

regulatory agencies.

H. Discharges of the substances listed below shall be limited to concentrations or quantities, which will not harm the wastewater facility, streams, soils, vegetation, ground water, and will not otherwise create a hazard or nuisance. The authorized representative may set limitations lower than the prohibition limits outlined below. Consideration will be given to such factors as the quantity of waste in relation to flows and velocities, materials of construction, the City's NPDES/SDS permit, capacity of the treatment plant, degree of treatability of wastes and other pertinent factors. Substances include but shall not be limited to:

(1) Wastewater having a temperature greater than 150° F (65.6° C), or causing, individually or in combination with other wastewater, the influent at the treatment facilities to have a temperature exceeding 104° F (40° C), or having heat in amounts which will be detrimental to biological activity in the treatment facilities.

(2) Noxious or malodorous liquids, gases, or solids.

(3) Radioactive wastes or isotopes in concentrations that exceed limits established by applicable state and federal regulations.

ARTICLE IV. USER CHARGES

A. Central Bi-Products agrees to pay user charges to the City for discharging wastewater flows and loadings to the City's Plant. The usage charge will be determined based on actual flow and loading parameters that are discharged into the City's Plant.

B. The base and usage charges will be utilized by the City to pay the first $5,000 of the annual capital and short lived asset costs to operate and maintain the Regional Wastewater Treatment Facility. All costs for capital and short lived assets required to operate and maintain the Regional Wastewater Treatment Facility in excess of $5,000 annually shall be paid by Central Bi-Products. Except in cases of emergency, the City shall provide advance notice to Central Bi-Products of capital and short lived asset costs anticipated to exceed $5,000 annually. The amount due for capital and short lived assets costs that exceed $5,000 annually will be included with the monthly invoice for base charges and usage charges and shall be payable in conformance with the City's standard policies and procedures.

C. The base charges and usage charges for wastewater treatment and disposal shall conform to the City's standard rates. The usage charge rate is reviewed and adjusted periodically

by the City Council.

D. The User Charges shall be payable on a monthly basis in conformance with the City's standard policies and procedures.

E. Any surcharges or penalties incurred under Article VI. of this Agreement shall be in addition to the base charges and usage charges for allowable discharges under this Agreement.

ARTICLE V. TERM OF AGREEMENT

A. The effective date of the Agreement shall be January 1, 2016.

B. The Agreement shall run concurrent with the City's NPDES/SDS Permit, which is scheduled to expire December 31, 2018. The Agreement shall be automatically renewed in conjunction with the City's NPDES/SDS permit (typically on a 5 year period basis), subject to modification in response to any new rule, regulation or pollutant limit imposed upon the City.

ARTICLE VI. NON-COMPLYING DISCHARGES

A. In the event that Central Bi-Products Sewage discharge exceeds the limits as defined in Article I., Paragraph F., discharge into the City's system shall immediately cease. Central Bi-Products may, upon notice and agreement with City, discharge non-complying wastewater to City for storage by City, dilution, and discharge on a batch discharge basis, all subject to storage availability, blending ratios and NPDES/SDS permit compliance. The volume of discharge allowed shall be calculated based on water quality of Central Bi-Products Sewage and the City's current treatment capacity.

B. The City provides no guarantee to accept and treat sewage from Central Bi-Products that exceeds the limits set forth in Article I, Paragraph F.

C. Central Bi-Products shall notify the City immediately by phone and within seven (7) days in writing, of any spill or discharge which may result in a violation of the limits stated in this Agreement or may cause the City's wastewater treatment system to become upset. If the City receives any fines or penalties due to the actions of Central Bi-Products, which causes an upset of the wastewater treatment system that are directly associated with the spill or discharge, these fines or penalties shall be assessed to Central Bi-Products.

D. In the event that Central Bi-Products Sewage discharge exceeds Central Bi-Products Allocated Share for any constituent as defined in Article I., Paragraph F., the City shall impose

surcharges in excess of Central Bi-Products Allocated Share.

E. Central Bi-Products shall pay the City surcharges based upon the following rates for each constituent discharged in excess of the Central Bi-Products Allocated Share:

Flow	The charge shall be based on the standard usage rate
CBOD	$2.00 per pound per day calculated on the basis of calendar day average during which the batch transfer is in progress.
TSS	$2.00 per pound per day calculated on the basis of calendar day average during which the batch transfer is in progress.
Ammonia, N, Un-ionized	Wastewater will NOT be accepted
Ammonia, N, Total	$20.00 per pound per day calculated on the basis of calendar day average during which the batch transfer is in progress.
P	$70.00 per kilogram for phosphorus treatment provided from the City's phosphorus credit reserve. Excessive phosphorus discharge requiring the purchase of additional phosphorus credits during the calendar year will be invoiced to Central Bi- Products based on the City's cost to purchase all additional phosphorus credits plus $2,500. No warranty is expressed or implied that additional phosphorus credits will be available for the City's purchase.
Chloride	Wastewater exceeding dilution range will NOT be accepted.
pH	$50.00 per day that the pH is less than 6.0 or greater than 9.0 as calculated on a daily average basis of samples collected

Surcharge calculations shall be based upon each day the batch transfer is in progress and the pollutant level for each constituent exceeds the maximum limit for that constituent. The surcharges shall apply to the mass discharged in excess of the stated allocated capacity for

BOD, TSS, Ammonia and P. The flow and loadings shall be based on production and clean-up days. The surcharge unit costs for the loading parameters shall be reviewed annually and necessary adjustments shall be made by the City.

ARTICLE VII. INDEMNIFICATION

Central Bi-Products agrees to indemnify and hold the City harmless from any and all liabilities, obligations, taxes, penalties, fines, claims, lawsuits, judgments, settlements, compromises, deficiencies, losses, costs, expenses and/or assessments including without limitation the costs of arbitration, litigation, and reasonable attorney's fees, consulting fees, damages or charges arising out of claims, suits, arbitration proceedings, demands, causes of action, settlements or award of damages, whether compensatory or punitive, or expenses arising therefrom, either at law or in equity which might be claimed now or in the future, which may arise out of or be caused by the activities and/or requirements to be carried out pursuant to the obligations of this Agreement by Central-Bi Products' agents or employees, or authorized representatives except for loss, liabilities, claims, demands or causes of action caused solely by the negligence or willful misconduct of the City, its officers, employees, representatives, agents or consultants. In the event of any such loss, liability, claim, demand or cause of action caused by the joint negligence of Central By-Products, its representatives, agents or consultants, guest or invitees, and the City, Central by-Products indemnification of the City shall be enforceable to the extent of Central By-Products negligence. If any action or proceeding is brought against the City by reason of such claim, Central By-Products upon notice from the City, shall defend the same at Central By-Product's expense through legal counsel reasonably satisfactory to the City. Central By-Products shall give the City prompt notice in the event of any such claim. Central By-Products indemnity of the City shall survive termination of this Agreement.

ARTICLE VIII. MISCELLANEOUS PROVISIONS

A. The City will keep books, records and accounts in which complete entries shall be made available of all transactions and costs relating to the Sewerage System. The books, records and accounts shall at all reasonable times be subject to inspection and copying by any party to this Agreement. Central Bi-Products may from time to time review such books and records. The City shall also provide to Central Bi-Products such information regarding the design or other technical information regarding the City Plant and its Sewerage System as Company may request

from time to time.

B. The City and Central Bi-Products warrant that each has the right, title and authority to enter into this Agreement and to perform each and every term, covenant and condition in it.

C. The City and Central Bi-Products agree that this Agreement constitutes the entire understanding of the parties hereto, and that no prior or contemporaneous oral or written understandings of the parties shall be applicable hereto except as specifically set forth herein. Nothing in this Agreement shall prohibit the City from adopting and enforcing ordinances rules or regulations providing for pretreatment of Sewage, exclusion of Sewage, or the establishing of sewerage user charges periodically, provided that no such action shall affect the Central Bi-Products rights hereunder.

D. The terms and conditions of this Agreement may be subject to renegotiation and modification during the term of the Agreement if limitations on discharge from the wastewater treatment facility, as set forth in the NPDES/SDS Permit, are modified. The City shall notify Central Bi-Products of any such change in this Agreement and negotiate in good faith the economic effect thereof prior to the effective date of change. Modification of this Agreement may occur only if in writing and signed by a duly authorized agent of both parties.

E . Central Bi-Products agrees to periodically meet with the City and its representatives to discuss issues related to the operation of the City's Plant, the status of the Agreement compliance and associated surcharges and penalties.

F. All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed to have been given if and when delivered or mailed, postage prepaid, by certified or registered mail, to:

(1) City of Redwood Falls
Attn: City Administrator
333 S Washington Street
PO Box 526
Redwood Falls, MN 56283-1657

(2) Farmers Union Industries, LLC
Attn: Manager of Regulatory Compliance
590 West Park Road
PO Box 319
Redwood Falls, MN 56283

G. This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota. Remedies provided in this Agreement are not exclusive of any other rights or remedies that might be available to the parties at law or in equity.

H. This Agreement shall bind and inure to the benefit of the parties and their respective successors and assigns, except as herein limited.

I. Any provision of this Agreement, which is prohibited or unenforceable in any jurisdiction, shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof or affecting the validity or enforce ability of such provision in any other jurisdiction.

J. If a dispute occurs between Central Bi-Products and the City regarding monitoring data or its interpretation or use under the Agreement, Central Bi-Products may request the City to obtain an opinion from its consulting engineer regarding such dispute. Upon the request of Central Bi-Products, the City shall provide the opinion of its consulting engineer to Central Bi- Products in an attempt to resolve the dispute.

If the dispute continues to occur between Central Bi-Products and the City, an independent professional engineer experienced in municipal sanitary engineering not regularly within the employment of either the City or Central Bi-Products shall be designated by the City and Central Bi-Products to review the matter in dispute and issue a technical opinion thereof. The City and Central Bi-Products shall agree on the selection of such engineer. If the technical opinion of the independent professional engineer substantially conforms to the opinion of the City and its consulting engineer, the cost for such review shall be borne in its entirety by Central Bi-Products. If the technical opinion by the independent professional engineer substantially conforms to the position of Central Bi-Products, the cost for such review shall be borne in its entirety by the City.

The City and Central Bi-Products may request mediation of any dispute. The mediation will be governed by the rules of the American Arbitration Association. The City and Central Bi-Products shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above. If the claim is not resolved by mediation, either party shall give written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction within 30 days of the termination of the mediation process.

IN WITNESS WHEREOF the parties have hereunto executed this Agreement the date and year first above written.

Farmers Union Industries,
a Minnesota Limited Liability Company

By: Duane Anderson CEO
Name, Title

By: David J. Peters CFO
Name, Title

STATE OF MINNESOTA)
) ss.
COUNTY OF REDWOOD)

The foregoing instrument was acknowledged before me on this 11 day of August, 2015, by Duane Anderson (Name), CEO (Title), and David J. Peters (Name), CFO (Title), on behalf of the Corporation.

Joy A. Draeger
Notary Public

JOY A. DRAEGER
Notary Public-Minnesota
My Commission Expires Jan 31, 2018

City of Redwood Falls,
a Minnesota charter city

By: _____
Corey Theis, Mayor

By: Keith Muetzel
Keith Muetzel, City Administrator

STATE OF MINNESOTA)
) ss.
COUNTY OF REDWOOD)

The foregoing instrument was acknowledged before me on this 18th day of August, 2015, by Corey Theis and Keith Muetzel, the Mayor and City Administrator, respectively, of the City of Redwood Falls, a Minnesota charter city, on behalf of the City of Redwood Falls.

Susan C. Wessels
Notary Public

This document drafted by:
Bolton and Menk, Inc.
140 1st Ave North
Sleepy Eye, MN 56085

Appendix C: Phosphorus Trading Agreement

INTERGOVERNMENTAL AGREEMENT FOR PHOSPHORUS TRADING RELATING TO THE LAKE PEPIN PRE-TMDL WQBEL STANDARDS

THIS INTERGOVERNMENTAL AGREEMENT (the "Agreement") is made and entered into this 23rd day of February, 2016, by and between the City of Redwood Falls, a Minnesota charter city (the "Buyer") and the City of New Ulm a Minnesota charter city (the "Seller")

RECITALS:

WHEREAS, The City of Redwood Falls (Buyer) (NPDES Permit No. MN0020401) has an annual mass phosphorus limit of 1,460 kg/yr based on the Lake Pepin Pre-TMDL standards. The Buyer is seeking 1,522 kg/yr of phosphorus credits to offset its loading. The Buyer is within the Minnesota River Major Watershed district and within the Minnesota River drainage basin; and

WHEREAS, The City of New Ulm (Seller) (NPDES Permit No. MN0030066) has an annual mass phosphorus limit of 7,482 kg/yr based on the Lake Pepin Pre-TMDL standards. The Seller is discharging phosphorus at a level below its permitted limit and therefore has capacity to trade. The Seller is within the Minnesota River Major Watershed district and within the Minnesota River drainage basin; and

WHEREAS, This agreement will arrange for the trade of 1,522 kg/yr of phosphorus credits from the City of New Ulm to the City of Redwood Falls to give the City of Redwood Falls 1,384 kg/yr of credits. The trade is based on a trade ratio of 1.1:1.0 per the MPCA Pre-TMDL Phosphorus Trading guidance. Table 4.1 of the submitted Redwood Falls August 5th Wastewater Treatment Study depicts the credit needs and all methodologies to derive loading reductions are contained therein; and

WHEREAS, This agreement requires review of the Minnesota Pollution Control Agency prior to execution. Both parties' permits will receive a minor modification to record this trade once executed; and

WHEREAS, This agreement is only for the Lake Pepin Pre-TMDL standards. It will be terminated once the Lake Pepin TMDL becomes final and final limits are issued or upon issuance of other more stringent standards; and

WHEREAS, A contingency plan to this agreement, the Buyer will modify the Regional Treatment Facility for in pond phosphorus removal as outlined as Alternative 1A. page 4-4 and table 4.2 of the submitted Redwood Falls August 5th Wastewater Treatment Study until such time a facility plan can be developed to meet permit requirements; and

NOW, THEREFORE, for valuable consideration, the receipt and sufficiency of which both parties acknowledge the parties agree as follows:

1. Terms. The City of Redwood Falls and the City of New Ulm agree to buy and sell phosphorus credits for the duration of each community's NPDES/SDS permit. This agreement will be reviewed for continuance with each permit reissuance with the term of the agreement extending a minimum of 1 year to coincide with and to cover overlap of the NPDES/SDS interim permits in order to prevent laps in coverage. Barring Acts of God or other unforeseen politics or newly imposed regulations outside of the actual control of either Buyer or Seller, both the Seller and Buyer will continue to provide and purchase credits as long as they are available or necessary.

2. Payment. The City of Redwood Falls will pay $25/kg of phosphorus credits in 2016. The total purchase price for 2016 is $38,800.00. This value will be updated annually based on the Consumer Price Index. Bi-Annual payments will be made consisting of half the annual value on or by January 15th of each year with payment of the second half on or by July 15th of the current year. In addition to the bi-annual payment, the Buyer will pay for MPCA imposed permit fees associated with the Seller's permit modification due to this trade agreement.

3. Continued Cooperation. During all stages of trade agreement, and continuing after termination, each party will provide the other party with any and all trade reporting documents or other documentation necessary to comply with each individual NPDES/SDS permit and the Minnesota Pollution Control Agency trading requirements.

4. Termination. Other than termination due to finalization of the Lake Pepin TMDL and imposition of new phosphorus limits, the Seller must provide a 60 day notice to withdraw from this agreement or to indicate their inability to remove the mass equivalent of phosphorus needed to meet the agreement. The Buyer upon withdrawal notification will immediately notify the Minnesota Pollution Control Agency to negotiate compliance scheduling, implement contingency provisions and use this period to solicit other potential trade partners to maintain compliance. The Seller will reimburse the Buyer for any pre credit purchases that remain unfulfilled at the time of termination. The Buyer must also provide a 60 day termination notice to coincide with calendar year end in the event credits are no longer needed due to treatment process changes or de-valued due to imposed upstream trading requirements to meet water quality standards from the Buyers point of discharge.

5. General. This Agreement shall supersede all prior negotiations, representations or agreement between the Buyer and Seller regarding the Project, whether written or oral. The terms and conditions of this Agreement shall not be constructed or used in any way by either party to represent precedence for future agreements. Each party represents, by signature below, that all necessary approvals have been secured authorizing the representative of each party to execute this Agreement.

THIS INTERGOVERNMENTAL AGREEMENT is made and effective as of the date first written above.

CITY OF NEW ULM
a Minnesota Charter City

Dated: 2-23-16

Print: Linda Heme, President
Title: New Ulm Public Utilities Commission

Dated: 2-23-16

Print: Brian Gramentz
Title: New Ulm City Manager

CITY OF REDWOOD FALLS,
a Minnesota charter city

Dated: 2-19-16

Corey Theis
Redwood Falls Mayor

Dated: 2-19-16

Keith Muetzel
Redwood Falls City Administrator

Attest.

Amy Busse
Redwood Falls City Attorney

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Application to Trade

Pre-Total Maximum Daily Load (TMDL)
Phosphorus Trading

Complete this form and submit to: Beckie Olson
(at address above)

Instructions to this form found on page 2.

Impaired Water Identification

Name of impaired water body (lake/reservoir): Lake Pepin

Impaired lake/reservoir ID number: 25-0001-00 Pollutant or stressor impairing water body: Nutrient/Eutrophication Biological Indicators

Facility Information (Buyer)

Name of facility: City of Redwood Falls Municipal Waste Water Facility NPDES/SDS Permit No.: MN0020401

Mailing address:

City: Redwood Falls State: MN Zip code: 56283

Name of facility contact person: Tom Stough Telephone number: 507-430-0166

Name of water body that facility discharges to: Minnesota River

Name of major watershed that facility discharges to: Minnesota River 8-digit HUC number: 07020004

Number of river miles facility discharge is upstream of impaired water body (necessary if parties are not in same HUC): 268

Facility Information (Seller)

Name of facility: New Ulm Wastewater Treatment Facilty NPDES/SDS Permit No.: MN0030066

Mailing address:

City: New Ulm State: MN Zip code: 56073

Name of facility contact person: Dan O'Connor Telephone number: 507.359.8360

Name of water body that facility discharges to: Minnesota River and Cottonwood river

Name of major watershed that facility discharges to: Minnesota and Cottonwood 8-digit HUC number: 07020007

Number of river miles facility discharge is upstream of impaired water body (necessary if parties are not in same HUC): 194

Trade Amount/Timeframe

A. Upward adjustment to buyer's phosphorus limit (kg/year)	B. Buyer trade ratio	C. Total phosphorus purchased (kg/year)	D. Downward adjustment to seller's phosphorus limit (kg/year)
1384	1.1:1	1,522	1,522

Certification

I hereby apply for coverage under Pre-TMDL Phosphorus Trading. By signing this form, the buyer listed above requests that the Minnesota Pollution Control Agency (MPCA) increase its facility's phosphorus mass limit listed in its National Pollutant Discharge Elimination System (NPDES) permit by the amount specified in column A of the Trade Amount/Timeframe table above. The seller requests that the MPCA decrease its facility's phosphorus mass limit listed in its NPDES permit by the amount specified in column D of the Trade Amount/Timeframe table above. I certify I am aware that this requested trade is not effective until it is incorporated into my facility's individual NPDES/State Disposal System (SDS) permit. I further certify I am aware that the MPCA will need to modify each facility's permit to implement this request.

Signature of **buyer** *(Principal Executive Office)*

Keith Muetzel
Printed name of person signing

Title: City Administrator

Date: 02-17-2016

Signature of **seller** *(Principal Executive Office)*

Brian Gramentz
Printed name of person signing

Title: City Manager

Date: 02-24-2016

Public Utilities Commission

310 1st North Street
New Ulm, MN 56073
www.ci.new-ulm.mn.us

P:: 507.359.8264
F:: 507.354.7318
maria.hughes@ci.new-ulm.mn.us

Feb. 24, 2016

James Doering, Public Works Project Coordinator
City of Redwood Falls
P.O. Box 526
Redwood Falls, MN 56283

Dear Mr. Doering:

Enclosed please find two originals of the agreement and application to trade forms pertaining to phosphorus trading.

Kind regards,

Maria Hughes
Clerical Assistant

Enclosures (2)

Appendix D: Preliminary Effluent Limit Request Form

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Preliminary Effluent Limit Review Request

EAO Effluent Limits Unit

Doc Type: Effluent Limit Standards Review

Purpose: This form is required for all preliminary effluent limit requests for: 1) new facilities with a surface water discharge; 2) where the design flow, outfall location, or quality of the effluent is changing for an existing facility with a surface water discharge; or 3) changes to treatment type that would impact quality of the effluent.

Complete application by typing or printing in black ink.
Instructions on page 3.

MPCA Use Only
MN
Application number
Date received

Contact Information

1. **Engineer or consultant or requester** Employer/Company: Bolton & Menk, Inc.
   Name: John Graupman Title: Principal Engineer
   Mailing address: 1960 Premier Drive
   City: Mankato State: MN Zip code: 56001
   Phone: 507-625-4171 Fax: 507-625-4177 E-mail: john.graupman@bolton-menk.com
2. **Permittee or Facility**
   Name: Redwood Falls Wastewater Treatment Facility County: Redwood
   City: Redwood Falls State: MN Zip code: 56283
   NPDES/SDS Permit #: MN0020401 *(complete only for existing permitted facilities)*
   Address of facility *(if known)*:

Facility Information (If more space is needed, attach additional page(s) to the request.)

3. **Reason for request:** *(Describe in detail: design flow, outfall locations, and/or changes to treatment type impacting the quality of the effluent.)*
   The City of Redwood Falls is in the facility planning stages of a minor improvements project to their wastewater treatment system. Improvements do not change design flows and loading but adds a treatment process.
4. **Identify design flows and waste flow type for the proposed facility:**
   See the Minnesota Pollution Control Agency (MPCA) website regarding Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants at: http://www.pca.state.mn.us/0agxb2d.

   For domestic wastewater facilities only
   Average Wet Weather Design Flow: 1.321 mgd (million gallons/day)
   Average Dry Weather Design Flow: 0.737 mgd (million gallons/day)
   Waste Flow Type: ☒ Continuous ☐ Controlled

   For industrial and other wastewater facilities only
   Maximum Daily Design Flow: _____ mgd (million gallons/day)
   Average Daily Design Flow: _____ mgd (million gallons/day)
   Waste Flow Type: ☐ Continuous ☐ Controlled ☐ Periodic/Seasonal ☐ Intermittent

Waste flow type: A description of the discharge type

Continuous: *Continuous, year-round discharge where flows occur without interruption throughout operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 122.2). Most domestic mechanical facilities are considered to have continuous discharges.*

Controlled: *Discharge permitted during pre-defined periods or windows which are generally during periods of higher receiving water flow and lower temperatures. For northern MN [MPCA regions I, II, III] these periods are 3/1-6/30 and 9/1-12/31. For southern MN [MPCA regions IV, V, Metro] these periods are 3/1-6/15 and 9/15-12/31. These discharges are almost exclusively stabilization ponds with controlled discharges in spring and fall.*

Intermittent: *Discharge that occurs sometimes, but not regularly (40CFR pt.122). Intermittent discharges occur infrequently and/or for short durations. Examples include water treatment plants with backwash discharge such as once every ten days or a few hours every week, and stormwater detention ponds with discharges that are precipitation dependent.*

Periodic/Seasonal: *Discharge that occurs regularly, but is not continuous all year, where discharge is intentional at specified times following treatment (e.g., monthly or seasonally) and of longer duration, as opposed to the short duration of intermittent discharges (40CFR 122). Examples include canning facilities that discharge process wastewater continuously during packing season (May-Sep or other months) and quarries and gravel mining operations. This excludes stabilization ponds with pre-defined discharge periods or windows.*

5. **Facility description:** *(Provide a description of the proposed wastewater treatment facility, including the type of treatment units.)*

- The proposed improvements include addition of chemical feed system for phosphorus precipitation, tertiary cloth disk filters with required pump station and replacement of existing pond aeration equipment (blowers, diffusers, and aeration piping).

6. **Wetland impacts:** *(For new or expanded discharges, will construction or operation of the proposed facility result in wetland filling, drainage, excavation, or permanent inundation?)* ☐ Yes ☒ No If yes, please provide the following information:

   a. Location of impacted wetland:

   b. Acreage of impacted wetland:

   c. Wetland type/classification:

   (See U.S. Fish and Wildlife Service National Wetlands Inventory at http://www.fws.gov/wetlands/index.html.)

7. **Is the facility located on tribal land?** ☐ Yes ☒ No
   If yes, also contact U.S. Environmental Protection Agency (EPA) Region V, John Coletti 312-886-6106.

8. **Identify all wastewater facility locations for which preliminary effluent limits are requested:**

County: Redwood		City/Township: Redwood Falls		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T113 N	R35 ☐E ☒W	31	NE	NW

County:		City/Township:		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			

County:		City/Township:		
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			

Existing/Proposed Surface Water Discharge

9. **Identify all surface water discharge locations for which preliminary effluent limits are requested:**

Complete the table for each surface water discharge point. If this is an existing facility, refer to the current National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Permit for Station ID. For new facilities, enter as much information as available. If more space is needed for additional stations, attach additional pages.

The location of a surface water discharge is defined as the location where a wastewater discharge enters a surface water (not where the pipe leaves the wastewater facility structure). If a pipe extends out into a river or lake, the location is identified where the pipe leaves the shore and enters the body of water. If the discharge is to a tile line or storm sewer the location is identified where the tile line or storm sewer enters a surface water. If the discharge is into an open ditch or ravine, the location is identified as the point where the discharge leaves the pipe and enters the open ditch.

Station ID: SD 002

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T113N	R35 ☐E ☒W	19	SE	SE
Latitude	Longitude	Datum	Coordinate Collection Method	
44.571877	-95.098931	NAD83	Google Maps	12/17/2020

Receiving Water Name: Minnesota River

Station ID: SD

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			
Latitude	Longitude	Datum	Coordinate Collection Method	

Receiving Water Name:

Surface water discharge locations for which preliminary effluent limits are requested - *continued*:

Station ID: SD

Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T N	R ☐E ☐W			
Latitude	Longitude	Datum	Coordinate Collection Method	

Receiving Water Name:

Attachments

☒ Did you attach a map?

Attach a map, U.S. Geological Survey topographic map (7.5 minute series) or other map of comparable detail that shows surface water bodies, roads, and other pertinent landmarks. The map should show and label the exact location of the existing or proposed facility, and the location of all existing and proposed wastewater discharge points into receiving waters. Mark and label all surface water discharge locations at the point where the wastewater enters the receiving water. If the discharge is to a tile line or storm sewer, label the tile line or storm sewer and show its flow path to the receiving water.

Note: Please ensure this form and all applicable attachments are complete. **Please make a copy for your records.**

Application Fee

An application fee is required under Minn. Stat. § 116.07, subd. 4d (1990) and Minn. R. ch. 7002 (Permit Fee Rules). This application fee must be submitted with the application. The current application fee is $1,550 with the dollar amount determined by point assignments contained in the Permit Fee Rules. Please refer to the application fee table located at: http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/water-permits-and-forms/mpca-water-quality-permit-fees.html.

Submittal

Requests that are submitted without the required fee and attachments will be returned. Please make your check payable to the Minnesota Pollution Control Agency. Send the completed request, attachments, and check to:

Attn: Fiscal Services – 6th floor
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Contact Information

If you have questions or need further assistance, contact Steven Weiss at 651-757-2814 or Carol Sinden at 651-757-2727 Effluent Limits Unit, Environmental Analysis and Outcomes Division.

Instructions

Surface water discharge location example:

Station ID: SD *1*

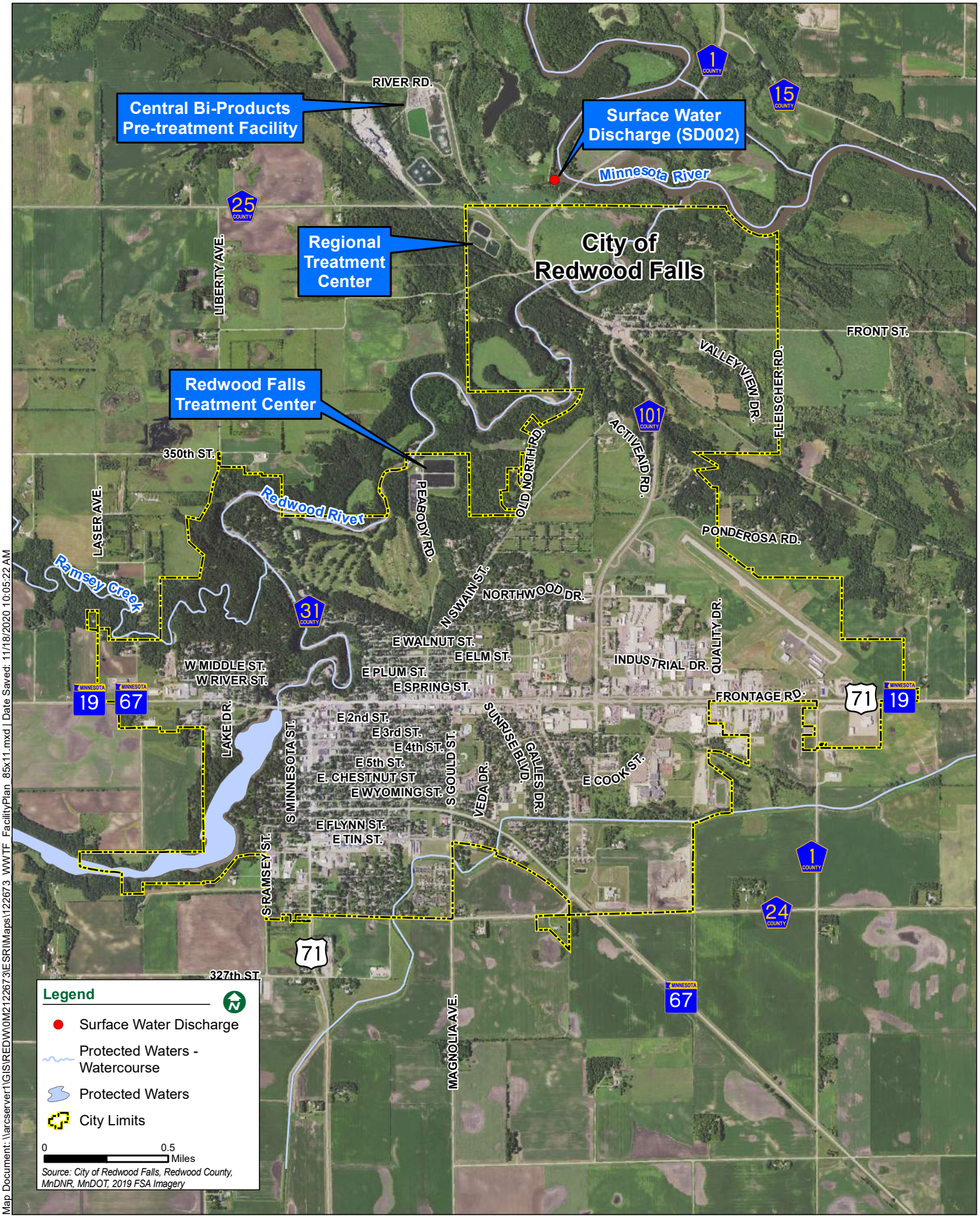
Township (26-71 or 101-168)	Range (1-51)	Section (1-36)	¼ Section (NW, NE, SW, SE)	¼ of ¼ Section (NW, NE, SW, SE)
T 109 N	*R 28 ☐E ☐W*	*5*	*NW*	*NW*
Latitude	Longitude	Datum	Coordinate Collection Method	
44.271062	*-94.180317*	*NAD83*	*DOQ (aerial photo)*	

Receiving Water: *County Ditch 4*

A datum for latitude/longitude should be specified. For latitude/longitude coordinates, this will either be NAD83 or WGS84 (the default on most GPS units). NAD83 is preferred.

For latitude/longitude indicate the method of collection and the date of collection. Methods of collection include:

GPS – Survey Quality
GPS – Recreational Receiver WAAS enabled (Real Time Differential Corrected)
GPS – Recreational Receiver Uncorrected
GPS – Unknown
Digitized – Web Map Google / Yahoo / Microsoft
Digitized – Digital Raster Graph (DRG) (USGS 7.5 min topographic map 1:24,000 scale)
Digitized – Digital Ortho Quad (DOQ) (USGS aerial photo 1:24,000 scale)



Map Document: \\arcserver1\GIS\REDW\0M2122673\ESRI\Maps\122673_WWTF_FacilityPlan_85x11.mxd | Date Saved: 11/18/2020 10:05:22 AM

Appendix E: MPCA Design Flow Determination Worksheet

Minnesota Pollution Control Agency

Water Quality

Wastewater Review and Guidance

Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants

Water/Wastewater Technical Review and Guidance/#5.20, February 2002

Contents:

The determination of design flows and pollutant loadings is one of the most important items in the planning of a new or expanded wastewater treatment facility. A detailed analysis of existing flow conditions and the use of adequate flow estimates will determine the hydraulic and pollutant removal capacity needed to properly treat the wastewater and comply with permit conditions. It is necessary to include all contributing flow streams and pollutant loading sources in this analysis, including all residential, seasonal, institutional, commercial, industrial, inflow, infiltration, return and recycle streams and any other unique aspect of flow and pollutant contributions.

These guidelines are the recommended procedures for estimating the design flow and pollutant loading conditions, and are considered to be the minimum values necessary to assure adequate treatment facility capacity. It is expected that sound engineering judgment will be used to determine the appropriate design conditions for each individual treatment facility and that consideration will be given to impacts of decisions on upstream and downstream unit processes.

Introduction

The flow monitoring period for any particular project must record flow data during critical low as well as peak wet weather flow events. Data collected during these flow periods are used to estimate the four flow conditions that are critical to the design and operation of wastewater treatment plants including average dry weather (ADW), average wet weather (AWW), peak hourly wet weather (PHWW), and peak instantaneous wet weather (PIWW).

The average dry weather flow is the daily average flow when the ground water is at or near normal and a runoff condition is not occurring.

Average wet weather or peak month flow is the daily average flow for the wettest 30 consecutive days for mechanical plants or for the wettest 180 consecutive days for controlled discharge pond systems. The 180 consecutive days for pond systems should be based on either the storage period from approximately November 15 through May 15 or the storage period from approximately May 15 through November 15.

The peak hourly wet weather flow is the peak flow during the peak hour of the day at a time when the ground water is high and a five-year one-hour storm event is occurring. To determine this five-year one-hour storm event for the specific project, please refer to the attached Map Number 1.

The peak instantaneous wet weather flow is the peak instantaneous flow during the day at a time when the ground water is high and a twenty-five year one-hour storm event is occurring. To determine the appropriate twenty-five year one-hour storm event, please refer to Map Number 2.

 Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194
(651) 296-6300, toll-free (800) 657-3864, TTY (651) 282-5332 or (800) 657-3864

Where the Minnesota Pollution Control Agency (MPCA) determines that the above design flow considerations will not provide adequate protection to the receiving waters, facility capacity in excess of peak instantaneous wet weather flow may be required.

In cases where flow studies are over five years old, or where the consultant designing the treatment or transmission facility did not perform the flow study, a verification of the acceptability of the flow data should be performed.

Table 1 contains a summary of the minimum recommended flow and loading conditions for only a select group of processes. Specific design parameter details for individual treatment process units shall be in accordance with Ten States Standards.

Table 1: Design Conditions Summary

Item	Design
Collection System	Must be capable of transporting all flow to the treatment facility without bypassing.
Lift Station	Must be capable of transporting all flow to the treatment facility without bypassing.
Sanitary Sewers	100 gpcd (Other flows may be approved provided adequate justification is provided. In no case will a flow of less than 75 gpcd be approved.) + 80 gpcd for seasonal visitors + 20 gpcd for out-of-town student + commercial, industrial, and other non-residential flow
Organic Loading	Minimum BOD of 0.17 #pcd plus commercial, industrial, and other non-residential flow
Organic Loading	Minimum TSS of 0.20 #pcd plus commercial, industrial, and other non-residential flow
Peak Hourly Wet Weather with new collection systems	Actual flow data; or Ten States Standards Figure 1, Chapter 10; or 2.5 times AWW for residential, commercial + peak hourly industrial flow
Peak Instantaneous Wet Weather with new collection systems	Actual flow data; or 2.5 times AWW for residential, commercial +peak hourly industrial flow
Flow Equalization Basin	If PHWW/ADW $\geq$ 3, flow equalization must be considered. If PHWW/AWW $\geq$ 3, flow equalization must be considered. If equalization is not provided, a discussion of how the facility will handle the transition in flow must be included. See page 4
Facility Piping and Pumping	PIWW
Preliminary Treatment Unit (screens, grit removal, influent filters, etc.)	PIWW
Clarifiers (surface settling rate and weir loading rate)	PHWW + recirculation flow see “Ten States Standards”
Disinfection (detention time)	PHWW see (Ten States Standards)

Design Flows

Design flow determinations shall be made from actual facility flow data to the extent possible. The probable degree of accuracy of the data shall also be evaluated. This reliability estimation should include an evaluation of the accuracy of the existing data measurement, as well as the reliability of estimates of flow reductions or contributions from infiltration and inflow. Critical data and methodology used should be discuss in the facility plan or other engineering documents. A discussion of a method to use when existing flow data is available and when it isn't available is discuss below.

Treatment Systems with New Sanitary Sewer Collection Systems

For mechanical plants, if the industrial flow varies during the day or week, the design flow should be based on the average flow on the peak day during the period when the industry or industries are operating. This condition is called "rated flow." For example, if the industry discharges 10,000 gallons over eight of the twenty-four hours, the rated flow is 30,000 gallons per day. For controlled discharge pond systems, if the industrial flow varies during the day or week, the average design flow may be based on a weekly average.

The peak hourly wet weather design flow are the sum of the average wet weather design flow for residential (full-time and seasonal), commercial and out-of-town students multiplied by a peaking factor, plus the peak hourly industrial flow. The peaking factor shall be determined in accordance with Figure 1, in Chapter 10 of Ten States Standards.

The MPCA may approve of an alternative flow design with appropriate justification. For determining the design of the collection system (including design flow), refer to Chapter 20 Design of Sewers from "Recommended Standards for Sewage Works" (Ten States Standards).

Some form of permit "control language" may be included for wastewater treatment facilities if the per capita design flow is less than what is recommended in this document. For this situation, it may be a permit violation with "no more connections" when the permitted design flow is reached. Violation of the permitted flow could result in the requirement for submittal of a report that examines the flow in comparison to the number of connections and the number of people using the system. The permittee could also be required to plan, design, and build additional treatment units upon reaching the design capacity.

Treatment Systems with Existing Sanitary Sewer Systems

For a mechanical plant, if a separate sanitary sewer system exists, the attached Table 2 should be used to determine the peak hourly wet weather flow, the peak instantaneous wet weather flow, the average dry weather flow, and the average wet weather flow.

Part A of Table 2 and Figure 1 are used to determine the peak hourly wet weather flow. The measured flow should be plotted for a twenty-four hour period when ground water is at or near normal and a runoff condition is not occurring (Curve X on Figure 1). The ground water elevation in relation to the sewer elevation should be noted. The present peak hourly dry weather flow [(1) on Figure 1 and Table 2] is peak hourly flow during the twenty-four hour period when the ground water is at or near normal and a runoff condition is not occurring. The measured flow should be plotted for a twenty-four hour period when ground water is high and a runoff condition is not occurring (Curve Y). The ground water elevation in relation to the sewer elevation should be noted. Number (2) on Figure 1 and Table 2 is the peak hourly flow during a high groundwater period for that specific area and system when a runoff condition is not occurring. This flow (2) minus the present peak hourly dry weather flow (1) is the peak hourly infiltration.

The measured flow should be plotted for a twenty-four hour period when the ground water is high and a runoff condition is not occurring (Curve Z). This should include overflow, bypasses, and emergency pumping. The amount of rainfall and its duration should be plotted on the same graph. The peak inflow is represented by the greatest distance between Curve Y and Curve Z. The present hourly flow at the point of greatest distance between Curve Y and Z [(5) on Figure 1 and Table 2] minus the present hourly flow during high ground water at the same time of day [(6) on Figure 1 and Table 2] is the peak hourly inflow. It may be necessary to adjust the measured flow based on a relationship between the data attained during a major storm event and the five-year one-hour designed storm event. Items (10) and (13) are determined through a cost effectiveness evaluation. The gpcd contribution for population increase in item (15) [also in (25), (33), and (41)] should be 100 gpcd.

Part B of the table determines the peak instantaneous wet weather flow. The present peak hourly inflow adjusted for a five-year one-hour rainfall event [see part A(8)] is subtracted from the peak hourly wet weather flow [see part

A(19)]. To this number, add the present peak hourly inflow adjusted for a twenty-five year one-hour storm event. The resulting number is the peak instantaneous wet weather flow.

Part C of Table 2 determines the average dry weather flow. The present average dry weather flow (24) is the average flow received over a twenty-four hour period when the ground water is at or near normal and a runoff condition is not occurring. If the industrial flow varies during the day or week, the present average dry weather flow should be based on the average flow of the peak day during the period when the industry or industries are operating (rated flow). This also applies to the average flow from industrial increases.

Part D of the table determines the thirty-day average wet weather design flow. The average infiltration and inflow after rehabilitation (where rehabilitation is cost effective) is the wettest thirty-day average. The amount of infiltration after rehabilitation averaged over the thirty wettest days should be the same or nearly the same as the peak infiltration after rehabilitation. This is due to the fact that the ground water could stay high for a fairly extended period of time. The amount of inflow after rehabilitation averaged over the thirty wettest days depends on the type of sources, their location, the amount of rainfall that affects the source, etc.

Part E of Table 2 correlates all related information that can impact the degree of accuracy of the determination of design flows. It is recommended that a minimum of six months of accurate data be recorded. Minnesota Rules 7077.0150 subp. 2(b) requires a minimum of 30 consecutive days of actual flow monitoring. Data associated with the critical peak wet weather flow events for a sustained wet weather period are essential for accurate estimation of design flows. Critical peak wet weather flow events typically occur in the spring (March-June) and must include the condition of high ground water with inflow.

Controlled Discharge Pond Systems with Existing Sanitary Sewer Systems

The peak hourly wet weather and the peak instantaneous wet weather design flows to a pond system with an existing sanitary sewer system are arrived at in the same manner as in Parts A and B of the previous section. If the present industrial flow varies during the day or week, the present average dry weather flow (24) and (30) may be based on a weekly average. When computing the average wet weather flow, the average infiltration after rehabilitation (31), and the average inflow after rehabilitation (32) are averages over the wettest 180 consecutive days.

Flow Equalization

This section applies to all treatment facilities except pond systems. During a period of high ground water for that area and system, if the ratio of peak hourly wet weather design flow to average wet weather design flow [which is (19) divided by (37)] is three or more, flow equalization shall be evaluated. When the ratio is three or more and flow equalization is not employed, an explanation must be included outlining how the plant will handle this transition from average wet weather design flow to peak hourly wet weather design flow.

During a normal ground water period, if the ratio of the peak hourly design flow during the five-year one-hour storm event [(1)+(14)+(15)+(17)+(18)] to the average dry weather design flow (29) is three or more, flow equalization shall be evaluated. When the ratio is three or more and flow equalization is not employed, an explanation must be included outlining how the plant will handle this flow transition.

Infiltration and Inflow (I/I)

Inflow means water other than wastewater that enters a sewer system from sources such as roof leaders, foundation drains, yard drains, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, storm water runoff and other drainage structures.

Infiltration means water other than wastewater that enters the sewer system from the ground through defective pipe, pipe joints, and manholes.

I/I is a part of every collection system and must be taken into account in the determination of an appropriate design flow.

Excessive infiltration means the quantity of flow that is more than 120 gpcd (domestic base flow and infiltration).

Excessive inflow means the quantity of flow during storm events that results in chronic operational problems related to hydraulic overloading of the treatment system or that results in a total flow of more than 275 gpcd (domestic and industrial base flow plus infiltration and inflow). Chronic

operational problems may include surcharging, backups, bypasses, and overflows.

If excessive levels of infiltration or inflow exist in the system, a comparison of alternatives for elimination of the excessive flow and treating the excessive flow shall be included with the design summary.

Bypass/Overflow

All bypass/overflow structures shall be manually controlled and kept locked at all times. All bypassing is regulated by permit and is prohibited. An upset defense may be available if: 1) bypass was unavoidable to prevent loss of life, personal injury or severe property damage; 2) there was no feasible alternative to the bypass; or 3) the permittee gives previous notice of an anticipated bypass.

Any bypassing must be reported to the MPCA in a report consistent with permit requirements. This report shall include, but not be limited to, the bypass duration, estimated volume and associated meteorological conditions. Refer to the facility permit for specific bypass requirements. All bypasses and overflows must be immediately reported to the MN Duty Officer at 1-800-422-0798 (outstate) or (651) 649-5451 (Twin Cities Metro Area).

The MPCA may require a corrective action plan to mitigate frequent and/or unjustified bypass events. Failure to follow the proper bypass notification procedures or resolve problems in a timely manner may subject the permittee to enforcement actions, including monetary penalties.

The following design flow considerations may be required to be incorporated into new or existing treatment facilities on a temporary or full time basis in order to reduce the frequency as well as degree of adverse environmental impact associated with bypassing:

A. The treatment facility shall provide pretreatment for the removal of coarse floatable and/or settleable solids during flows in excess of peak instantaneous wet weather. In addition, the pretreated wastes shall then be blended with the fully treated effluent, where practical, and discharge samples collected for the purpose of determining NPDES/SDS permit compliance of the blended effluent.

B. Flow equalization for mechanical plants may be necessary in order to effectively operate treatment plants. Please refer to the section entitled Flow Equalization.

Essential Project Components Percentage

Minnesota Rules 7077.0111 to 7077.0292 apply to the MPCA's administration of financial assistance programs for the construction of municipal wastewater treatment systems. The assistance programs include the Wastewater Infrastructure Fund (WIF) and the State Revolving Fund (SRF) loan program. These rules require the calculation of an "essential project components percentage." The percentage will be used by the Public Facilities Authority (PFA) in their determination of a project's cost that may qualify for assistance with the WIF. Please see Table 3 for more information on calculating an essential project components percentage.

Wastewater Treatment Plant Design Loading

Table 4 should be used to determine the design loadings for the upgraded wastewater treatment plant.

For More Information

Please contact the engineer assigned to the project or District. If the engineer is unknown, contact the Customer Assistance Center.

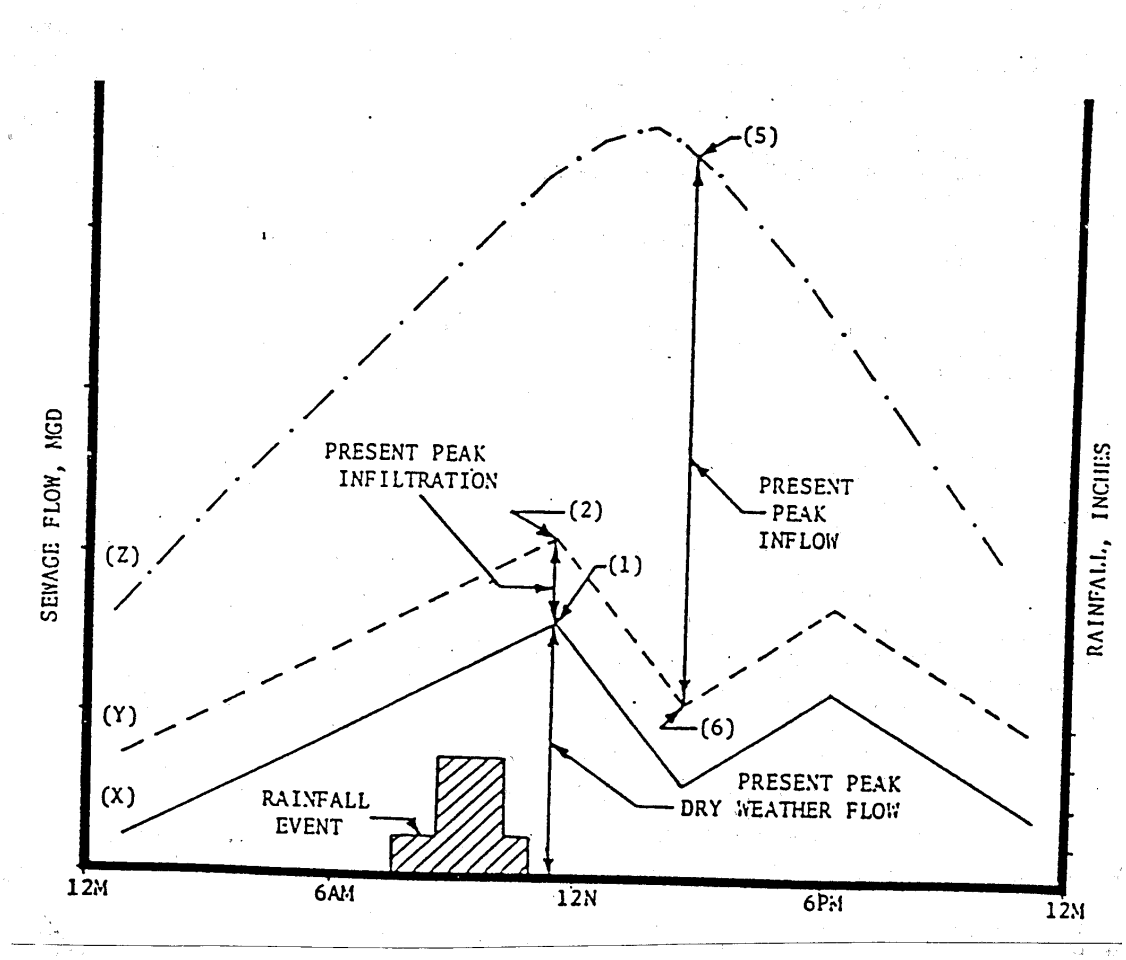
Customer Assistance Center ..... (651) 297- 2274

MPCA ..... (651) 296-6300

Toll-free ..... (800) 657-3864

TTY ..... (651) 282-5332

Figure 1: Determination of Peak Hourly Flows Before Adjustment for Storm Event



Note: All flow measurements taken at treatment plant with adjustments for bypasses, overflows, and emergency pumping.

Groundwater elevation in relation to sewers should be stated for several points in the sewer system.

Dates of flow measurement should be stated.

PROJECT NAME _____
LOCATION _____
COMPLETED BY _____ **DATE** _____

Table 2: Determination of Design Flows

(A) For determination of peak hourly wet weather design flows (PHWW): Gallons Per Day

1	Present peak hourly dry weather flow	
2	Present peak hourly flow during high ground water period (no runoff)	
3	Present peak hourly dry weather flow [same as (1)] -	
4	Present peak hourly infiltration =	
5	Present hourly flow during high ground water period and runoff at point of greatest distance between Curves Y and Z	
6	Present hourly flow during high ground water (no runoff) at same time of day as (5) measurement -	
7	Present peak hourly inflow =	
8	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event	
9	Present peak hourly infiltration [same as (4)]	
10	Peak hourly infiltration cost effective to eliminate -	
11	Peak hourly infiltration after rehabilitation (where rehabilitation is cost effective) =	
12	Present peak hourly adjusted inflow [same as (8)]	
13	Peak hourly inflow cost effective to eliminate -	
14	Peak hourly inflow after rehabilitation (where rehabilitation is cost effective) =	
15	Population increase _____@_____ gpcd times 2.5 (peaking factor)	
16	Peak hourly flow from planned industrial increase	
17	Estimated peak hourly flow from future unidentified industries	
18	Peak hourly flow from other future increases	
19	Peak hourly wet weather design flow [(1)+(11)+(14)+(15)+(16)+(17)+(18)]	

(B) For determination of peak instantaneous wet weather design flow (PIWW): Gallons Per Day

20	Peak hourly wet weather design flow [same as (19)]	
21	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event [same as (8)] -	
22	Present peak inflow adjusted for a 25-year 1-hour rainfall event +	
23	Peak instantaneous wet weather design flow =	

(C) For determination of average dry weather design flow (ADW): Gallons Per Day

24	Present average dry weather flow	
25	Population increase _____@_____ gpcd	
26	Average flow from planned industrial increase +	
27	Estimated average flow from other future unidentified industries +	
28	Average flow from other future increases +	
29	Average dry weather design flow [(24)+(25)+(26)+(27)+(28)] =	

(D) For determination of average wet weather design flow (30-day average for mechanical plants and 180-day average for controlled discharge ponds) (AWW): Gallons Per Day

30	Present average dry weather flow	
31	Average infiltration after rehabilitation (where rehabilitation is cost effective) +	
32	Average inflow after rehabilitation (where rehabilitation is cost effective) +	
33	Population increase @ gpcd +	
34	Average flow from planned industrial increase +	
35	Estimated average flow from other future unidentified industries +	
36	Average flow from other future increases +	
37	Average wet weather design flow [(30)+(31)+(32)+(33)+(34)+(35)+(36)] =	

(E) Critical data (including a graphical display similar to Figure 1), methodology, and a discussion on the following items shall be included with the above calculations:

38	Dates during which actual flow data was recorded and its probable degree of accuracy.
39	Ground water elevation data relative to the collection system, during the time period when flow data was recorded.
40	Rainfall data during the time period when flow data was recorded and how the amount of rainfall compares to normal seasons.
41	Probable degree of accuracy of flow reduction due to proposed or completed I/I correction or elimination of bypasses.

Table 3: Essential Project Components Percentage

Definitions:

"Essential project components" means those components of a wastewater disposal system that are necessary to convey or treat a municipality's existing wastewater flows and loadings and future flows and loadings based on the projected residential growth of the municipality for a 20-year period.

Mass Loading (lbs./day) = Flow (MGD) X Concentration (mg/l) X 8.34

	Total Existing Daily Conditions		Total Proposed 20-year Design Conditions	
Flow (MGD)		MGD		MGD
$CBOD_5$ (mg/l)		mg/l		mg/l
Mass Loading (lbs./day)		lbs./day		lbs./day

Essential Project Components Percentage = $100 \times \frac{\text{Total Existing } CBOD_5 \text{ Mass Loading}}{\text{Total 20-year Growth Mass Loading}}$

$= 100 \times \frac{(\quad)}{(\quad)}$

$= \_\_\_\_\_\%$

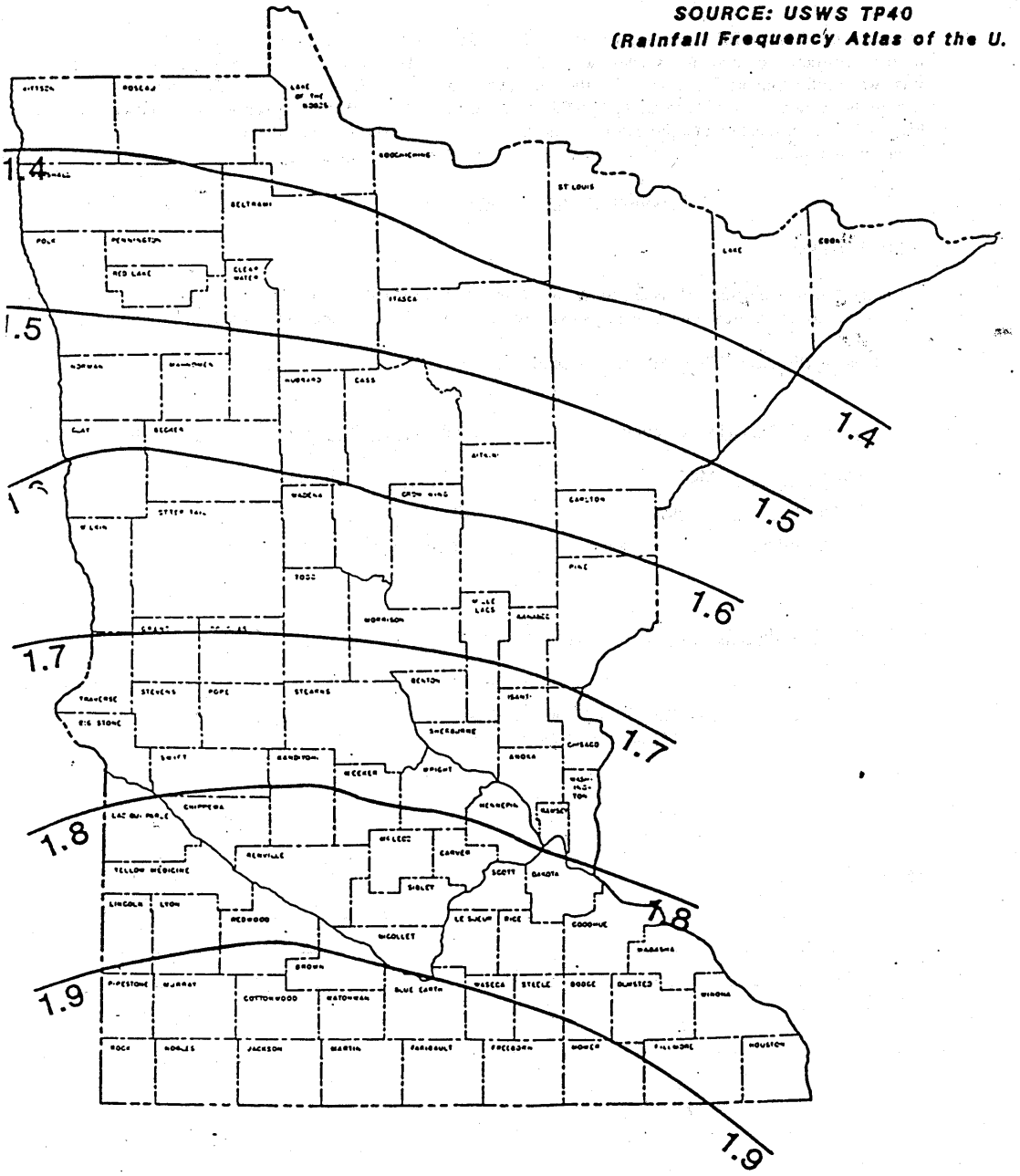
Table 4: Determination of Design Loadings

		Unit Basis	ADW	AWW
Residential Waste	Population			
	Flow, GPD			
	BOD_5, #/day			
	TSS, #/day			
	NH_3-N, #/day			
	P, #/day			
Out-of-Town Students and Workers	Number			
	Flow, GPD			
	BOD_5, #/day			
	TSS, #/day			
	NH_3-N, #/day			
	P, #/day			
Seasonal Residents	Number			
	Flow, GPD			
	BOD_5, #/day			
	TSS, #/day			
	NH_3-N, #/day			
	P, #/day			
Industrial	Flow, GPD			
	Rated Flow, GPD			
	BOD_5, #/day			
	TSS, #/day			
	NH_3-N, #/day			
	P, #/day			
Other (Specify)	Flow, GPD			
	Rated Flow, GPD			
	BOD_5, #/day			
	TSS, #/day			
	NH_3-N, #/day			
	P, #/day			
Infiltration	GPD			
Inflow	GPD			
Total	Flow, GPD			
	Rated Flow, GPD			
	BOD_5, mg/l			
	BOD_5, #/day			
	TSS, mg/l			
	TSS, #/day			
	NH_3-N, mg/l			
	NH_3-N, #/day			
	P, mg/l			
	P, #/day			

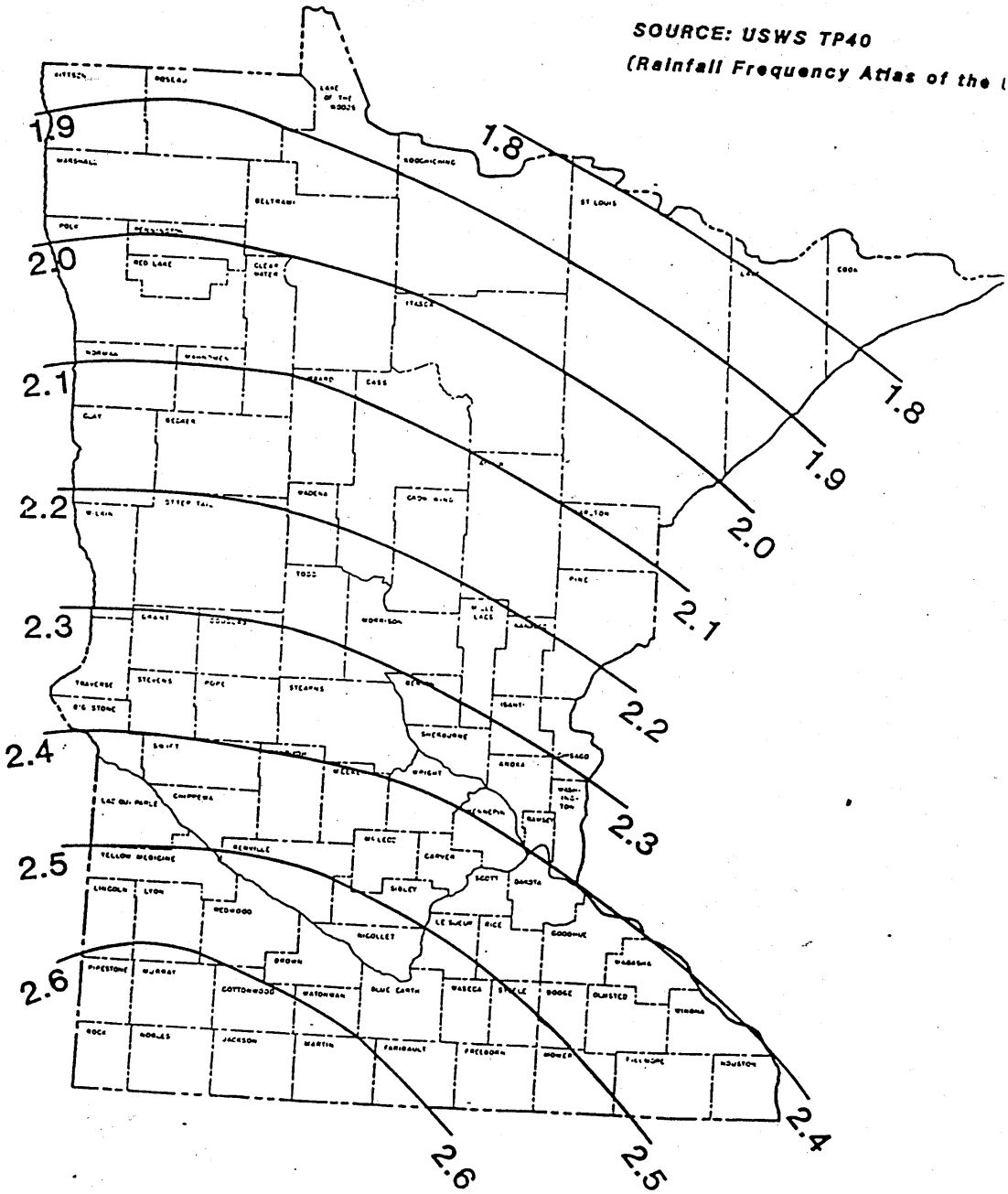
* It may be necessary to also test for TKN for certain industrial contributors.

MAP NUMBER 1:
5-Year, 1-Hour Storm Event (inches)

SOURCE: USWS TP40
(Rainfall Frequency Atlas of the U.



MAP NUMBER 2 :
25-YEAR, 1-Hour Storm Event (inches)



Appendix E – Determination of Design Flow Summary - City of Redwood Falls			
A)	**For Determination of Peak Hourly Wet Weather Design Flow (PHWW)**		**MGD**
1	Present peak hourly dry weather flow		1.106
2	Present peak hourly flow during high ground water period (no runoff)		1.982
3	Present peak hourly dry weather flow [same as (1)]	-	1.106
4	Present peak hourly infiltration	=	0.876
5	Present hourly flow during high ground water period and runoff at point of greatest distance between Curves Y and Z		
6	Present hourly flow during high ground water (no runoff) at same time of day as (5) measurement	-	
7	Present peak hourly inflow	=	
8	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event		1.565
9	Present peak hourly infiltration [same as (4)]		0.876
10	Peak hourly infiltration cost effective to eliminate	-	0
11	Peak hourly infiltration after rehabilitation (where rehabilitation is cost effective)	=	0.876
12	Present Peak hourly adjusted inflow [same as (8)]		1.565
13	Peak hourly inflow cost effective to eliminate	-	0
14	Peak hourly inflow after rehabilitation (where rehabilitation is cost effective)	=	1.565
15	Population increase 0 @ 100 gpcd times 3 (peaking factor)		0.000
16	Peak hourly flow from planned industrial increase		0
17	Estimated peak hourly flow from future unidentified industries		0
18	Peak hourly flow from other future increases		0
19	Peak hourly wet weather design flow [(1)+(11)+(14)+(15)+(16)+(17)+(18)]		**3.547**
B)	**For Determination of Peak Instantaneous Wet Weather Design Flow (PIWW)**		**MGD**
20	Peak hourly wet weather design flow [same as (19)]		3.547
21	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event [same as (8)]	-	1.565
22	Present peak inflow adjusted for a 25-year 1-hour rainfall event	+	1.956
23	Peak instantaneous wet weather design flow	=	**3.938**
C)	**For Determination of Average Dry Weather Design Flow (ADW)**		**MGD**
24	Present average dry weather flow including Industrial Rated Flow from Central Bi-Products		0.737
25	Population increase 0 @ 100 gpcd	+	0.000
26	Average flow from planned industrial increase	+	0
27	Estimated average flow from other future unidentified industries	+	0.00
28	Average flow from other future increases	+	0.087
29	Average dry weather design flow [(24)+(25)+(26)+(27)+(28)]	=	**0.824**
D)	**For Determination of Average Wet Weather Design Flow (30-day Average)**		**MGD**
30	Present average dry weather flow and Industrial Rated Flow from Central Bi-Products		0.737
31	Average infiltration after rehabilitation (where rehabilitation is cost effective)	+	0.350
32	Average inflow after rehabilitation (where rehabilitation is cost effective)	+	0.234
33	Population increase 0 @ 100 gpcd	+	0.000
34	Average flow from planned industrial increase	+	0
35	Estimated average flow from future unidentified industries	+	0.00
36	Average flow from other future industries	+	0.00
37	Average wet weather design flow [(30)+(31)+(32)+(33)+(34)+(35)+(36)]	=	**1.321**

Appendix F: Facility Plan Checklist and SERP Mailing List

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF facilities plan submittal checklist

Clean Water Revolving Fund (CWRF) Program

Submissions Required for a Complete Facilities Plan

Minn. R. 7077.0272

Instructions: The Facilities Plan may be submitted via email at ppl.submittals.pca@state.mn.us (and one hard copy submitted to the assigned Minnesota Pollution Control Agency [MPCA] Review Engineer).

Facility information

Project name: Wastewater Treatment Facility Improvements

Proposed dates for construction: 2023-2024 or later

City's authorized representative: James Doering

Title: Public Works Project Coordinator Telephone: (507) 637-5755

Mailing address: 333 S. Washington St. PO Box 526

City: Redwood Falls State: MN Zip code: 56283

Technical agent or consulting engineer: John Graupman, P.E.

Name of firm/organization: Bolton & Menk, Inc. Telephone: 507-380-0433

Check yes or no for the following questions

Is the Facilities Plan signed by an engineer registered in the State of Minnesota? ☒ Yes ☐ No

Has the municipality in which the facility will be located held at least one public hearing to discuss the proposed project?

☒ Yes ☐ No If yes, what was the date the hearing was held: To be held March 15, 2022

Check the boxes below if you have included the following items

If all of the following items are not included with the Facilities Plan, the Facilities Plan is incomplete and may be returned or filed until a complete submittal is received. Facilities Plan review will not begin until a complete submittal is received. Please see Minn. R. 7077.0272 for more information about the content of facilities plan.

The following forms can be found on the MPCA website at https://www.pca.state.mn.us/water/wastewater-financial-assistance.

- ☒ A completed *CWRF cost and effectiveness certification checklist* **provided by the MPCA**.
- ☒ A completed *CWRF B3 2030 exemption form* **provided by the MPCA**.
- ☒ A completed CWRF cost and effectiveness certification form **provided by the MPCA**.
- ☐ A summary of the public hearing documenting that the following items were discussed:
  - ☐ The various treatment alternatives considered
  - ☐ The location of the project site
  - ☐ The reasons for choosing the selected treatment method
  - ☐ The estimated sewer service charges

  To be submitted after March 15, 2022 public hearing.
- ☐ A summary of the comments received at the public hearing and the action taken to address those comments.
- ☒ A complete list of addresses used for public notice purposes on a form **provided by the MPCA.**
- ☐ A copy of the resolution of the municipality's governing body adopting the facilities plan. To be submitted after March 15, 2022 public hearing.
- ☐ A list of ordinances or intermunicipal agreements required for the implementation and administration of the project.
- ☒ A signed treatment agreement with each significant industrial user.
- ☒ For surface water dischargers only, a copy of the Preliminary Effluent Limits review letter **provided by the MPCA.**
  - Contact the MPCA to determine if a formal request for Preliminary Effluent Limits needs to be made for the project.
  - The alternatives analysis should address antidegradation requirements if the project is proposing an increase in flow or loading.
- ☒ A completed *Environmental Information Worksheet* **provided by the MPCA.**
- ☐ For individual sewage treatment systems that serve more than one structure, an assurance from the municipality stating that all property owners who will be served by the proposed system agree to be part of the system, to participate in the construction project, and to finance future operation, maintenance, and replacement of the system.
- ☒ Copies of all notifications, certifications, and comments received.

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF cost and effectiveness checklist

Clean Water Revolving Fund (CWRF) Program

Instructions: This checklist must be used with the Minnesota Pollution Control Agency (MPCA) *Minnesota Clean Water Revolving Fund (CWRF) cost and effectiveness guidance* document dated March 2018. The guidance document assists the consulting engineer in completing the cost and effectiveness analysis required by the Federal Water Pollution Control Act (FWPCA) Section 602(b)(13). The cost and effectiveness analysis for a project must be further documented in the project Facilities Plan. This checklist is also an attachment to the MPCA *Facilities Plan submittal checklist.*

Project information

Project name: Redwood Falls WWTF Improvements Date submitted (mm/dd/yyyy): 3/4/2022

City: Redwood Falls

City's authorized representative: James Doering

Consulting engineer: John Graupman

Cost analysis items

Cost analysis items to be completed for all CWRF wastewater projects.

Section		Yes	No
II.	Does the project owner have an Asset Management system in place? Where is the Asset Management system documented in the Facilities Plan:	☐	☒
IVA.	Did the Facilities Plan address Energy Conservation Opportunities? Where is the Energy Conservation discussion documented in the Facilities Plan:	☐	☒
IVB.	Did the Facilities Plan address Renewable Energy Opportunities? Where is the Renewable Energy discussion documented in the Facilities Plan:	☐	☒
IV.C.i.	Has the Facilities Plan analyzed Water Reuse options? Where is the Water Reuse options analysis documented in the Facilities Plan:	☐	☒
IV.C.ii.	Has the Facilities Plan analyzed installation of Water Efficient Devices? Where is the use of Water Efficient Devices analysis documented in the Facilities Plan:	☐	☒
IV.C.iii.	Has the Facilities Plan analyzed installation of new Water Meters or replacement of existing Water Meters? Where is the installation of new or replacement Water Meters analysis documented in the Facilities Plan:	☐	☒
IV.C.iv.	Has the Facilities Plan considered or completed Water Audits and/or Conservation Plan? Where is the discussion of Water Audits and/or Conservation Plan documented in the Facilities Plan:	☐	☒
IV.D.	Did the Facilities Plan for the project complete a Buildings, Benchmark, and Beyond (B3) Sustainable Building (SB) Wastewater Treatment Plant (WWTP) or B3 SB 2030 *WWTP exemption form*? Where is the B3 SB 2030 *WWTP exemption form* documented in the Facilities Plan: *Appendix M*	☒	☐

Nonmonetary analysis items **Applicable**: **Yes** ☐ **No** ☒

Nonmonetary analysis items to be completed for all new wastewater treatment facilities with design average wet weather (AWW) flow of greater than 100,000 gallons per day, or significant upgrades meaning work on three or more major treatment units for any wastewater treatment facilities with a design AWW flow of greater than 1 million gallons per day.

Section		Yes	No
V.A.i.	Does the Facilities Plan analyze the project sustainability and climate resilience? Where is the discussion on project sustainability and climate resilience documented in the Facilities Plan:	☐	☒
V.A.ii.	Does the Facilities Plan analyze how a project addresses Water Quality objectives? Where is the discussion on how the project addresses Water Quality objectives documented in the Facilities Plan: *Section IV Evaluation of Alternatives*	☒	☐
V.A.iii.	During the project planning process, did the owner consider project alternatives, such as consolidation or regionalization with another or other service area? Where is the discussion on how the project addresses possible consolidation or regionalization documented in the Facilities Plan:	☐	☒
V.B.i.	Is the project location and physical aspects discussed in the Facilities Plan? Where is the discussion on the project location and physical aspects located in the Facilities Plan: *Section IV Evaluation of Alternatives*	☒	☐
V.B.ii.	Is the project reliability discussed in the Facilities Plan? Where is the discussion on the project reliability located in the Facilities Plan: *Section IV Evaluation of Alternatives*	☒	☐
V.B.iii.	Is the project feasibility and operability discussed in the Facilities Plan? Where is the discussion on the project feasibility and operability located in the Facilities Plan: *Section IV Evaluation of Alternatives*	☒	☐
V.C.i.	Are possible water conservation practices, water reuse and/or water recapture opportunities discussed in the Facilities Plan? Where is the discussion on the project water conservation practices, water reuse, and/or water recapture opportunities located in the Facilities Plan:	☐	☒
V.C.ii.	Are possible energy conservation practices discussed in the Facilities Plan? Where are the possible energy conservation practices discussed in the Facilities Plan:	☐	☒
V.C.iii.	Are possible opportunities to recover and recycle or reuse other resources discussed in the Facilities Plan? Where are possible opportunities to recover and recycle or reuse other resources options discussed in the Facilities Plan:	☐	☒
V.C.iv.	Are possible opportunities to use green infrastructure components within the project discussed in the Facilities Plan? Where are possible opportunities to use green infrastructure components within the project discussed in the Facilities Plan:	☐	☒
V.C.v.	Are possible other environmental impacts of the project discussed in the Facilities Plan? Where are the possible other environmental impacts of the project discussed in the Facilities Plan: *Section IV Evaluation of Alternatives and EIW*	☒	☐

Section		Yes	No
V.D.i.	Are possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan? Where are the possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan:	☐	☒
V.D.ii.	Are possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan? Where are the possible considerations which may be part of a local trend or demographics affecting the need or demand for a project discussed in the Facilities Plan:	☐	☒
V.D.iii.	Are there possible environmental justice issues which may be considered for the project discussed in the Facilities Plan? Where are the possible environmental justice issues which may be considered for the project discussed in the Facilities Plan:	☐	☒
V.D.iv.	Are there possible acceptability or affordability issues which may be considered for the project discussed in the Facilities Plan? Where are the possible acceptability or affordability issues which may be considered for the project discussed in the Facilities Plan: *Section V Opinion of Probable Costs*	☒	☐

Integrating cost and effectiveness analysis **Applicable: Yes ☐ No ☒**

Integrating cost and effectiveness analysis to be completed for all new wastewater treatment facilities with design AWW flow of greater than 100,000 gallons per day, or significant upgrades meaning work on three or more major treatment units for any wastewater treatment facilities with a design AWW flow of greater than 1 million gallons per day.

Section		Yes	No
VI.	Has an integrated cost and effectiveness analysis of the cost factors and the other/nonmonetary factors for a project been completed in the Facilities Plan? Where is the integrated cost and effectiveness analysis of the cost factors and the other/nonmonetary factors for a project discussed/located in the Facilities Plan?	☐	☒

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF cost and effectiveness certification form

Clean Water Revolving Fund (CWRF) Program

Federal Water Pollution Control Act Section 602(b)(13)
and Minn. R. 7077.0272, subp. 2.D. or 7077.0277, subp. 2.C.

Instructions: The project representative must check boxes 1), 2), and either Z) or ZZ) below, and the form must be signed by both the Project Representative and the Professional Engineer for the project.

☒ 1) The municipality has studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which the assistance is sought under the Clean Water Revolving Fund (Minn. Stat. § 446.07); and

☒ 2) The municipality has selected, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, conservation, and energy conservation[Z&ZZ], taking into account:

a) The cost of constructing the project or activity.
b) The cost of operating and maintaining the project or activity over the life of the project or activity.
c) The cost of replacing the project or activity.

☒ Z) If this project exempt from Building, Benchmarks, and Beyond (B3) provisions of the Sustainable Building (SB) 2030 Guidelines (B3 SB 2030) Wastewater Treatment Plants (WWTP) Review (attach a completed *B3 SB 2030 exemption form*).

☐ ZZ) If this project not exempt from B3 SB 2030 WWTP Review.

Project information

Municipality name: City of Redwood Falls, Minnesota

Project number: 0M2.122673

Certification

We certify that the project has completed requirements (1 and 2, and either Z or ZZ) as checked above.

Project Representative

Print name: James Doering

Signature: James Doering "Digitally signed by James Doering DN: C=US, E=jdoering@ci.redwood-falls.mn.us, O=City of Redwood Falls, OU=Public Works Project Coordinator, CN=James Doering Date: 2022.03.02 14:22:43-06'00'

Date (mm/dd/yyyy): 03/02/2022

Professional Engineer

Print name: John Graupman

Signature: John Graupman

Date (mm/dd/yyyy): 3/02/2022

Footnote: If ZZ) is checked, the Professional Engineer has submitted a Facilities Plan to the B3 SB 2030 WWTP Review and will consider the Review water and energy conservation recommendations.

Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

State Environmental Review Process (SERP) Mailing List Form

Clean Water State Revolving Fund Program

Minnesota Rules 7077.0272, subp. 2.a.A.
Minnesota Rules 7077.0277, subp. 3.B.

Doc Type: Wastewater Point Source

Instructions: This is the complete mailing list that the Minnesota Pollution Control Agency (MPCA) will use to public notice the Environmental Summary or other environmental review documents. Please type names and addresses on this form and return to the MPCA staff engineer. This list should be considered minimum. If a more substantial mailing list is available for the Public Participation Program, it should be added to this mailing list. **Please return this mailing list in MS Word format only.**

Example address blocks:

The Honorable Mark Anderson
Minnesota State Senator
135 State Office Building
St. Paul, MN 55113

Marv Johnson, City Administrator
City of Willmar
236 Oriole Avenue
Willmar, MN 55699

Municipality name: Redwood Falls **Project number:**

Contact name: John Graupman **Phone number:** (507) 625-4171
(person completing the form)

Public notice address information

1.	**The Honorable State Senator:**	**6.**	**City Administrator/Clerk:**
	Gary H. Dahms 100 Rev. Dr. Martin Luther King Jr. Blvd. State Office Bldg., Room 121 St. Paul, MN 55155-1206		Keith Muetzel, City Administrator 333 S. Washington St. PO Box 526 Redwood Falls, MN 56283
2.	**The Honorable State Representative:**	**7.**	**Engineering Consultant:**
	Paul Torkelson 381 State Office Building 100 Rev. Dr. Martin Luther King Jr. Blvd. St. Paul, MN 55155		Bolton & Menk, Inc. John Graupman, P.E. 1960 Premier Drive Mankato, MN 56001
3.	**The Honorable County Board Chair:**	**8.**	**County Planning and Zoning Office:**
	Jim Salfer 865 Pine St. P.O. Box 183 Wabasso, MN 56293		Nick Brozek, Land Use & Zoning Supervisor 403 South Mill Street P.O. Box 130 Redwood Falls, MN 56283
4.	**The Honorable Mayor:**	**9.**	**Watershed District (if established):**
	Tom Quackenbush, Mayor 333 S. Washington St. PO Box 526 Redwood Falls, MN 56283		Redwood Soil & Water Conservation District Scott Wold 403 South Mill Street P.O. Box 130 Redwood Falls, MN 56283
5.	**Township Board Clerk:***	**10.**	**Regional Development Commission:**
			Southwest Regional Development Commission 2401 Broadway Ave., Suite 1 Slayton, MN 56172

**Include if any portion of the project (including the facility, interceptor, influent or outfall lines) will be located in the township(s).*

To add rows, place your cursor in the last row of the second column and hit tab.

Interested citizens:	**Interested groups:** (i.e., homeowners associations, environmental, business, civic, etc., organizations)
Teresa Burgess, PE, CPESC Bolton & Menk, Inc. 1960 Premier Drive Mankato, MN 56001	Central Bi-Products 590 W. Park Rd. PO Box 319 Redwood Falls, MN 56283
	Attn: Tribal Historic Preservation Officer Lower Sioux Indian Community of Minnesota P.O. Box 308 39527 Res. Hwy 1 Morton, MN 56270

To add rows, place your cursor in the last row of the second column and hit tab.

Property owners:

Property owner list should include all property owners of the site to be, or which has been previously acquired. For pond systems, include the property owner(s) of the pond site, spray irrigation site(s) and all property owners of homes within one-fourth mile of the pond site and any clusters of homes within one-half mile of the pond site.

Federal agencies:

ATTN: Field Supervisor
U.S. Fish and Wildlife Service
Twin Cities Field Office
4101 American Boulevard East
Bloomington, MN 55425-1665

ATTN: Environmental Compliance Chief
U.S. Army Corps of Engineers
St. Paul District
180 Fifth Street East, Suite 700
St. Paul, MN 55101-1678

ATTN: Regional Environmental Officer
Federal Emergency Management Agency
Region V Office
536 South Clark Street, 6th Floor
Chicago, IL 60605

State agencies:

ATTN: Environmental Review Supervisor
MN Department of Natural Resources
Division of Ecological and Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155 -4025

ATTN: Manager of Government Programs and Compliance
MN Historical Society
Minnesota Historic Preservation Office
345 West Kellogg Boulevard
St. Paul, MN 55102-1906

ATTN: Cultural Resource Director
MN Indian Affairs Council
161 St. Anthony Avenue, Suite 919
St. Paul, MN 55103

MPCA regional office(s):

Marshall 504 Fairgrounds Rd Suite 200 Marshall, MN 56258	Willmar 1601 Highway 12 East Suite 1 Willmar, MN 56201-6002

Appendix G: Public Hearing Presentation and Comments

BOLTON & MENK
Real People. Real Solutions.

City of Redwood Falls

City of Redwood Falls, Minnesota

Wastewater Review

Public Hearing

March 15, 2022

Presented by John Graupman, P.E.

0M2.122673

1

Background

- Original Redwood facility constructed in 1988
  - Aerated pond system
- Regional facility constructed in 1996
- Facilities are at hydraulic capacity
- Pending phosphorus limits require improvements
- Minimal growth capacity left
  - Requires inflow and infiltration (I/I) elimination
  - Essential to stop rainwater and groundwater intrusion
- Key takeaways
  - Permitted flows and Phosphorous limits
  - I/I reduction impact on growth

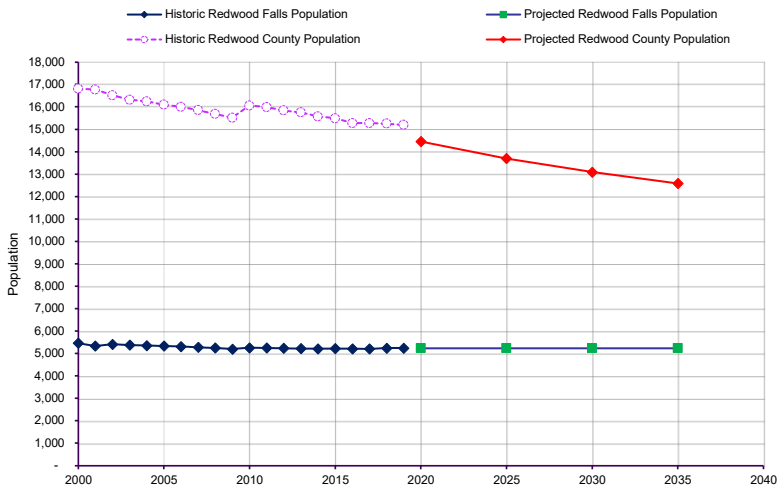
2

Population Projections

Table 2.1: Population Projections		
Year	Historic Redwood Falls Population (1)	Historic Redwood County Population (1)
2000	5,459	16,815
2001	5,327	16,778
2002	5,407	16,519
2003	5,370	16,317
2004	5,348	16,245
2005	5,327	16,096
2006	5,307	16,005
2007	5,271	15,851
2008	5,247	15,680
2009	5,198	15,518
2010	5,254	16,059
2011	5,248	15,986
2012	5,230	15,842
2013	5,218	15,755
2014	5,207	15,573
2015	5,214	15,486
2016	5,211	15,275
2017	5,203	15,278
2018	5,236	15,252
2019	5,236	15,204
2020	5,236	14,457(2)
2025	5,236	13,699(2)
2030	5,236	13,088 (2)
2035	5,236	12,588(2)
2040	5,236	12,182 (2)
(1) Historical population from MN State Demographer		
(2) MN State Demographer Population Projection by County 2015 - 2050 (March 2017)		

3

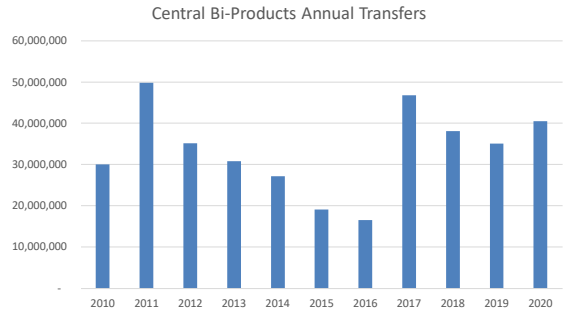
Population Projections



4

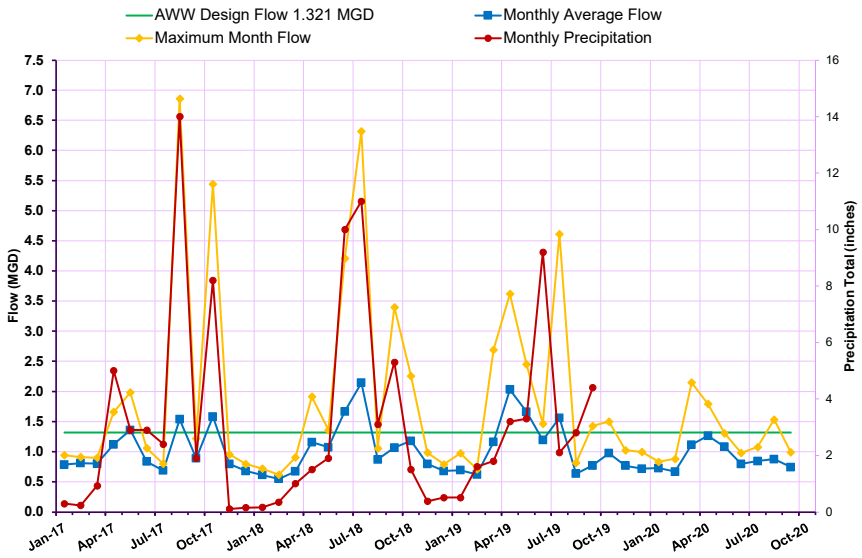
Current Permitted and Design Flows

- Permitted for 1.321 million gallons per day (MGD) monthly average
- Central Bi-Products last agreement allowed 30 million gallons per year
- Recent precipitation events resulted in exceeding permitted flow
- Daily peaks are limited by transfer pump capacity to the regional facility and nearly resulted in pond overflows



5

Historical Flows



6

Inflow and Infiltration (I/I)

- City required by MPCA to address excessive I/I
- Sump pump project in process
- Critical to reduce flow
  - Ensure no pond overflow/bypass
  - Gain growth capacity

7

Permitted Design Flow Limitations

- Exceeding design flows not a direct violation
- Sewer extension permits can be prohibited if flows exceed permitted design
- Requesting increase in design flow challenges
  - Limits would become more stringent
  - Current facility would not be well equipped to meet lower limits
  - Expect need to physically expand treatment facility (new site)

8

Phosphorus Limits

- City currently using in-pond treatment and trading with New Ulm to meet the current limit
- New limit pending
  - Trading is not a viable option for RES limits
    - All facilities expected to have stringent limits with little excess capacity
    - A trading facility would need to be upstream of Redwood Falls
    - Non-point options would not give credits in dry weather low flow conditions (critical time frame for RES)
  - Requires more treatment than in-ponds can provide
  - Expected to be in next permit (current permit expired)
    - NPDES permit expired December 31, 2018
    - Next permit expected in 2022

9

Phosphorus Treatment Options

- Option 1: Add tertiary treatment to ponds
  - Lowest capital cost
  - Lowest operational cost
  - Does not provide growth beyond current permitted flows
  - I/I reduction critical

10

Phosphorus Treatment Options

- Option 2: New mechanical facility (greenfield site)
  - High capital costs
  - High operational costs
  - Could provide capacity for additional flow and growth

11

Cost Estimates

- Option 1
  - $8-10 million
  - Eligible for PSIG grant
  - $2.5-3.0 million net cost
  - 10-15 years minimum effective life
    - Estimated O&M $800,000 per year (current $700,000)
    - Estimated debt service
      - $600,000 per year no grant
      - $170,000 per year with PSIG grant
  - User cost increase
    - 60-65% no grant
    - 20-25% with PSIG grant

12

Cost Estimates

- Option 2
  - $20-30 million
  - Eligible for up to $7 million grant
  - 20-40 years effective life
    - Estimated O&M $1,000,000 per year (current $700,000)
    - Estimated debt service
      - $1,500,000 per year no grant
      - $1,000,000 per year with PSIG grant
  - User cost increase
      - 180% no grant
      - 130% with PSIG grant

  Might be eligible for other hardship grants

13

Schedule

- Finalize Facility Plan recommendations
- Submit Facility Plan March 2022
- Request funding 2022
- Design fall 2022
- Bid summer 2023
- Finish construction summer 2025

14

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City of Redwood Falls

QUESTIONS?

City of Redwood Falls, Minnesota

Wastewater Review

Public Hearing

March 15, 2022

John Graupman, P.E.

John.Graupman@bolton-menk.com

507-380-0433

15

Appendix H: Resolution Adopting Facility Plan

Approved Resolution to be submitted after
March 15, 2022 Public Hearing.

RESOLUTION ____

CITY OF REDWOOD FALLS, MINNESOTA

STATE OF MINNESOTA)
COUNTY OF REDWOOD)
CITY OF REDWOOD FALLS)

ADOPTION OF WASTEWATER TREATMENT FACILITY PLAN

WHEREAS, the City Council of the City of Redwood Falls recognizes the need to upgrade its Wastewater Treatment System to achieve compliance with new discharge regulations; and

WHEREAS, Bolton & Menk, Inc. has been retained as Consulting Engineers to prepare a Wastewater Treatment Facility Plan for the purpose of submitting such plan to the Minnesota Pollution Control Agency; and

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF REDWOOD FALLS:

1. The City Council does hereby adopt the proposed Redwood Falls Wastewater Treatment Facility Plan as presented by Bolton & Menk, Inc. as consulting Engineers.

2. The appropriate City Officials are hereby authorized and directed to submit the City's Wastewater Treatment Facility Plan to the Minnesota Pollution Control Agency for review and approval.

Upon vote taken thereon, the following Council Members voted:

For –
Against –

Whereupon said Resolution No. _____ was declared duly passed and adopted this ___ day of March, 2022.

Signed: _____
Mayor

Attest: _____
City Administrator

Appendix I: PPL Application, Preliminary Scoring Worksheet, and Environmental Information Worksheet

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Project Priority List (PPL)

Wastewater Application

1. **Applicant name:** City of Redwood Falls, Minnesota
   Project area: Wastewater Treatment Facility
   Town/city: Redwood Falls, MN
   Population: 5,210
   County: Redwood Falls

2. **Contact person:** James Doering
   Address: 333 S. Washington St., PO Box 526
   Phone: (507) 637-5755 Fax: (507) 637-2417
   E-mail: jdoering@ci.redwood-falls.mn.us

3. **Project consultants/Firm name (if applicable):** Bolton & Menk, Inc.
   Contact name: John Graupman
   Address: 1960 Premier Drive, Mankato, MN 56001
   Phone: (507) 625-4171 Fax: (507) 625-4177
   E-mail: johngr@bolton-menk.com

4. **Project area description:**	☒ **Sewered:**	☐ **Unsewered** (submit map of project area)
a. Number of existing households:	2,320	
b. Number of non-residential users:	308 (approx. commercial connections)	

Need or problem project addresses: (Check all that apply)

- ☐ Failing on-site systems # of failing systems: ____
- ☐ Connection to an existing system
- ☒ Rehab of an existing facility
- ☐ Rehab collection system
- ☒ Expansion of existing treatment plant
- ☐ New treatment and/or collection system
- ☐ Advanced treatment

5. **Please indicate if this project may be a Green Project Reserve (GPR) which are wastewater projects that are either categorical or non-categorical and have components or the entire project is applying to be determined GPR eligible.**

The U.S. Environmental Protection Agency (EPA) provided a guidance document listing examples of projects that will qualify for Green Project Reserve dollars. Below is a list of those examples. If the proposed project matches one or more of the examples, check the box next to the example that describes the project. For more information, see *CW Green Guidance* at http://www.pca.state.mn.us/water/wastewater-financial.html.

Categorical eligible project types

☐ 1. **Water Efficiency**

- ☐ a. Installation of water meters (applies only to drinking water distribution systems – contact the Minnesota Department of Health)
- ☐ b. Retrofit or replacement of water using fixtures, fittings, equipment or appliances
- ☐ c. Efficient landscape or agricultural irrigation equipment
- ☐ d. Systems to recycle gray water
- ☐ e. Reclamation, recycling, and reuse of existing rainwater, condensate, degraded water, stormwater, and/or wastewater streams.
- ☐ f. Collection system leak detection equipment
- ☐ g. Development and initial distribution of public education materials

☐ **2. Energy Efficiency**

- ☐ a. Energy efficient retrofits and upgrades to pumps and treatment processes
- ☐ b. Leak detection equipment for treatment works
- ☐ c. Producing clean power for 212 treatment works on site (wind, solar, hydroelectric, geothermal, biogas powered combined heat and power)
- ☐ d. Pro-rata share of capital costs for offsite publicly owned clean energy facilities that provide power to a treatment works.

☐ **3. Green Infrastructure**

- ☐ a. Implementation of comprehensive street tree or urban forestry programs, including expansion of tree box sizes to manage additional stormwater and enhance tree health.
- ☐ b. Implementation of green streets (combinations of green infrastructure practices in transportation rights-of-ways), for either new development, redevelopment or retrofits
- ☐ c. Implementation of water harvesting and reuse programs or projects, where consistent with state and local laws and policies.
- ☐ d. Implementation of wet weather management systems for parking areas which include: the incremental cost of porous pavement, bioretention, trees, green roofs, and other practices that mimic natural hydrology and reduce effective imperviousness at one or more scales.
- ☐ e. Establishment and restoration of riparian buffers, floodplains, wetlands and other natural features.
- ☐ f. Downspout disconnection to remove stormwater from combined sewers and storm sewers.
- ☐ g. Comprehensive retrofit programs designed to keep wet weather out of all types of sewer systems using green infrastructure technologies and approaches.

☐ **4. Environmentally Innovative Projects**

- ☐ a. Green Infrastructure/Low Impact development stormwater projects
- ☐ b. Decentralized wastewater treatment and/or reuse projects that reduce energy consumption, recharge aquifers and reduce water withdrawals and treatment costs
- ☐ c. Projects that employ development and redevelopment practices that preserve or restore site hydrologic processes through sustainable landscaping and site design.
- ☐ d. Projects that use water balance approaches (water budgets) at the project, local or state level that preserve site, local or regional hydrology. Such an effort could pilot and show-case efforts to plan and manage in a concerted manner, surface and groundwater withdrawals, stream base flow (aquatic species protection), wetland and floodplain storage, groundwater recharge and regional or local reuse and harvesting strategies using a quantified methodology.
- ☐ e. Projects that demonstrate the energy savings and climate change implications of sustainable site design practices and the use of green infrastructure such as green roofs, increased tree canopy, reduced water consumption and potable water use due to sustainable site designs, rainwater harvesting and reuse and reductions in hard or infrastructure needed to manage stormwater and Combined Sewers Overflow (CSOs).
- ☐ f. Projects that demonstrate the differential uses of water based on the level of treatment and potential uses as a means to reducing the costs of treating all water to potable water standards.
- ☐ g. Projects that identify and quantify the benefits of using integrated water resources management approaches.

☐ **5. Non-categorical (describe)**

_____

_____

6. **Possible solution and cost estimates (if known):** Construct tertiary disk filters with chemical feed system for phosphorus removal. Estimated cost $9,400,000
7. **Current project status:** Planning
8. **Desired construction start date, if financing is available (month/year):** August 2023 (based on desirable financing)

NOTE: Required attachments for unsewered area projects. A map of the project service area which has an identifiable scale, identifies all the structures with wastewater flows, and has the maximum impact zone clearly encircled.

On behalf of an eligible project as their authorized authority, I hereby submit this application for placement on the PPL:

Print Authorized Representaive Name: James Doering

Signature: James Doering Digitally signed by James Doering DN: C=US, E=jdoering@ci.redwood-falls.mn.us, O=City of Redwood Falls, OU=Public Works Project Coordinator, CN=James Doering Date: 2022.03.02 14:21:25-06'00'

Title: Public Works Project Coordinator

Date: 03/02/2022

For more information, contact:

Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324 or bill.dunn@state.mn.us

www.pca.state.mn.us/water/wastewater-financial.html

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

PPL Wastewater Existing Facility Improvements Scoring Worksheet

Project Priority List (PPL)
Minnesota Rule Chapter 7077.0117

Doc Type: PPL Points Determination

MPCA Use Only

Project Number
Staff Engineer
Total Points
Date

Facility Information (please print)

Project name: Redwood Falls Wastewater Treatment Improvements
Applicant name (if different): City of Redwood Falls, Minnesota
Contact name: Jim Doering Title: Public Works Project Coordinator
E-mail address: jdoering@ci.redwood-falls.mn.us Phone: (507) 637-5755

Instructions: This worksheet is used to score all requests for state financial assistance for wastewater improvement projects for Minnesota Pollution Control Agency (MPCA) permitted facilities. Scoring is based on the environmental criteria contained in Minnesota Rule Chapter 7077. The result of scoring is a ranked list called the Project Priority List (PPL) from which projects will be selected for funding.

Applicants must complete their sections of the worksheet and submit it with their requests for placement on the PPL. As part of completing the worksheet, the applicant must provide sufficient documentation to support the award of points. Complete application information is located on the MPCA website at http://www.pca.state.mn.us/ppl.

Complete this form if your proposal includes improvements to wastewater collection and/or treatment facilities that have an existing National Pollutant Discharge Elimination System (NPDES) Permit or a State Disposal System (SDS) Permit.

For more information, contact: Bill Dunn, Clean Water Revolving Fund Coordinator at 651-757-2324, Fax 651-297-8324, or bill.dunn@state.mn.us.

Applicant completes questions 15-40 and 85; MPCA completes 45-80, 90-95

Points

[15] Existing and proposed stabilization ponds located in karst areas and SDS facilities with high ground water table [subp. 6]

15.1 Does this project replace or rehabilitate stabilization ponds located over karst areas? ☐ Yes ☒ No

15.2 Does this project replace or rehabilitate wastewater treatment facilities having a disposal site (spray irrigation, rapid infiltration, etc.) with less than three feet of vertical separation from the treated wastewater discharge point to the seasonally high ground water table or to bedrock? ☐ Yes ☒ No

If Yes to either 15.1 or 15.2, enter 20 points 0

[20] Existing facility at or above 85% capacity [subp. 1]

Complete 20.1 *if project improves only the treatment facility or improves both the treatment facility and the collection facilities.*

20.1 Is this treatment facility at or above 85% of either its permitted hydraulic flow or organic loading capacity as determined by the last 12 month average wet weather flow (AWW) or average annual discharge, **and** will the project proposal appropriately resolve capacity issues either through expansion of treatment capacity or reduction of loadings? ☐ Yes ☒ No

Permitted hydraulic and/or organic loading capacity: 1.321 MGD (AWW); 171 mg/L CBOD5 (1,884 lbs/day CBOD5 @ AWW)

Actual hydraulic and/or organic loading capacity:

Complete 20.2 *if project improves only the collection facilities.*

20.2 Is this collection facility at or above 85% of the design peak instantaneous wet weather flow (PIWW) or provide documentation of other physical conditions, such as by-passing to show the peak flow has exceeded the design PIWW, **and** will the project proposal appropriately resolve capacity issues through expansion of collection facility capacity? ☐ Yes ☒ No

Design PIWW: 4.04 MGD

Documented peak flow: 6.5 MGD (June 2014 flood). Second highest peak = 2.06 MGD

If Yes to either 20.1 or 20.2, enter 5 points 0

[25] Existing age of treatment or collection facilities within the proposed project service area [subp. 2]
(*Age is determined by the construction year of all or a substantial portion of the existing facility addressed by project.)*

25.1 Last significant construction year of treatment or collection facilities, which are proposed to be repaired or replaced within the service area? ☒ Yes ☐ No

Enter Year: 1996

1996: Construction of existing Regional Treatment Center (3-cell aerated pond system)

1988: Construction of existing Redwood Falls Treatment Center (3-cell aerated pond system)

25.2 Are the facilities 20 years or more old? If yes, attach documentation of last significant construction year. ☒ Yes ☐ No

If Yes, enter 20 points **20**

[30] Existing excessive infiltration/inflow (i/i) with proposed reduction plan [subp. 3]

30.1 Does this facility have excessive infiltration or inflow? (Minn. R. 7077.0105, subp. 12 and 13)

Calculate infiltration: 135 gallon/capita/day Greater than 120 gallon/capita/day? ☒ Yes ☐ No

Calculate inflow: 217 gallon/capita/day Greater than 275 gallon/capita/day? ☐ Yes ☒ No

30.2 Does the proposal include measures to correct excessive infiltration or inflow? ☐ Yes ☒ No

If Yes to both 30.1 and 30.2, enter 15 points **0**

[35] Existing or proposed land (including sub-surface) discharge [subp. 4]

35.1 Does the facility currently land discharge treated wastewater effluent, will it continue to land discharge, **and** not create or contribute to known ground water nitrate levels over 10 mg/L? ☐ Yes ☒ No

35.2 Does the proposed alternative call for the consumptive use (nitrogen or volume) spray irrigation or on-land disposal systems, that are required by permit to denitrify (nitrate limit)? ☐ Yes ☒ No

If Yes to either 35.1 or 35.2, enter 20 points **0**

[40] Existing stringent limit that exceeds secondary treatment [subp. 5]

40.1 Is the existing facility currently subject to CBOD or TSS permit limits that are more stringent than secondary treatment (25 mg/l and 30 mg/l), or has an ammonia, total nitrogen or phosphorus limit? (Minn. R. 7050.0211) Exclude facilities discharging to Class 7 waters that are subject to 15 CBOD. ☒ Yes ☐ No

If Yes, enter 10 points **10**

[45] Existing effluent discharge violations *(Enforcement staff)* [subp. 7]

45.1 Is the existing facility on the Significant Noncompliance List (CFR, title 40, section 123.45, appendix A) **and** would the proposed project designed to eliminate the problem? ☐ Yes ☒ No

If Yes, enter 5 points **0**

[50] Existing repeated facility failures *(Enforcement staff)* [subp. 8]

50.1 Has the existing treatment or collection facility experienced bypasses, overflows and/or surcharges during two or more storm events within a 12-month period when operating at less than "peak instantaneous wet weather flow" **and** is the proposed project designed to eliminate such failures? ☐ Yes ☒ No

If Yes, enter 10 points **0**

[55] Existing discharge to outstanding resource value water (ORVW) or impaired water (*Effluent Limits Coord.)* [subp. 9]

55.1 Does the existing facility currently discharge into an ORVW or Impaired water? ☒ Yes ☐ No

If Yes, enter 5 points **5**

55.2 If yes, does the existing facility also have existing acute/chronic effluent discharge standards violations? (see question 45.1 or subp. 7)? ☐ Yes ☒ No

If Yes to both 55.1 and 55.2, enter 5 points **0**

55.3 If yes, does the existing facility also have existing chronic failures? (see question 50.1 or subp. 8) ☐ Yes ☒ No

If Yes to 55.1, 55.2, and 55.3, enter 5 points **0**

[60] Existing discharge near potable water intake (*Effluent Limits Coordinator)* [subp. 10]

60.1 Is there potable water intake within 25 miles downstream of the existing facility discharge? ☐ Yes ☒ No

If Yes, enter 5 points | **0**

Project name: **Redwood** Falls Wastewater Treatment Improvements **Points**

[65] Existing endangered or threatened species (*Effluent Limits Coordinator)* [subp. 11]

65.1 Does the receiving water downstream from the existing facility discharge support any endangered or threatened species? ☐ Yes ☒ No

If Yes, enter 5 points | **0**

[70] Proposed introduction of more stringent discharge limits for an existing facility (*Effluent Limits Coordinator)* [subp. 12]
Does this existing treatment facility need to meet more intensive and/or extensive wastewater treatment standards because of:

70.1 More stringent facility discharge limits as incorporated into MPCA permit revisions? ☒ Yes ☐ No

70.2 Discontinuation of an existing permit variance? ☐ Yes ☒ No

70.3 Need to treat additional hydraulic or organic loading capacities without increasing either the permitted frozen effluent mass limit or concentration of discharges to the receiving waters? ☐ Yes ☒ No

If Yes to 70.1, 70.2 or 70.3, enter 10 points | **10**

[75] Existing receiving water classification *(Effluent Limits Coordinator)* [subp. 13]

Only the most strict classification can be used, 7 points maximum

75.1 Receiving water classification is 2A ☐ Yes ☒ No

If Yes to 75.1, enter 7 points | **0**

75.2 Receiving water classification is 1, 2Bd ☐ Yes ☒ No

If No to 75.1 and Yes to 75.2, enter 5 points | **0**

75.3 Receiving water classification is 2B, 2C, 2D ☒ Yes ☐ No

If No to 75.1 and 75.2 and Yes to 75.3, enter 3 points | **3**

75.4 Receiving water classification is 7 ☐ Yes ☒ No

If No to 75.1, 75.2 and 75.3 and Yes to 75.4, enter 1 point | **0**

[80] Project facility effluent to stream impact dilution ratio *(Effluent Limits Coordinator)* [subp. 14]

*For all discharges to rivers, streams, or ditches (flowing receiving water), calculate the facility effluent low flow by averaging the influent flow reported on the monthly discharge monitoring reports (DMRs) for the three consecutive months with the lowest **influent** flow in three climatic years, April 1 to March 31.*

80.1 What is the ratio of the **influent** low flow of the facility to the 7Q10 flow of the receiving water?

Dilution Ratio* = Wastewater Treatment Facility (WWTF) Low Flow (million gallons per day [mgd]) / Receiving water low flow (mgd)

(0.594 mgd/ _____ mgd = Dilution Ratio) Dilution Ratio = ☐

*For all "Dilution Ratios" greater than 1.0 or if the 7Q10 receiving water flow = 0 mgd set dilution ratio = 1.0

Note: Round up calculated value for dilution ratio to the next whole number (e.g., 8.3 = 9). 15 x dilution ratio = | ☐

[85] Proposed project implements corrective measures (*Effluent Limits Coordinator)* [subp. 15]

85.1 Will the project implement corrective measure(s) for problems identified in a study, such as: ☐ Yes ☒ No

- Clean Water Partnership Project
- Impaired Water Study
- EPA-approved Watershed Restoration Action Strategy
- Equivalent (other) study, e.g., County Water Plan

Type of Study: *Attach supporting documentation and identify relevant sections.*

If Yes, enter 5 points | **0**

[90] Proposed project helps meet a total maximum daily load (TMDL) for a receiving water *(Effluent Limits Coord)* [subp. 16]

90.1 Does this project contribute to the achievement of a TMDL by being designed to reduce the discharge of pollutants as required by an Agency approved TMDL implementation plan or does the project require an National Pollutant Discharge Elimination System (NPDES) Permit or State Disposal System (SDS) Permit that will require the reduced discharge of pollutants based on a ☒ Yes ☐ No

TMDL?

If Yes, enter 20 points	**20**

Project name: **Redwood** Falls Wastewater Treatment Improvements **Points**

[95] Propose project points reduction for new/expanded discharges into specified waters *(Effluent Limits Coord)* [subp. 17]

95.1 Does the proposed project involve a new or expanded discharge* to one or more of the following specified waters? ☐ Yes ☒ No

a) Outstanding Resource Value Waters (Minn. R. 7050.0180)

b) Impaired waters (Section 303(d) of the Clean Water Act)

c) Classification 2A, lake, or wetland that exceeds 200,000 gallons per day

* If new permit requirements include frozen effluent mass limits from the existing permit, the facility is not defined as expanding and negative points will not be assigned.

If Yes, enter minus 5 points	**0**

[100] Project includes wastewater reuse

100.1 Does the project include the beneficial use of treated wastewater effluent that will reduce or replace the use of a groundwater, surface water, or potable water source? ☐ Yes ☒ No

100.2 Do the project components needed to beneficially use treated wastewater effluent account for at least 20% of the total eligible project cost? ☐ Yes ☒ No

100.3 Does the project receive points under item 35 (Minn. R. 7077.0117, subp. 4) for land discharge? ☐ Yes ☒ No

If Yes to both 100.1 and 100.2, enter 30 points	**0**
Total	**68+**

Appendix J: Intended Use Plan Letter

Final letter to be submitted on or after April 1, 2022.

April 1, 2022

Minnesota Public Facilities Authority
1st National Bank Building
332 Minnesota St., Suite W820
St. Paul, MN 55101-1378

Attn: Peter Bradshaw

RE: Placement of the City of Redwood Falls on the Clean Water Revolving Loan Fund
2023 Intended Use Plan – Wastewater Treatment Facility

Dear Mr. Bradshaw,

Please consider this letter as the formal request from the City of Redwood Falls to be placed on the 2023 Intended Use Plan for the Clean Water Revolving Loan Fund. The proposed project in this request is the Wastewater Treatment Facility project.

The following information should satisfy the requirements for listing on the IUP.

Project Description
The project will be located in the City of Redwood Falls near the existing Regional Treatment Center site. The proposed project includes construction of tertiary filtration disk filters and chemical feed system for phosphorus removal.

Project Schedule
Based on financing availability, the City anticipates the following schedule to complete these improvements:

1. Planning, Design, and Engineering	August 2022 – March 2023
2. Review and Approvals	March 2023 – July 2023
3. Bid Advertisement and Bid Opening	July 2023
4. Construction	September 2023 – September 2025

Project Cost Estimate
The estimated cost of the Wastewater Treatment Facility project is $9,400,000

Approximate Monthly Distribution Schedule

Month/Year	Amount
September 2023 – April 2024	$300,000/month
May 2024 –December 2024	$550,000/month
January 2025 – September 2025	$300,000/month

We look forward to working with the Public Facilities Authority and Minnesota Pollution Control Agency on this very important project for the City of Redwood Falls.

If you have any questions, please feel free to call me, or you may contact our engineer, John Graupman of Bolton & Menk, Inc., at (507) 507-380-0433.

Thank you for your consideration of this request.

Sincerely,

James Doering
Public Works Project Coordinator

cc: John Graupman, Bolton & Menk, Inc.
Owen Todd, Bolton & Menk, Inc.

Appendix K: City Wastewater Budget

City wastewater budget

to be provided at a later date.

Appendix L: Environmental Information Worksheet (EIW)

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Environmental Information Worksheet (EIW) form

Clean Water State Revolving Fund Program

Minnesota Rule Chapter 7077.0272, subp. 2.a.F.
Minnesota Rule Chapter 7077.0277, subp. 3.E.

Doc Type: Wastewater Point Source

Eligible applicants seeking funds for clean water (stormwater and wastewater) projects through the Clean Water State Revolving Fund (commonly referred to as the CWSRF Program) are required by Minn. R. ch. 7077.0272, subp. 2.a. F. and Minn. R. ch. 7077.0277, subp. 3.E., to complete an Environmental Information Worksheet (EIW). This information will be used to assess environmental impacts, if any, caused by the project.

Questions: Contact Review Engineer or Bill Dunn at 651-757-2324 or bill.dunn@state.mn.us.

1. Project title: City of Redwood Falls - WWTF Facility Plan

2. Proposer: City of Redwood Falls

Contact person: Teresa Burgess, PE, CPESC

Title: Senior Project Engineer

Address: 1960 Premier Drive

Mankato, MN 56001

Phone: 507-625-4171 ext. 2638

Fax: 507-625-4177

3. Project location: County: Redwood City/Twp: Redwood Falls

1/4 NW 1/4 Section: 31 Township: 113 Range: 35

Tables, Figures, and Appendices attached to the EIW:

- County map showing the general location of the project;
- United States Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable);
- Site plan showing all significant project and natural features.

4. Description:

a. Provide a project summary of 50 words or less.

Construct new tertiary media filters and install new aeration equipment at the existing wastewater treatment facility.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

Construct new tertiary media filters and install new aeration equipment at the existing wastewater treatment facility. This system provides a long-term solution for phosphorus removal to meet future discharge limits for the Minnesota River. The project is proposed to be constructed between May 2022 and June 2023.

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

To achieve compliance for total phosphorus discharge, the City of Redwood Falls entered into an agreement with New Ulm to purchase phosphorus credits. Due to downstream exceedance of RES water quality standards, it is anticipated that downstream sellers of phosphorus credits will become unavailable once the new standards are implemented. The City of Redwood Falls has still exceeded the phosphorus limits even after purchasing credits with New Ulm. Since there are no upstream sellers that would cover the City's credit needs, the City is forced to explore alternatives to remove phosphorus from their treated effluent to meet mass limits for the Lake Pepin TMDL, prior to more facility expansion for the RES standards. The project will benefit all downstream property owners.

d. Are future stages of this development including development on any outlots planned or likely to happen? ☐ Yes ☒ No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

NA

e. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No
If yes, briefly describe the past development, timeline and any past environmental review.

NA

5. Project magnitude data

Total Project Area (acres) 5 or Length (miles) _____
Number of Residential Units: Unattached NA Attached NA maximum units per building NA
Commercial/Industrial/Institutional Building Area (gross floor space): total square feet NA
Indicate area of specific uses (in square feet): NA

Office		Manufacturing	
Retail		Other Industrial	
Warehouse		Institutional	
Light Industrial		Agricultural	
Other Commercial (specify)			

Building height _____ If over 2 stories, compare to heights of nearby buildings _____

6. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure.

Unit of government	Type of application	Status
City	Plan Approval	Future
MPCA	Construction Stormwater Permit	Future
MPCA	Plan Approval	Future
MPCA	WWTF Permit	Future

7. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

The work is all proposed to be done on the site of the existing WWTF. There are no known environmental hazards or soil contamination. There are no known abandoned storaged tanks. There are no known hazardous liquid or gas pipeslines in the project area.

8. Cover types. Estimate the acreage of the site with each of the following cover types before and after development:

	Before	After		Before	After
Types 1-8 wetlands			Lawn/landscaping		
Wooded/forest			Impervious Surfaces		
Brush/grassland			Other (describe)	5	5

Cropland					
			Total	5	5

9. Fish, wildlife, and ecologically sensitive resources.

a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

The USFWS online Information for Planning and Consultation tool was used. Two threatened species, Northern Long-eared Bat and Prairie Bush-clover have ranges that include the project area. The determination key reached a finding that the project as proposed may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). A copy of the determination is attached. The existing vegetation on the project site is mowed lawn type grasses. Prairie bush-clover typically occur on bedrock outcrop prairie or northern facing mesic to dry prairie slopes. These conditions do not occur on the project site.

The online tool also identified one bird of particular concern on the USFWS Birds of Conservation Concern (BCC) list. The Bobolink is a small blackbird. Its preferred diet is cultivated grains. The online tool indicates that the bird is unlikely to be found in the project area during its typical breeding season. Construction noise may displace the bird from surrounding areas. The project as proposed does not impact the preferred nesting or forage settings for this species.

b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources such as native prairie habitat, colonial waterbird nesting colonies or regionally rare plant communities on or near the site? ☒ Yes ☐ No
If yes, describe the resource and how it would be affected by the project. Indicate if a site survey of the resources has been conducted and describe the results. If the Minnesota Department of Natural Resources (DNR) Natural Heritage and Nongame Research program has been contacted give the correspondence reference number: License Agr. LA-955
Describe measures to minimize or avoid adverse impacts.

Rare features data was provided by the Division of Ecological and Water Resources, DNR. The following geologic features were identified within 0.1 mile of the project site: weathering (Jurassic, cretaceous), Fossil Plant (quaternary), and Sedimentary unit or sequence (cretaceous, quaternary). Dust can accelerate weathering. Western Harvest Mouse and Oregon Woodsia were identified as potentially being found within 1 mile of the project. The mouse is typically found in open prairie habitats, but also in fence rows, grassy fields, and unmown roadsides. The project area is mowed grass type vegetation. Foraging mice may be found in the project area, but are unlikely to select this area for nesting. The mice forage primarily at night so are unlikely to be on the site during human activity. Construction noise may encourage the mice to move their burrows further from the site until the work is completed. The Oregon Woodsia is a flowering point that grows 2-10 inches in height in outcrops of exposed bedrock. This plant is unlikely to be found on the project site.

10. Physical impacts on water resources. Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? ☐ Yes ☒ No
If yes, identify water resource affected. Describe alternatives considered and proposed mitigation measures to minimize impacts. Give the DNR Protected Waters Inventory (PWI) number(s) if the water resources affected are on the PWI.

NA

11. Water use. Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? ☐ Yes ☒ No
If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

NA

12. Water-related land use management districts. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? ☒ Yes ☐ No
If yes, identify the district and discuss project compatibility with district land use restrictions.

A portion of the WWTF is located in the regulated floodway. The project is located outside the floodway. The project will not cause any fill to be placed in the floodway. The project is compatible with the local land use and zoning.

13. Water surface use. Will the project change the number or type of watercraft on any water body? ☐ Yes ☒ No
If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

NA

14. Erosion and sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved: **5** Acres: **8100** cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

An erosion and sediment control plan will be developed with the project detail design. The plan will include best management practices such as perimeter sediment control, project phasing to minimize exposed soils, and dust control.

15. Water quality – surface-water runoff.

a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm water pollution prevention plans.

Stormwater runoff from the site sheet flows to the Redwood River. Before reaching the river, the stormwater runoff flows through a vegetative buffer. The buffer slows the flow, increases infiltration, and provides water quality treatment. The detail design will include development of a stormwater pollution prevention plan. The plan will use best management practices such as phasing, perimeter sediment control, and minimizing soil exposure. Dust control on this site will be critical. Dust control measures will vary depending on the time of year. Water is appropriate if there is not too much wind, but during hot and/or windy weather dust control may require calcium chloride or covering the soils with erosion control fabric. The project as proposed does not create enough impervious soil to cause a rate or volume impact to the Redwood River. The project will improve the effluent discharge to the Redwood River.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

Stormwater runoff sheet flows to the surrounding area and eventually enters the Redwood River. The project as proposed will not create enough impervious to cause rate or volume issues in the Redwood River. The treatment improvements will result in improved water quality in the receiving waters.

16. Water quality – wastewater.

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

The WWTF treats municipal sewage. The site does not create any new sewage.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies, and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

The site uses a a pond system for sewage treatment. This project will improve the WWTF ability to remove phosphorus. New tertiary media filters and new aeration equipment will be added to the treatment train.

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

This project is an existing municipal WWTF.

d. If the project requires disposal of liquid animal manure, describe disposal technique and location and discuss capacity to handle the volume and composition of manure. Identify any improvements necessary. Describe any required setbacks for land disposal systems.

NA

17. Geologic hazards and soil conditions.

a. Approximate depth (in feet) to Groundwater 36 minimum; *43* average.
Bedrock: *36* minimum; *36* average.

Describe any of the following geologic site hazards to groundwater and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

There are no known geologic hazards. The site has wastewater ponds. The ponds are lined to avoid infiltration. There are no known groundwater issues.

b. Describe the soils on the site, giving U.S. Soil Conservation Service (SCS) classifications, if known. Discuss soil

granularity and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

Soils that can be found on the site include: 94B-Terril loam, 2 to 6 percent slopes, 327B-Dickman sandy loam, 2 to 6 percent slopes, 992E-Rock outcrop-Copaston complex, 2 to 40 percent slopes, 1016-Udorthents, loamy, 1851B-Blue Earth mucky clay loam, sloping, 1852F-Terril-Swanlake loams, 25 to 70 percent slopes, L243A-Havelock-Zumbro complex, 0 to 3 percent slopes, frequently flooded, L244A-Du Page-Zumbro complex, 0 to 3 percent slopes, occasionally flooded, M-W-Water, miscellaneous. The site soils are Soil Groups A, B, B/D, C, C/D, and D. Soil Groups A and B infiltrate very fast. However, this site has been previously graded and compacted which closes up the soil voids and slows infiltration. No hazardous materials are proposed to be used during construction. If the Contractor utilizes any materials that could spill, a material appropriate spill kit will need to be available to facilitate a rapid response to any spills.

18. Solid wastes, hazardous wastes, storage tanks.

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

The project will not create any new wastes. No storage tanks are proposed. Construction waste will be collected and removed from the site for disposal at an licensed disposal site.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

Materials used at the WWTF are stored in a manner meeting the MPCA Industrial Stormwater Permit "No Exposure" definition. This project will not change the storage of materials at the site.

c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

None

19. Traffic. Parking spaces added: *0* Existing spaces (if project involves expansion): *0*
Estimated total average daily traffic generated: *0* Estimated maximum peak hour traffic generated (if known) and its timing: *0* Provide an estimate of the impact on traffic congestion affected roads and describe any traffic improvements necessary. If the project is within the Twin Cities metropolitan area, discuss its impact on the regional transportation system.

The project does not create any new traffic. There are no new parking spaces added. There will be short-term impacts to traffic during construction. These impacts will cease once construction is completed. To minimize disruption to the surrounding area, construction hours will be limited to normal work hours. No work will be allowed on during nighttime, weekends, or holidays without prior consent of the City.

20. Vehicle-related air emissions. Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts. Note: If the project involves 500 or more parking spaces, consult *Environmental Assessment Worksheet (EAW) Guidelines* about whether a detailed air quality analysis is needed.

The project does not cause any permanent impacts to existing traffic volumes or patterns. Temporary impacts will occur during construction of the project. These impacts will be minimized by proper construction staging and restriction of work to normal work hours. The State of MN does not have any vehicle emissions testing requirements, however, construction equipment with excessive vehicle emissions will be required to be removed from the site and not returned until appropriate repairs are made.

21. Stationary source air emissions. Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

The project as proposed does not include any stationary sources of air emissions such as boilers or exhaust stacks. Dust control will be implemented during construction activities to minimize both air and water erosion. Dust control best management practices will include project phasing, minimizing exposed soils, application of water, and prompt soil stabilization. Soil stabilization such as paving, or vegetation will minimize dust once construction is complete. The project as designed does not produce greenhouse gases or ozone depleting chemicals other than those associated with vehicle related air emissions.

22. Odors, noise, and dust. Will the project generate odors, noise or dust during construction or during operation? ☒ Yes ☐ No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

Construction vehicles will create dust, noise, and odors. The impacts of these will be minimized by limiting the hours of work, project phasing, and requiring construction equipment to be in good working order. Dust control measures such as applying water and prompt soil stabilization will be used to minimize fugitive dust. There are sensitive geologic resources within 0.1 miles of the project. implementation of dust control during the construction will be critical. Dust control measures that may be used during construction include limiting the amount of exposed soil by project phasing, covering soils with erosion blanket, and prompt stabilization of disturbed soils in addition to the use of water and/or calcium chloride.

23a. Nearby resources. Are any of the following resources on or in proximity to the site? Projects should search the Minnesota State Historic Preservation Office's (SHPO) National Register of Historic Places database.

***Note:** Project proposers must contact the SHPO at datarequestshpo@mnhs.org to request a database review to obtain information on any known historical or archaeological sites in the project area. Include a copy of correspondence with SHPO with the submittal of this EIW form.

a. Archaeological, historical, or architectural resources? ☐ Yes ☒ No

b. Prime or unique farmlands or land within an agricultural preserve? ☐ Yes ☒ No

c. Designated parks, recreation areas, or trails? ☐ Yes ☒ No

d. Scenic views and vistas? ☐ Yes ☒ No

e. Other unique resources? ☐ Yes ☒ No

If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

NA

23b. Section 106 Review (36 CFR 800) is required for all CWRF projects. The following forms can be found on the MPCA Wastewater and Stormwater Financial Assistance website at https://www.pca.state.mn.us/ppl. Select Clean Water Revolving Fund tab; then scroll to Facilities Plan and Facilities Plan Supplement for Wastewater Treatment Systems heading.

a. Project is exempt from review (attach completed *Exemption Checklist*) ☐ Yes ☒ No

b. Project is required to complete further Section 106 Review: ☒ Yes ☐ No
   a. SHPO
   b. Tribal consultation
   c. Other Consulting parties

24. Visual impacts. Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? ☐ Yes ☒ No

If yes, explain.

NA

25. Compatibility with plans and land use regulations. Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? ☒ Yes ☐ No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

The project is compatible with the City land use requirements including but not limited to City Ordinance and land use. The project as proposed is not subject to any other land use regulations.

26. Impact on infrastructure and public services. Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☐ Yes ☒ No

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

The project as proposed does not generate the need for any new or expanded infrastructure or public services that are not being constructed as part of this project.

27. Cumulative impacts. Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative impacts. Describe the nature of the cumulative impacts and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to cumulative impacts (or discuss each cumulative impact under appropriate item(s) elsewhere on this form).

This project as proposed is not a reaction to nor is it intended to facilitate new development.

28. Other potential environmental impacts. If the project may cause any adverse environmental impacts not addressed by items 1

to 28, identify and discuss them here, along with any proposed mitigation.

There are no other known environmental impacts that are not addressed in this document.

29. Summary of issues. List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

The project as proposed will create temporary impacts from noise and dust. Dust can accelerate weathering of rock features such as those found approximately 0.1 miles from the project site. These impacts will be minimize by implementing project phasing, limiting work hours, and implementation of a Stormwater Pollution Prevention Plan that includes dust control measures. Dust control will be critical during construction to avoid impacts to nearby resources.

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https://www.dot.state.mn.us/maps/gdma/data/mapfinder/countyHTMLs/redwood.html

City of Redwood Falls

Wastewater Facility Plan

Redwood Falls, Redwood County, MN

Aerial Map

January 2021

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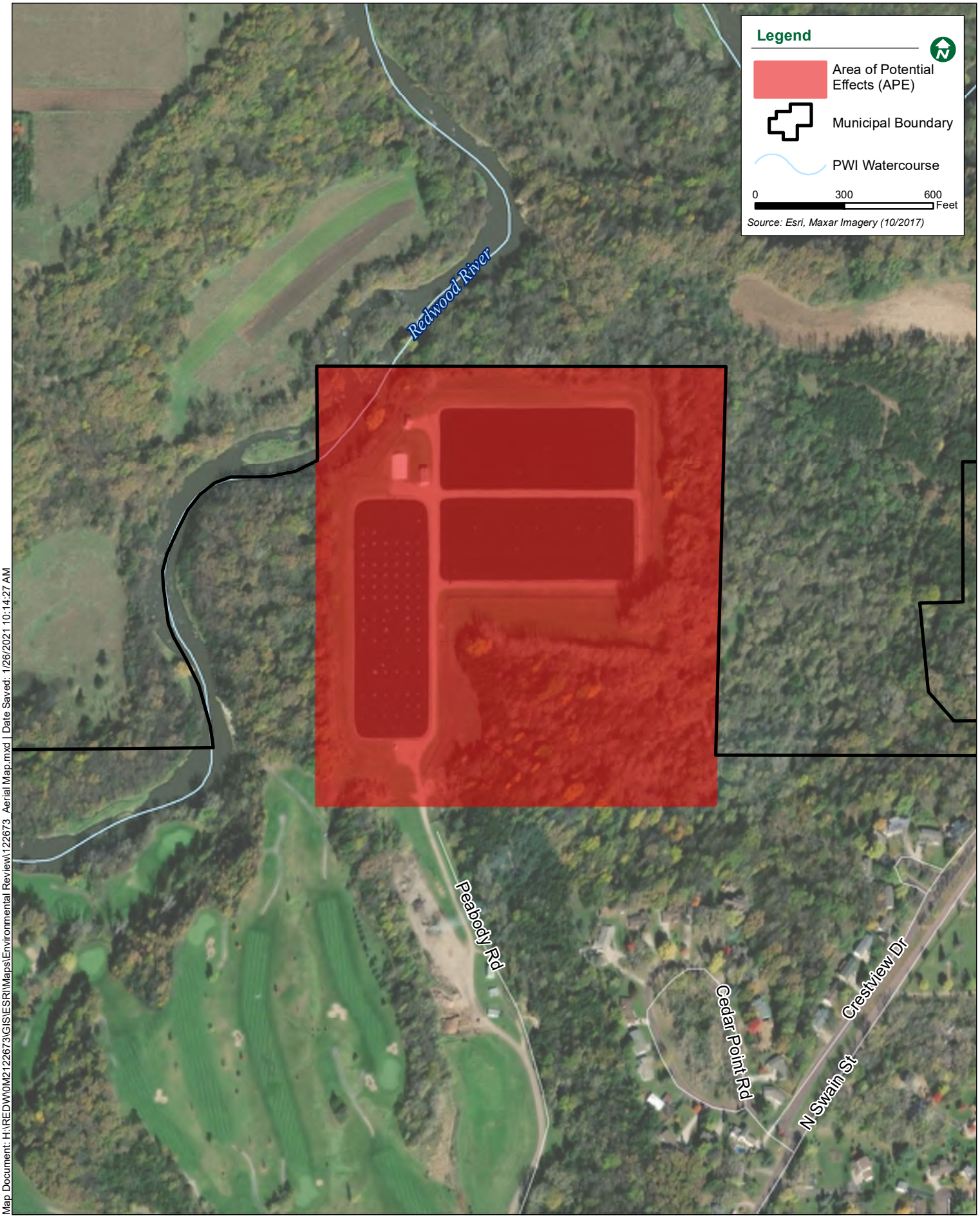

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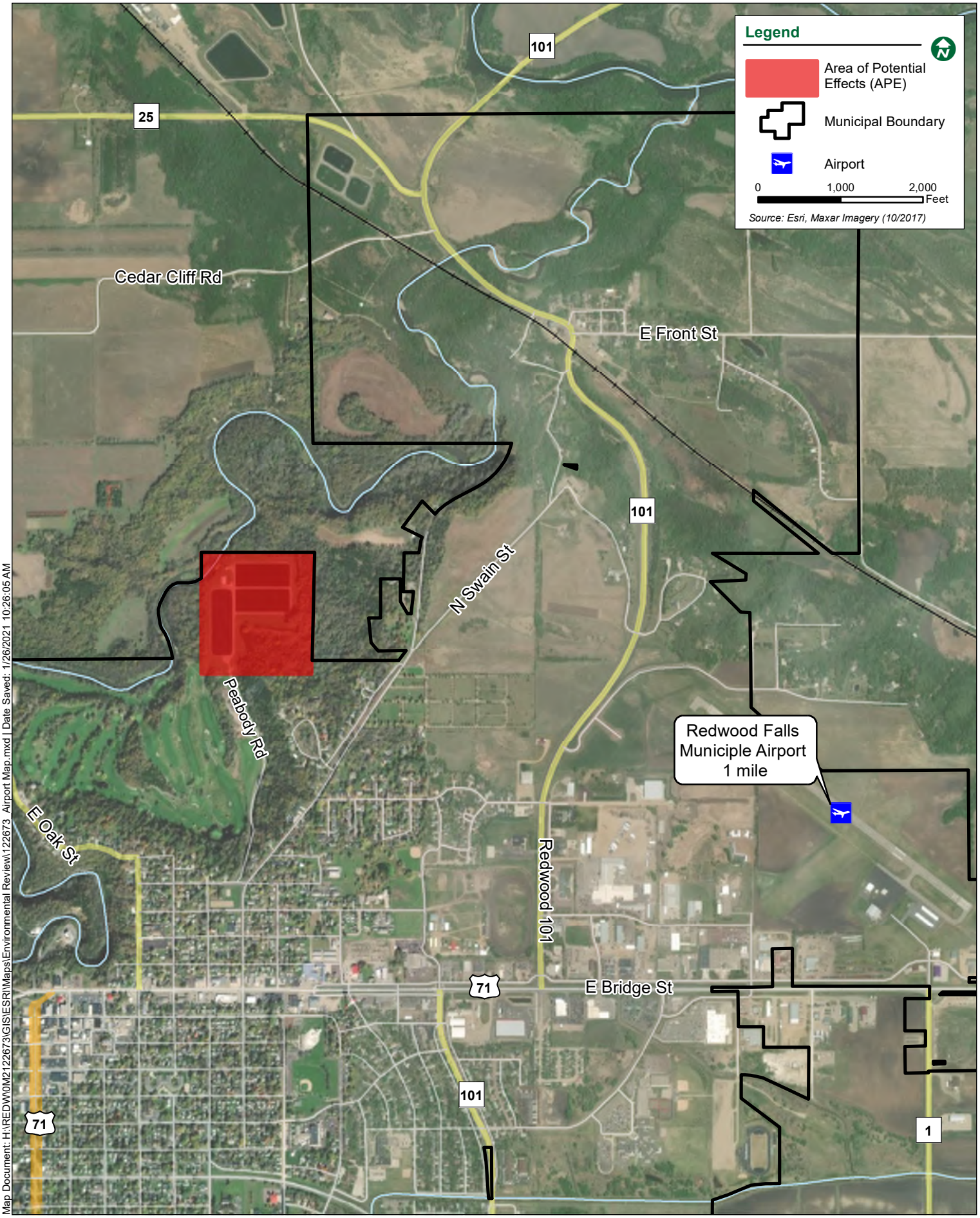

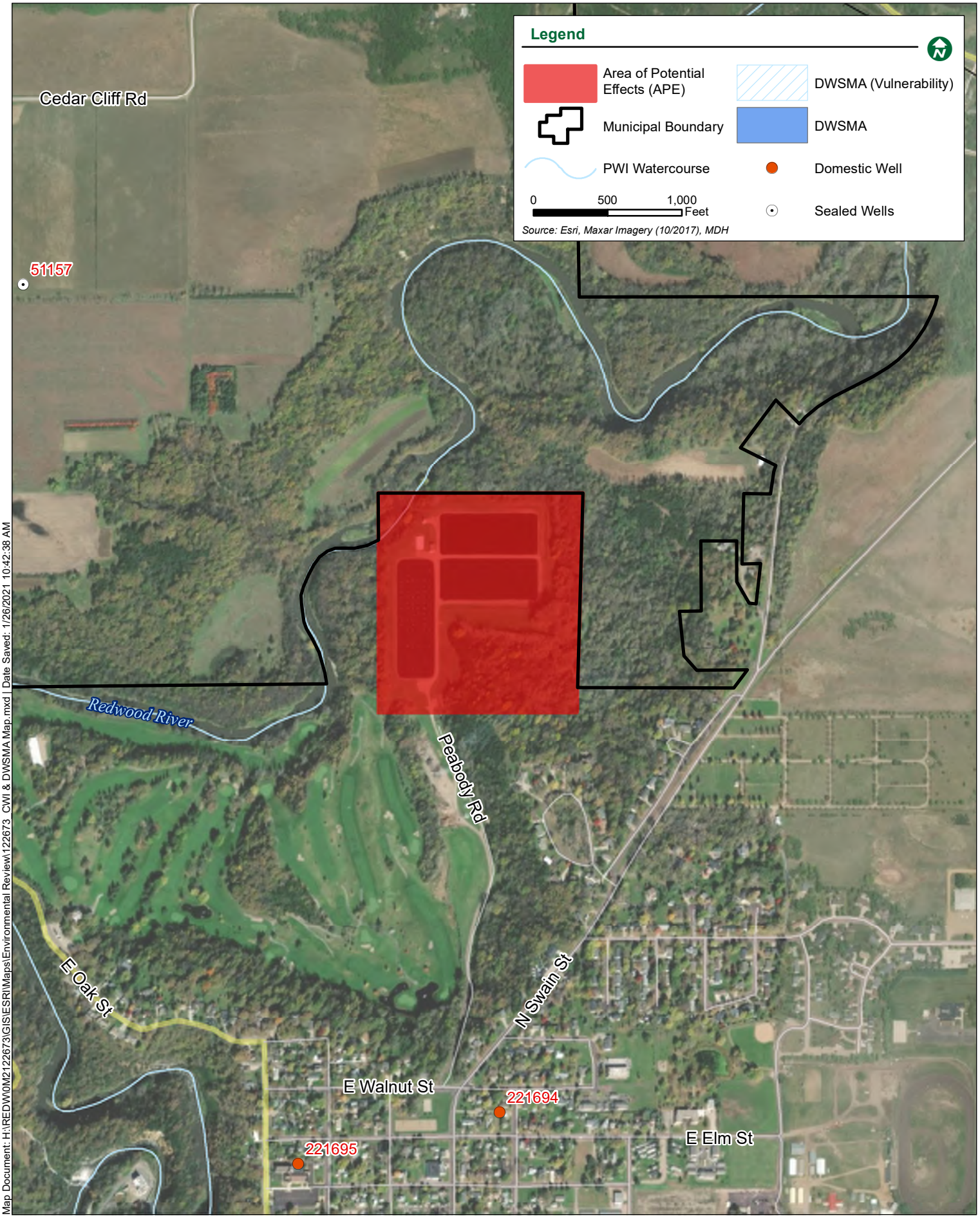

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Wastewater Facility Plan

Redwood Falls, Redwood County, MN

What's In My Neighborhood Map

January 2021

City of Redwood Falls

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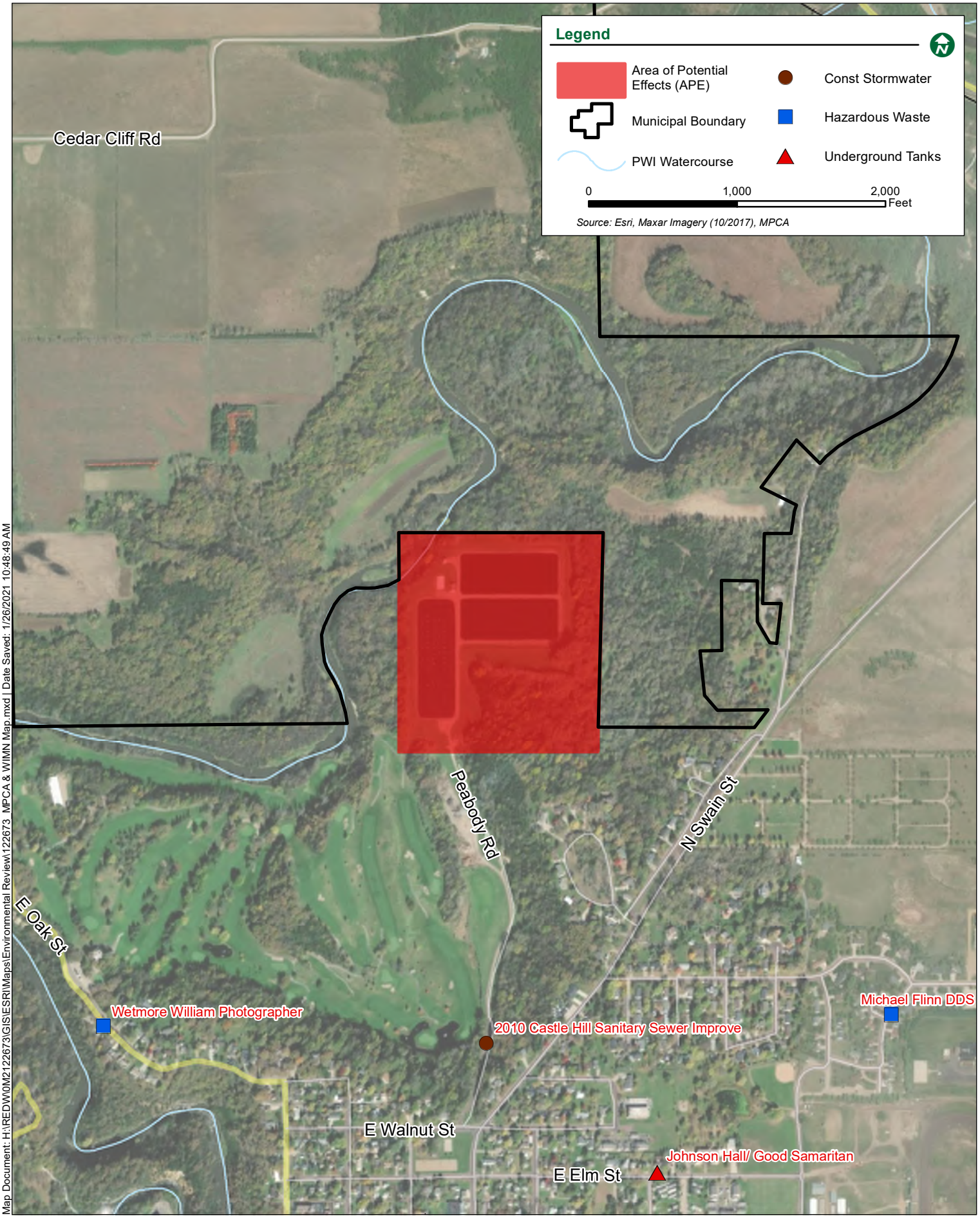

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City of Redwood Falls

Wastewater Facility Plan

Redwood Falls, Redwood County, MN

National Wetlands Inventory Map

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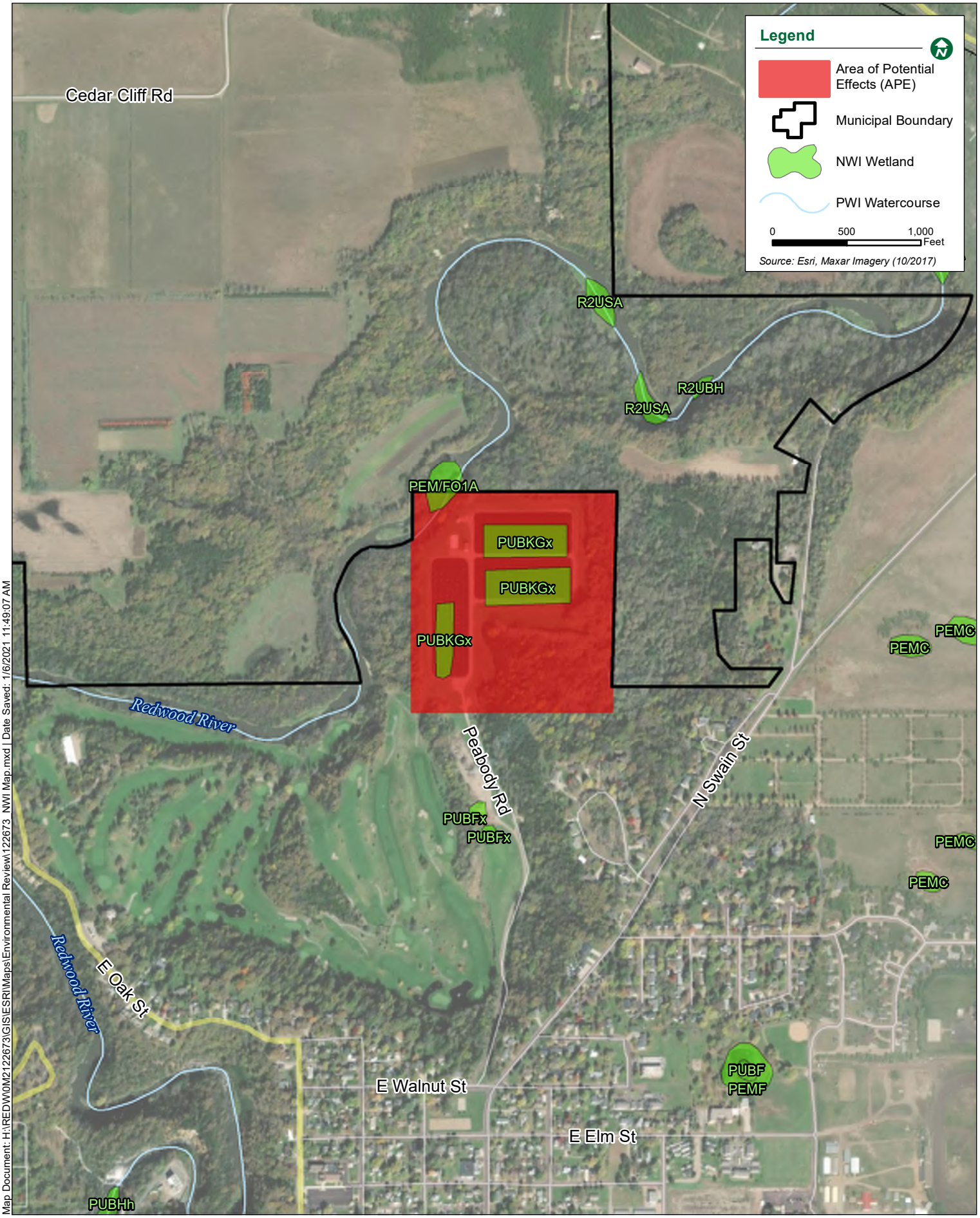

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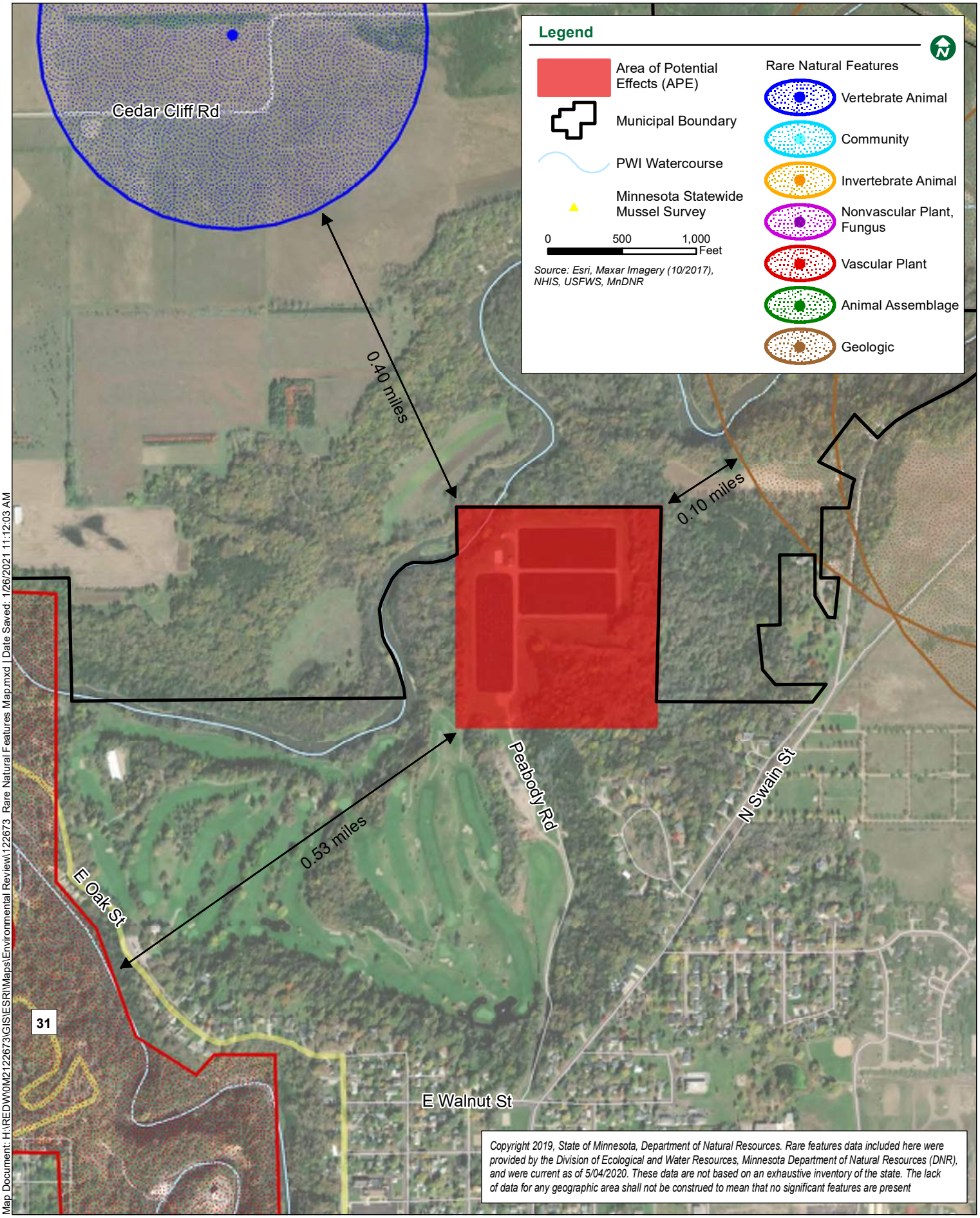

City of Redwood Falls

Wastewater Facility Plan

Redwood Falls, Redwood County, MN

Special & Impaired Waters Map

January 2021

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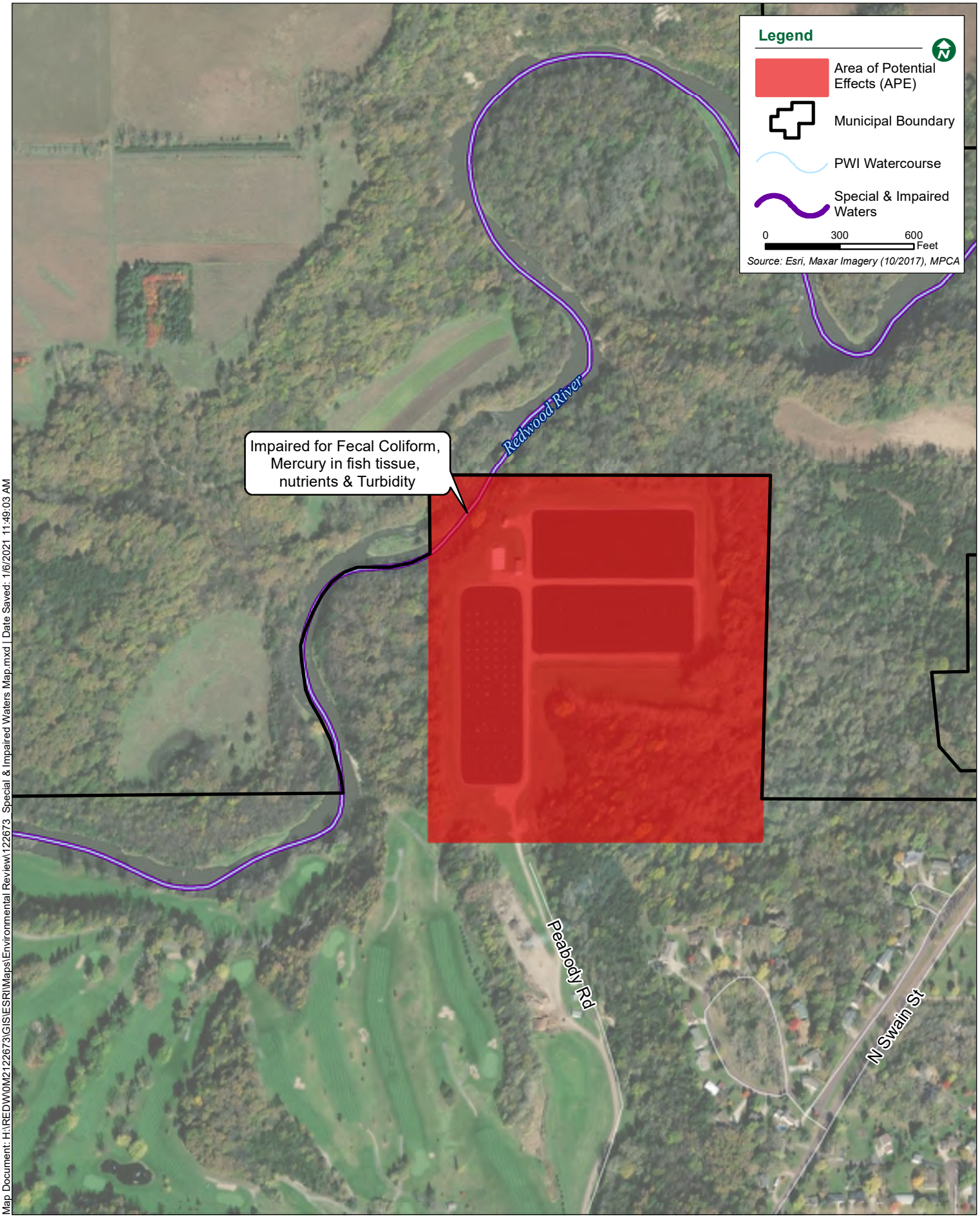

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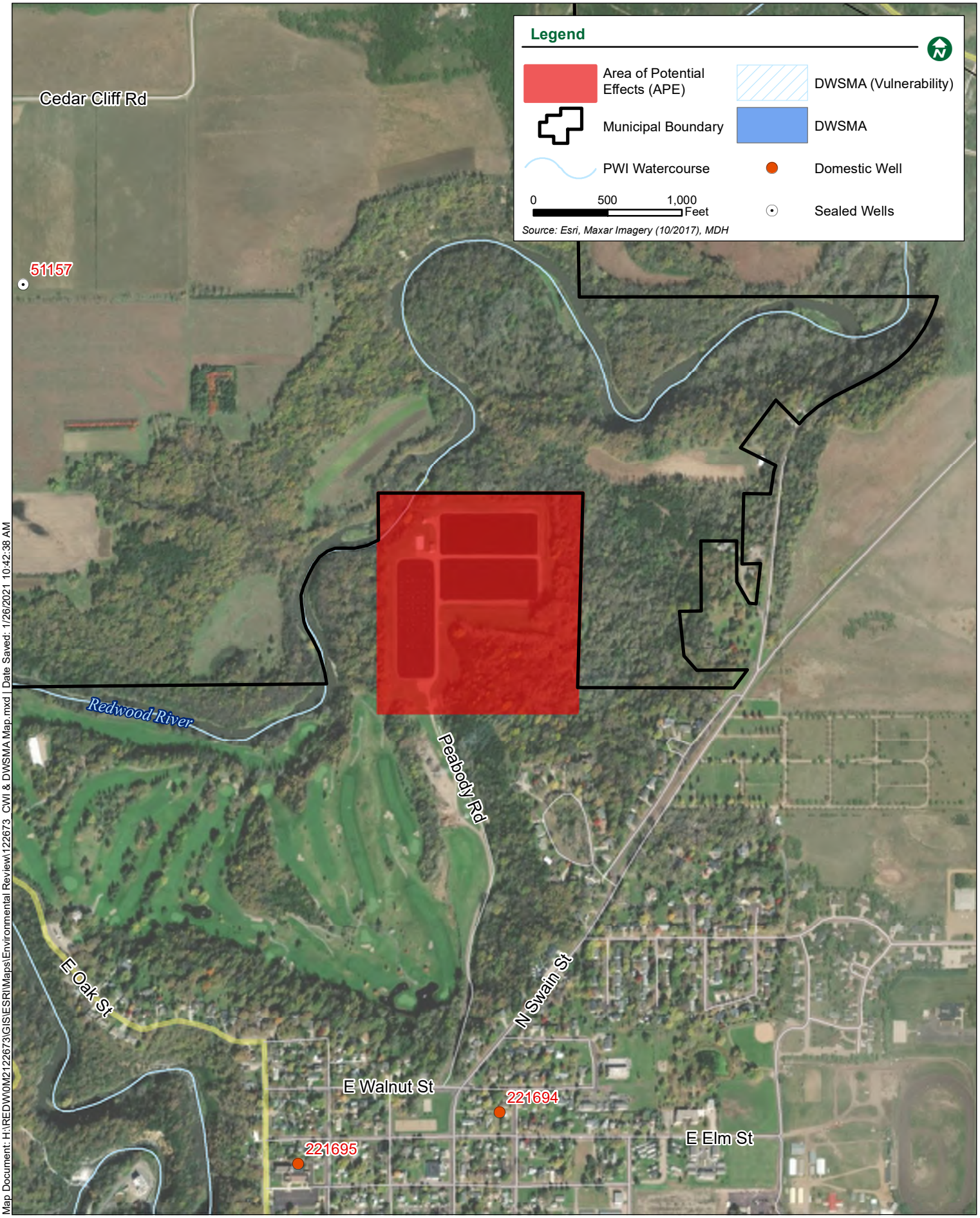

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Wastewater Facility Plan

Redwood Falls, Redwood County, MN

What's In My Neighborhood Map

January 2021

City of Redwood Falls

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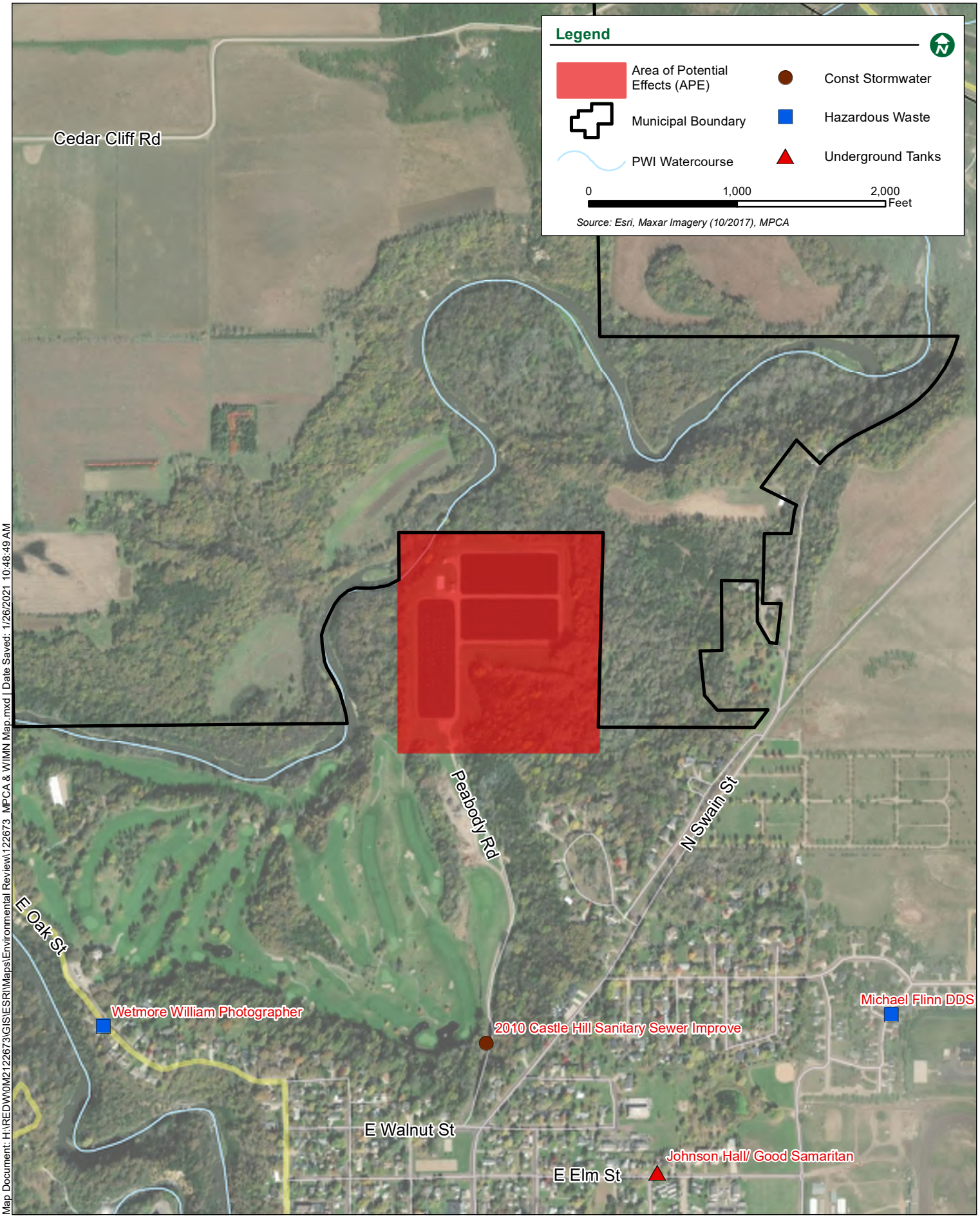

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City of Redwood Falls

Wastewater Facility Plan

Redwood Falls, Redwood County, MN

National Wetlands Inventory Map

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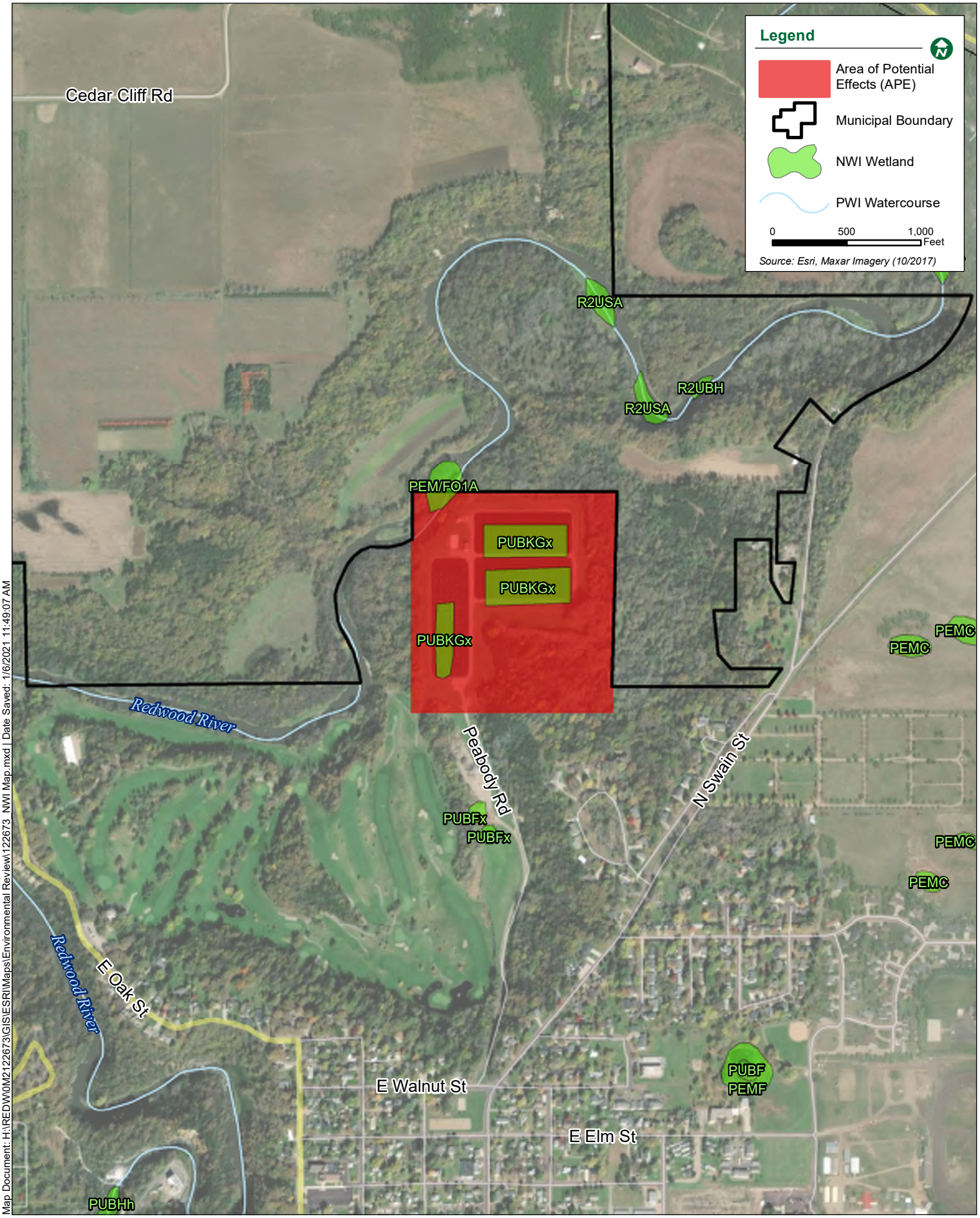

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City of Redwood Falls

Wastewater Facility Plan

Redwood Falls, Redwood County, MN

Special & Impaired Waters Map

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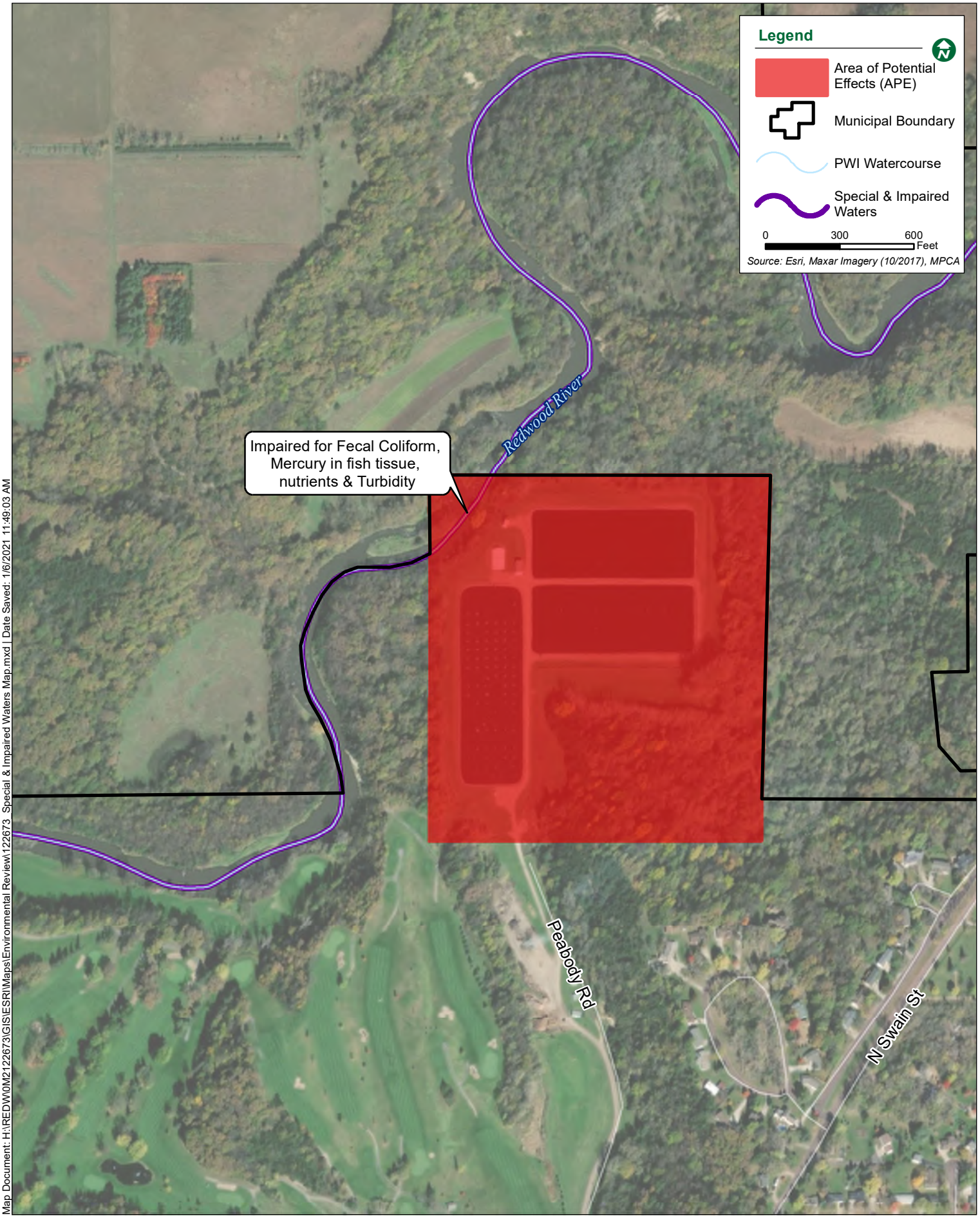

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City of Redwood Falls

Wastewater Facility Plan

Redwood Falls, Redwood County, MN

Aerial Map

January 2021

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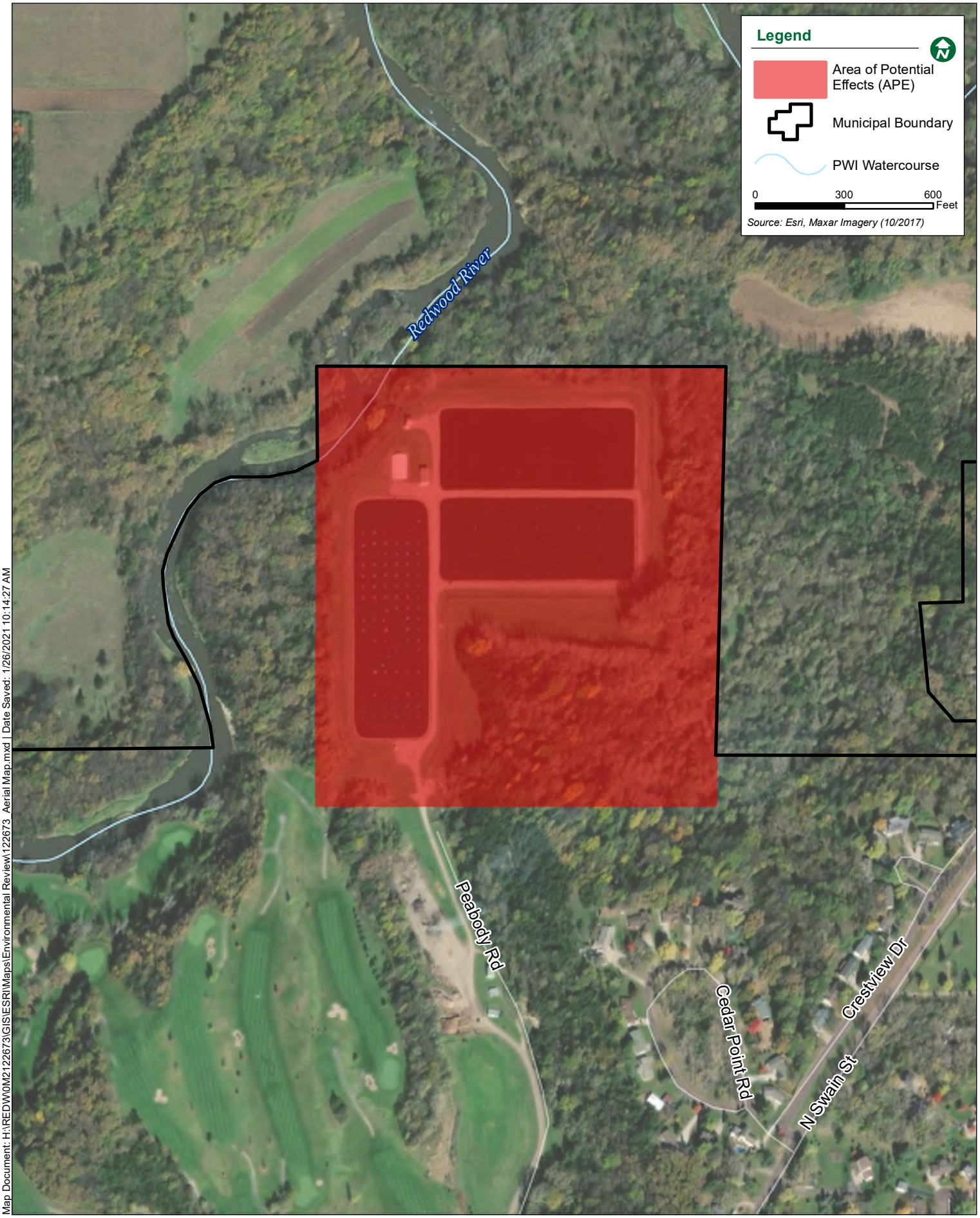

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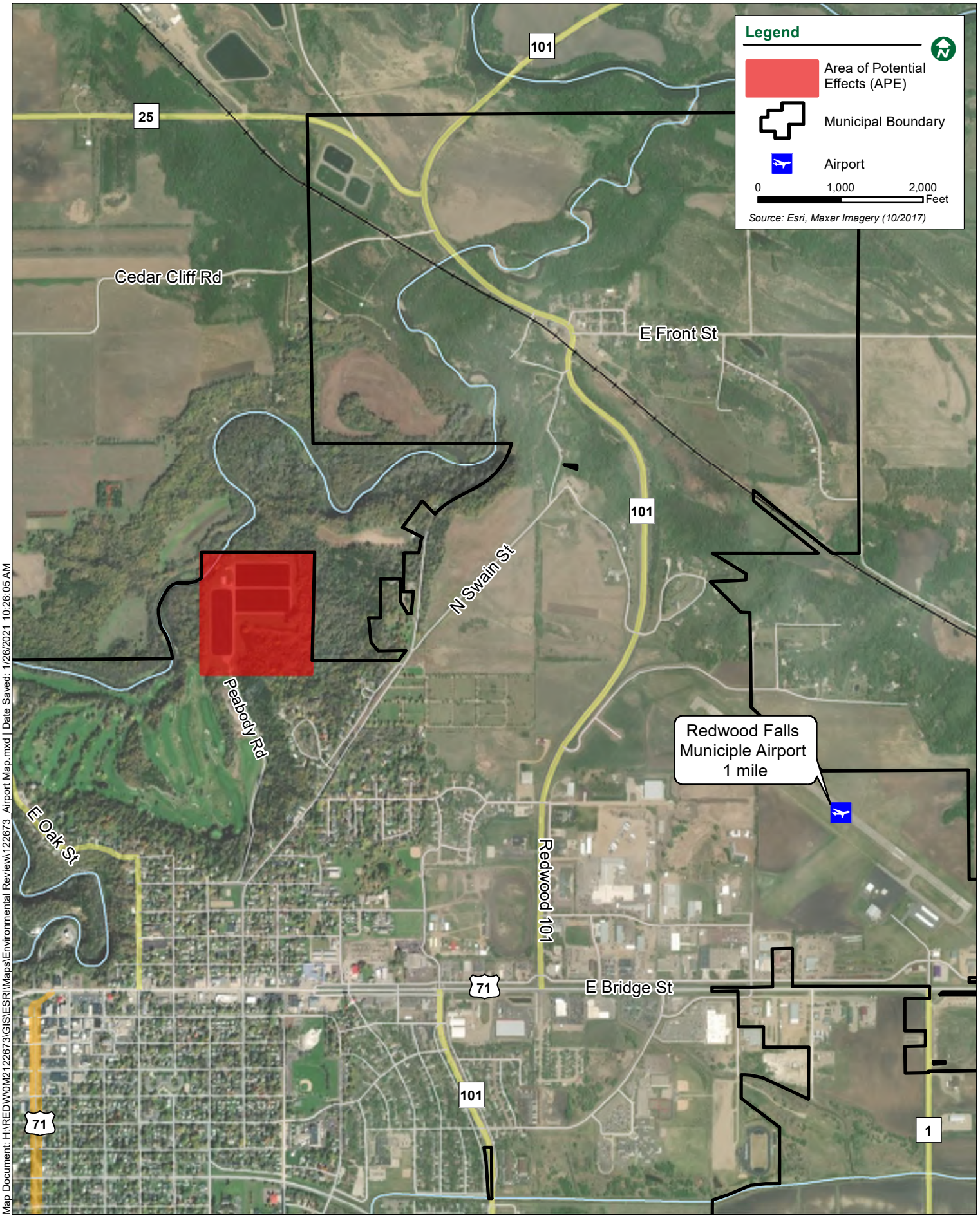

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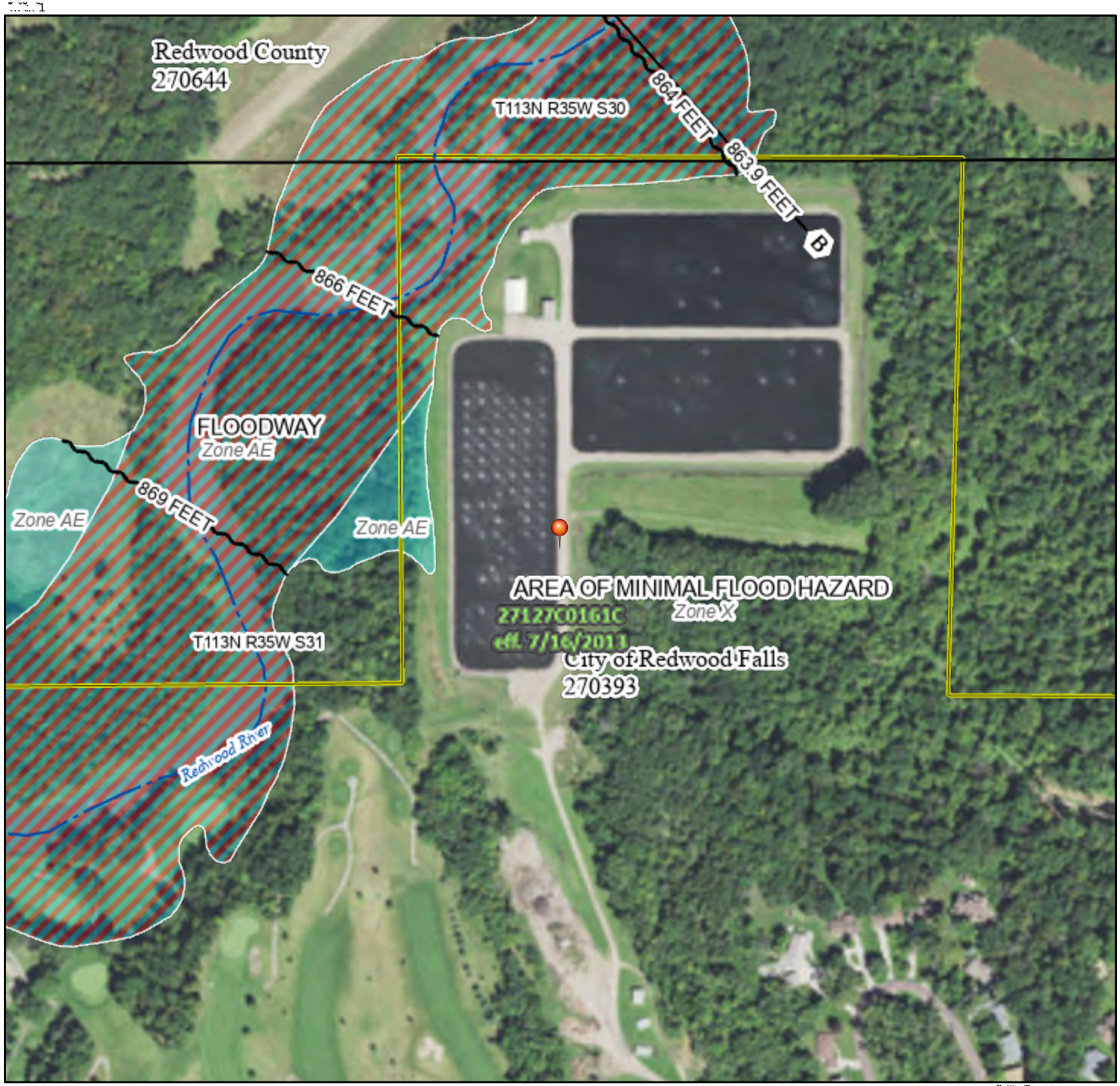

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
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http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To: February 28, 2021
Consultation code: 03E19000-2021-TA-0844
Event Code: 03E19000-2021-E-02711
Project Name: City of Redwood Falls WWTF CWRF Facility Plan

Subject: Verification letter for the 'City of Redwood Falls WWTF CWRF Facility Plan' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Teresa Burgess:

The U.S. Fish and Wildlife Service (Service) received on February 28, 2021 your effects determination for the 'City of Redwood Falls WWTF CWRF Facility Plan' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Prairie Bush-clover Lespedeza leptostachya Threatened

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

City of Redwood Falls WWTF CWRF Facility Plan

2. Description

The following description was provided for the project 'City of Redwood Falls WWTF CWRF Facility Plan':

> The City is considering multiple options for improvements to the existing WWTF. None of the work being considered is outside the existing perimeter fence of the facility. The area has been previously graded.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.5539001,-95.10913018616631,14z

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   Yes

8. Will the action only remove hazardous trees for the protection of human life or property?

   No

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

    No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

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FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
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Phone: (952) 252-0092 Fax: (952) 646-2873
http://www.fws.gov/midwest/Endangered/section7/s7process/step1.html

In Reply Refer To: February 28, 2021
Consultation Code: 03E19000-2021-SLI-0844
Event Code: 03E19000-2021-E-02710
Project Name: City of Redwood Falls WWTF CWRF Facility Plan

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies any federally threatened, endangered, proposed and candidate species that may occur within the action area – the area that is likely to be affected by your proposed project. The list also includes any designated and proposed critical habitat that overlaps with the action area. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representatives) must consult with the Service if they determine their project may affect listed species or critical habitat. Agencies must confer under section 7(a)(4) if any proposed action is likely to jeopardize species proposed for listing as endangered or threatened or likely to adversely modify any proposed critical habitat.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally. You may verify the list by visiting the ECOS-IPaC website http://ecos.fws.gov/ipac/ at regular intervals during project planning and implementation and completing the same process you used to receive the attached list. As an alternative, you may contact this Ecological Services Field Office for updates.

Please use the species list provided and visit the U.S. Fish and Wildlife Service's Region 3 Section 7 Technical Assistance website at - http://www.fws.gov/midwest/endangered/section7/s7process/index.html. This website contains step-by-step instructions that will help you

determine if your project will have an adverse effect on listed species or critical habitat and will help lead you through the Section 7 process.

For all **wind energy projects** and **projects that include installing towers that use guy wires or are over 200 feet in height**, please contact this field office directly for assistance, even if no federally listed plants, animals or critical habitat are present within the action area.

Although no longer protected under the Endangered Species Act, be aware that bald eagles (*Haliaeetus leucocephalus*) are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and Migratory Bird Treaty Act *(*16 U.S.C. 703 *et seq*), as are golden eagles (*Aquila chrysaetos*). Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near a bald eagle nest or winter roost area, see our Eagle Permits website at http://www.fws.gov/midwest/midwestbird/EaglePermits/index.html. The information available at this website will help you determine if you can avoid impacting eagles or if a permit may be necessary.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
Bloomington, MN 55425-1665
(952) 252-0092

Project Summary

Consultation Code: 03E19000-2021-SLI-0844
Event Code: 03E19000-2021-E-02710
Project Name: City of Redwood Falls WWTF CWRF Facility Plan
Project Type: WASTEWATER FACILITY
Project Description: The City is considering multiple options for improvements to the existing WWTF. None of the work being considered is outside the existing perimeter fence of the facility. The area has been previously graded.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.5539001,-95.10913018616631,14z

Counties: Redwood County, Minnesota

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
Prairie Bush-clover *Lespedeza leptostachya* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4458	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

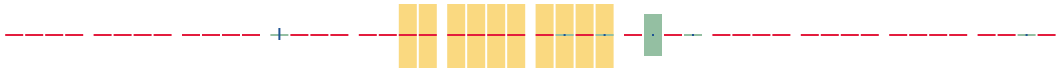
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Bobolink
BCC Rangewide
(CON)



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Redwood County, Minnesota

February 28, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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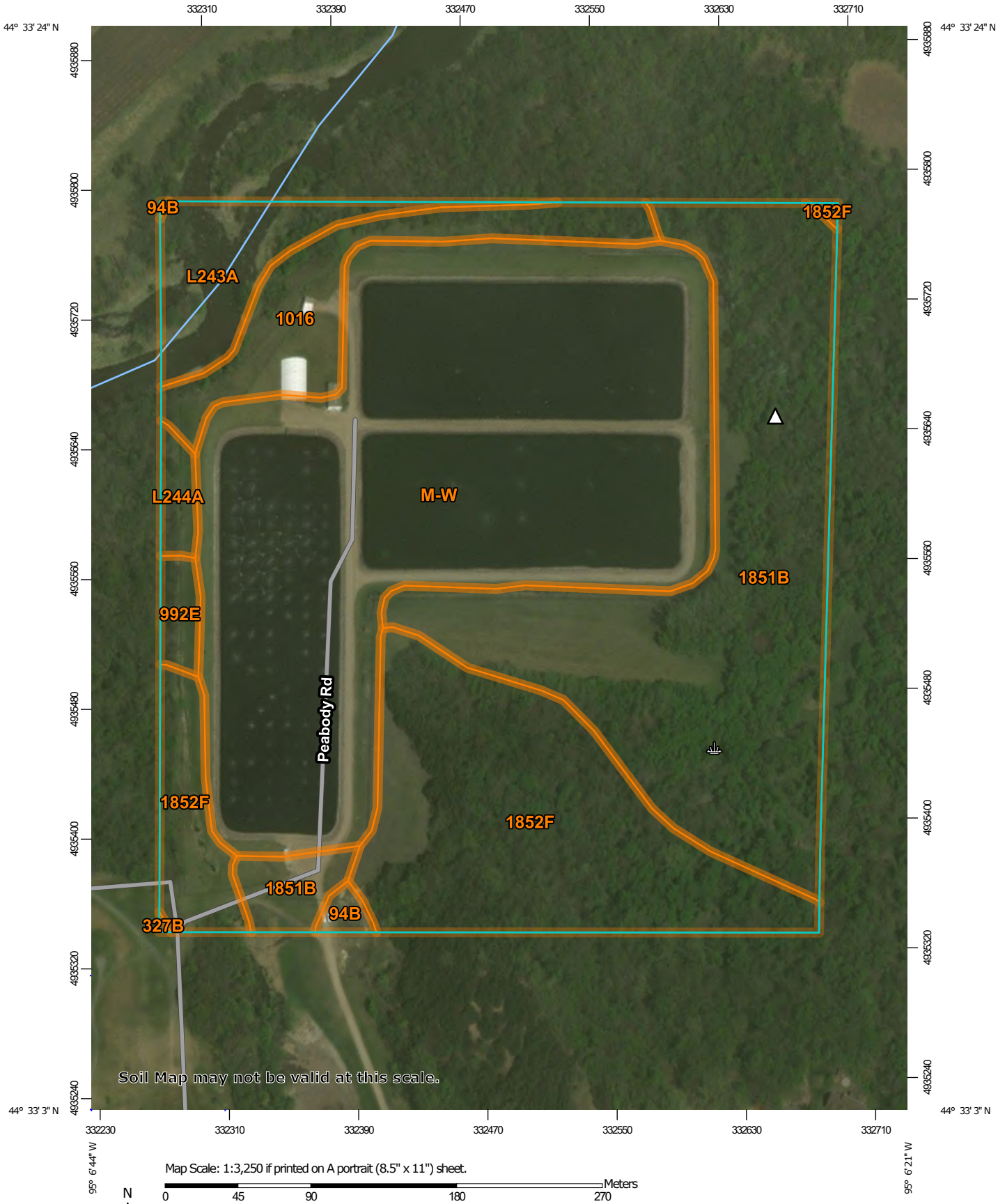
Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:3,250 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: Redwood County, Minnesota
Survey Area Data: Version 19, Jun 8, 2020

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

Date(s) aerial images were photographed: Apr 26, 2013—Nov 4, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
94B	Terril loam, 2 to 6 percent slopes	0.2	0.4%
327B	Dickman sandy loam, 2 to 6 percent slopes	0.0	0.0%
992E	Rock outcrop-Copaston complex, 2 to 40 percent slopes	0.4	0.9%
1016	Udorthents, loamy	2.8	6.0%
1851B	Blue Earth mucky clay loam, sloping	12.4	26.9%
1852F	Terril-Swanlake loams, 25 to 70 percent slopes	9.0	19.5%
L243A	Havelock-Zumbro complex, 0 to 3 percent slopes, frequently flooded	2.0	4.3%
L244A	Du Page-Zumbro complex, 0 to 3 percent slopes, occasionally flooded	0.4	0.9%
M-W	Water, miscellaneous	19.0	41.2%
Totals for Area of Interest		**46.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different

management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Redwood County, Minnesota

94B—Terril loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tsjq
Elevation: 690 to 1,840 feet
Mean annual precipitation: 24 to 37 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Terril and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Terril

Setting

Landform: Ground moraines
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Colluvium

Typical profile

Ap - 0 to 9 inches: loam
A - 9 to 34 inches: loam
Bw - 34 to 52 inches: loam
C - 52 to 79 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 39 to 51 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: R103XY011MN - Footslope/Drainageway Prairies
Forage suitability group: Level Swale, Neutral (G103XS001MN)
Other vegetative classification: Level Swale, Neutral (G103XS001MN)
Hydric soil rating: No

Minor Components

Delft

Percent of map unit: 8 percent
Landform: Swales on ground moraines
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Ecological site: R103XY001MN - Loamy Wet Prairies
Other vegetative classification: Level Swale, Neutral (G103XS001MN)
Hydric soil rating: Yes

Storden, moderately eroded

Percent of map unit: 7 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Ecological site: R103XY002MN - Calcareous Upland Prairies
Other vegetative classification: Sloping Upland, Calcareous (G103XS010MN)
Hydric soil rating: No

Clarion

Percent of map unit: 5 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R103XY004MN - Loamy Upland Prairies
Other vegetative classification: Level Swale, Low AWC, Neutral (G103XS003MN)
Hydric soil rating: No

327B—Dickman sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2vvgr
Elevation: 690 to 1,840 feet
Mean annual precipitation: 24 to 37 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dickman and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dickman

Setting

Landform: Outwash plains, terraces
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy glaciofluvial deposits over sandy outwash

Typical profile

Ap - 0 to 10 inches: sandy loam
A - 10 to 12 inches: sandy loam
Bw - 12 to 19 inches: sandy loam
2Bw - 19 to 33 inches: loamy sand
2C - 33 to 79 inches: sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R103XY003MN - Sandy Upland Prairies
Forage suitability group: Sandy (G103XS022MN)
Other vegetative classification: Sandy (G103XS022MN)
Hydric soil rating: No

Minor Components

Hanska

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Linear
Ecological site: R103XY001MN - Loamy Wet Prairies
Other vegetative classification: Level Swale, Neutral (G103XS001MN)
Hydric soil rating: Yes

Estherville

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Tread, rise

Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R103XY003MN - Sandy Upland Prairies
Other vegetative classification: Sandy (G103XS022MN)
Hydric soil rating: No

992E—Rock outcrop-Copaston complex, 2 to 40 percent slopes

Map Unit Setting

National map unit symbol: 2kpdd
Elevation: 700 to 1,570 feet
Mean annual precipitation: 23 to 35 inches
Mean annual air temperature: 43 to 50 degrees F
Frost-free period: 155 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 50 percent
Copaston and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Setting

Landform: Terraces

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Not Suited (G103XS024MN)
Other vegetative classification: Not Suited (G103XS024MN)

Description of Copaston

Setting

Landform: Terraces
Landform position (two-dimensional): Backslope, shoulder, summit
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A,AB - 0 to 14 inches: sandy loam
Bw - 14 to 18 inches: sandy loam
R - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 40 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R103XY006MN - Bedrock Controlled Upland Prairies
Forage suitability group: Rocky (G103XS019MN)
Other vegetative classification: Rocky (G103XS019MN)
Hydric soil rating: No

Minor Components

Wadena variant

Percent of map unit: 5 percent
Landform: Outwash plains
Hydric soil rating: No

Oshawa variant

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Tilfer

Percent of map unit: 5 percent
Landform: Flats
Hydric soil rating: Yes

1016—Udorthents, loamy

Map Unit Setting

National map unit symbol: 2kpdj
Elevation: 700 to 1,570 feet
Mean annual precipitation: 23 to 35 inches
Mean annual air temperature: 43 to 50 degrees F
Frost-free period: 155 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Setting

Landform: Moraines
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Variable soil material

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Sloping Upland, Calcareous (G103XS010MN)
Other vegetative classification: Sloping Upland, Calcareous (G103XS010MN)

1851B—Blue Earth mucky clay loam, sloping

Map Unit Setting

National map unit symbol: 2kpdq
Elevation: 700 to 1,570 feet
Mean annual precipitation: 23 to 35 inches
Mean annual air temperature: 43 to 50 degrees F
Frost-free period: 155 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Blue earth, sloping, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blue Earth, Sloping

Setting

Landform: Swales
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Lacustrine deposits

Typical profile

A - 0 to 10 inches: mucky clay loam
Cg - 10 to 52 inches: mucky clay loam
2Cg - 52 to 60 inches: clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Available water capacity: Very high (about 12.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R103XY013MN - Calcareous Fens
Forage suitability group: Ponded If Not Drained (G103XS013MN)
Other vegetative classification: Ponded If Not Drained (G103XS013MN)
Hydric soil rating: Yes

Minor Components

Oshawa variant
Percent of map unit: 8 percent
Landform: Flood plains
Hydric soil rating: Yes

Millington
Percent of map unit: 7 percent
Landform: Flood plains
Hydric soil rating: Yes

1852F—Terril-Swanlake loams, 25 to 70 percent slopes

Map Unit Setting
National map unit symbol: 2kpdr
Elevation: 700 to 1,570 feet
Mean annual precipitation: 23 to 35 inches
Mean annual air temperature: 43 to 50 degrees F
Frost-free period: 155 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Terril and similar soils: 50 percent
Swanlake and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Terril

Setting
Landform: Moraines
Landform position (two-dimensional): Footslope, backslope

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Colluvium

Typical profile

A,A1 - 0 to 24 inches: loam
A2 - 24 to 36 inches: loam
Bw - 36 to 60 inches: loam

Properties and qualities

Slope: 25 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 30 to 43 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R103XY011MN - Footslope/Drainageway Prairies
Forage suitability group: Not Suited (G103XS024MN)
Other vegetative classification: Not Suited (G103XS024MN)
Hydric soil rating: No

Description of Swanlake

Setting

Landform: Moraines
Landform position (two-dimensional): Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Till

Typical profile

A - 0 to 9 inches: loam
Bk1 - 9 to 17 inches: loam
Bk2,C - 17 to 60 inches: loam

Properties and qualities

Slope: 25 to 70 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water capacity: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B
Ecological site: R103XY002MN - Calcareous Upland Prairies
Forage suitability group: Not Suited (G103XS024MN)
Other vegetative classification: Not Suited (G103XS024MN)
Hydric soil rating: No

Minor Components

Estherville
Percent of map unit: 10 percent
Landform: Outwash plains
Hydric soil rating: No

Delft
Percent of map unit: 10 percent
Landform: Swales
Hydric soil rating: Yes

L243A—Havelock-Zumbro complex, 0 to 3 percent slopes, frequently flooded

Map Unit Setting
National map unit symbol: 2ljj3
Elevation: 700 to 1,800 feet
Mean annual precipitation: 23 to 35 inches
Mean annual air temperature: 43 to 50 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Havelock, frequently flooded, and similar soils: 75 percent
Zumbro, frequently flooded, and similar soils: 18 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Havelock, Frequently Flooded

Setting
Landform: Flats on flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile
A1,A2 - 0 to 32 inches: loam
Cg - 32 to 60 inches: clay loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: NoneFrequentOccasional
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water capacity: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F103XY033MN - Wet Floodplains
Forage suitability group: Frequently Flooded (G107XS016MN)
Other vegetative classification: Frequently Flooded (G107XS016MN)
Hydric soil rating: Yes

Description of Zumbro, Frequently Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 10 inches: fine sandy loam
AB - 10 to 42 inches: loamy fine sand
C - 42 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 30 to 43 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Ecological site: F103XY031MN - Sandy Floodplains
Forage suitability group: Sloping Upland, Low AWC, Neutral (G103XS004MN)
Other vegetative classification: Sloping Upland, Low AWC, Neutral (G103XS004MN)
Hydric soil rating: No

Minor Components

Oshawa, frequently flooded

Percent of map unit: 5 percent
Landform: Oxbows on flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Frequently Flooded (G103XS016MN)
Hydric soil rating: Yes

Havelock, occasionally flooded

Percent of map unit: 2 percent
Landform: Flats on flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Level Swale, Calcareous (G107XS009MN)
Hydric soil rating: Yes

L244A—Du Page-Zumbro complex, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2ljm7
Elevation: 700 to 1,800 feet
Mean annual precipitation: 23 to 35 inches
Mean annual air temperature: 43 to 50 degrees F
Frost-free period: 150 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Du page, occasionally flooded, and similar soils: 70 percent
Havelock, occasionally flooded, and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Du Page, Occasionally Flooded

Setting

Landform: Rises on flood plains, flats on flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap,A1,A2 - 0 to 36 inches: loam
C1,C2 - 36 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 30 to 43 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water capacity: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F103XY032MN - Loamy Floodplains
Forage suitability group: Sloping Upland, Calcareous (G103XS010MN)
Other vegetative classification: Sloping Upland, Calcareous (G103XS010MN)
Hydric soil rating: No

Description of Havelock, Occasionally Flooded

Setting

Landform: Flats on flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap,A1,A2 - 0 to 32 inches: clay loam
Cg - 32 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Available water capacity: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F103XY033MN - Wet Floodplains
Forage suitability group: Level Swale, Calcareous (G107XS009MN)
Other vegetative classification: Level Swale, Calcareous (G107XS009MN)
Hydric soil rating: Yes

Minor Components

Oshawa, frequently flooded

Percent of map unit: 5 percent
Landform: Oxbows on flood plains

Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Frequently Flooded (G103XS016MN)
Hydric soil rating: Yes

Zumbro, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Sloping Upland, Neutral (G103XS002MN)
Hydric soil rating: No

M-W—Water, miscellaneous

Map Unit Composition
Water, miscellaneous: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

BOLTON & MENK
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1960 Premier Drive
Mankato, MN 56001-5900

Ph: (507) 625-4171
Fax: (507) 625-4177
Bolton-Menk.com

January 13, 2021

Attention: Sarah J. Beimers, Environmental Review Program Manager
State Historic Preservation Office
50 Sherburne Avenue, Suite 203
St. Paul, MN 55155

Submitted via email to: ENReviewSHPO@state.mn.us

RE: Wastewater Treatment Facility Improvements
City of Redwood Falls, Redwood County
Project No: 0M2.122673
NW ¼ T113, R 35, Section 31

We are initiating consultation on this project under Section 106 of the National Historic Preservation Act and implementing regulations at 36 CFR 800. The above project is being funded under the Clean Water State Revolving Fund administered by the Minnesota Public Facilities Authority and the Minnesota Pollution Control Agency. Please accept this letter and attachments on behalf of the City as a formal request for review of this project.

The City is considering four options for meeting the permit standards for wastewater improvements. All four of these options include improvements within the boundary of the existing wastewater treatment facility. Figures 1-4b show the options being considered. To minimize clutter, the APE is shown only on the USGS map.

Please provide your response to:

Teresa Burgess
Bolton & Menk, Inc.
1960 Premier Drive
Mankato, MN 56082
teresa.burgess@bolton-menk.com
Cell: 507-327-9292

Sincerely,

Bolton & Menk, Inc.

Teresa J. Burgess, PE, CPESC
Senior Project Engineer

Enclosures:

1. Completed Request for SHPO Review Form
2. Location Maps
3. Figures showing potential improvements
4. Photos

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Clean Water Revolving Fund

City of Redwood Falls

Wastewater Treatment Facility

0M2122673

Please mail the completed form and required material to:

State Historic Preservation Office
203 Administration Building
50 Sherburne Ave
St. Paul, MN 55155

DEPARTMENT OF ADMINISTRATION

Request for Project Review by the State Historic Preservation Office (SHPO)

(●) This is a new submittal
( ) This is additional information relating to SHPO Project #: _____

DATE: 1/12/2021

I. GENERAL PROJECT INFORMATION

Project Title: City of Redwood Falls Wastewater Treatment Facility Improvements

Project Address (or Location): See attached map

City / Township (circle one): Redwood Falls Zip: 56283 County: Redwood

Legal Description: Township 113 Range 35 E/W (circle one) Section 31 Quarter-section NW

II. PROJECT CONTACT INFORMATION

Project Contact Name: Teresa Burgess Title: Senior Project Engineer

Company/Agency: Bolton & Menk, Inc.

Street Address: 1960 Premier Drive Phone Number: 507-625-4171 ext. 2638

City: Mankato State: MN Zip: 56001 Email: teresa.burgess@bolton-menk.com

III. FEDERAL AND/OR STATE INVOLVEMENT

Federal Agency (if applicable): EPA
(Agency providing funds, licenses, or permits)
Permit or Project Reference #: Clean Water Revolving Fund

State Agency (if applicable): MPCA
(Agency providing funds, licenses, or permits)
Permit or Project Reference #: Clean Water Revolving Fund

Local Agency (if applicable): City of Redwood Falls

(Continued on Reverse Side)

Please refer to the **Instructions for Completing the Request for Project Review Form.** Submit one *Request for Project Review* form for each project. Project submittals will not be accepted via fax or e-mail. For questions regarding the SHPO review process, please visit our website or contact Kelly Gragg-Johnson, Environmental Review Specialist, at 651-201-3285 or kelly.graggjohnson@state.mn.us.

IV. PROJECT DESCRIPTION AND BOUNDARIES

A) REQUIRED FOR ALL PROJECTS

☑ Write a detailed description of the proposed project. (See attached.)

The City is considering 4 options. (Figures 1, 2, 3, & 4b) All of the work is inside the existing wastewater treatment plant limits. Improvements being considered are clarifiers, manholes, tanks, and lift station improvements.

☑ Attach a map of project location, with project area(s) clearly marked. Road names must be included and legible.

B) Architecture

Are there any buildings or structures within the project area? ◉ Yes ○ No

If **No**, continue to the Archaeology section below. If **Yes**, submit all of the following information:

☐ List all buildings and structures within the project area and the year they were built. (See attached.)

Existing wastewater treatment ponds and buildings. The age of the buildings are not known.

☑ Photographs of ***each*** building and structure located within the project area, along with a photo key. Include streetscape images, if applicable. All photographs must be clear, crisp, focused, and taken at ground level. Aerial photos are insufficient.

☐ List known historic buildings or structures located within the project area (i.e., individual properties or districts which are listed in the National Register or which meet the criteria for listing in the National Register). (See attached.)

There are no known historic properties in or near the project.

C) Archaeology

Does the proposed undertaking involve ground-disturbing activity? ◉ Yes ○ No

If **No**, this form is complete. If **Yes**, submit all of the following information:

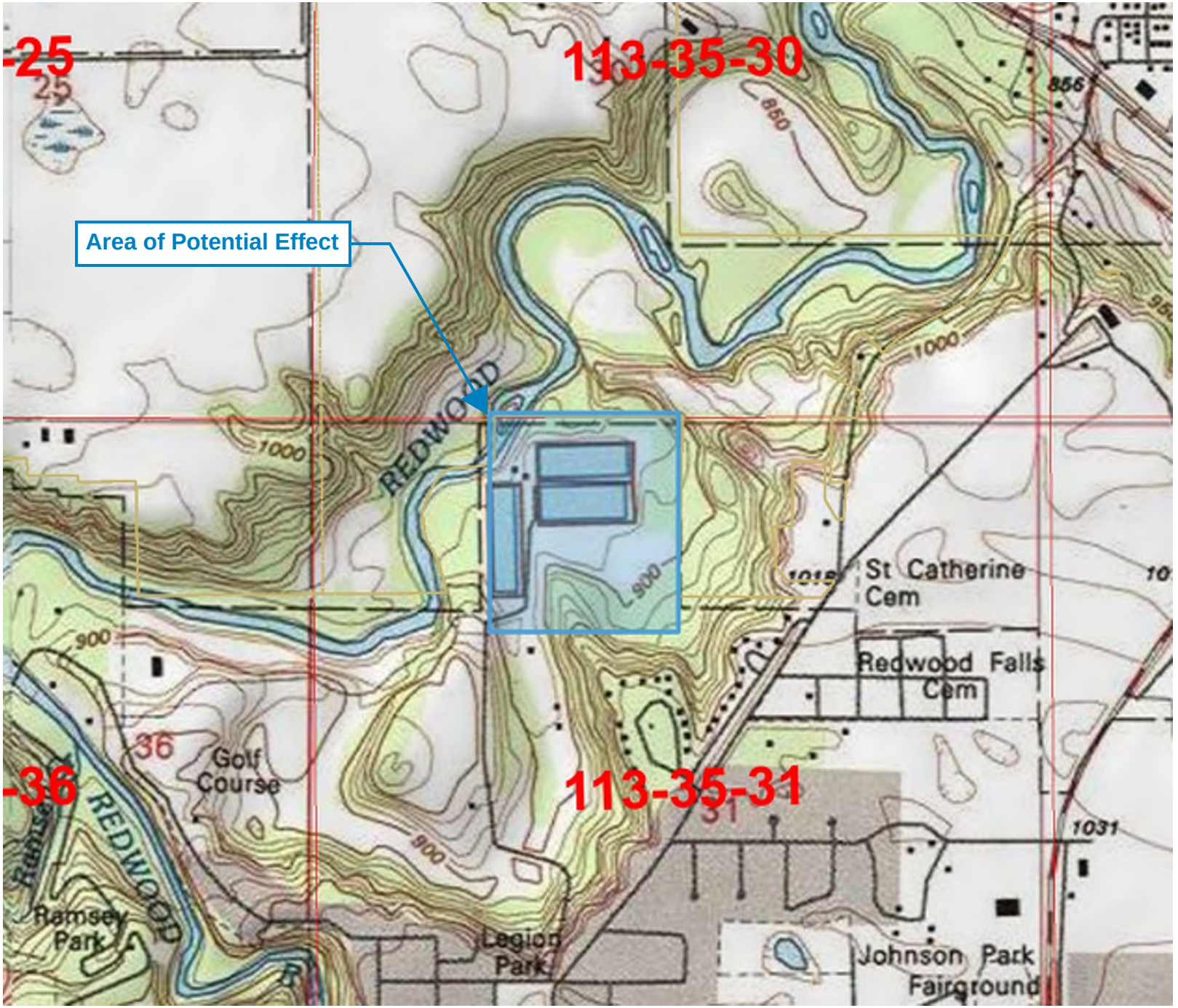
☑ Attach the relevant portion of a 1:24000-scale USGS topographic map (photocopied or computer generated) ***with the project boundary marked***.

☑ Description of current and previous land use and disturbances: (See attached.)

Existing wastewater treatment facility.

☑ Any available information concerning known or suspected archaeological resources within the project area. (See attached.)

There are several known cultural resources in Redwood County. The project area is previously disturbed from when the original pond system was constructed.



0 1,000 Feet

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Legend

- Municipal Boundaries
- Sections
- County Boundaries

USGS Project Location Map

Disclaimer:

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information, and data located in various city, county, and state offices, and other sources affecting the area shown, and is to be used for reference purposes only. Bolton & Menk, Inc. is not responsible for any inaccuracies herein contained.

City of Redwood Falls

Wastewater Treatment Evaluation

City of Redwood Falls

Figure 1 – Circular Clarifier Addition

April 2020

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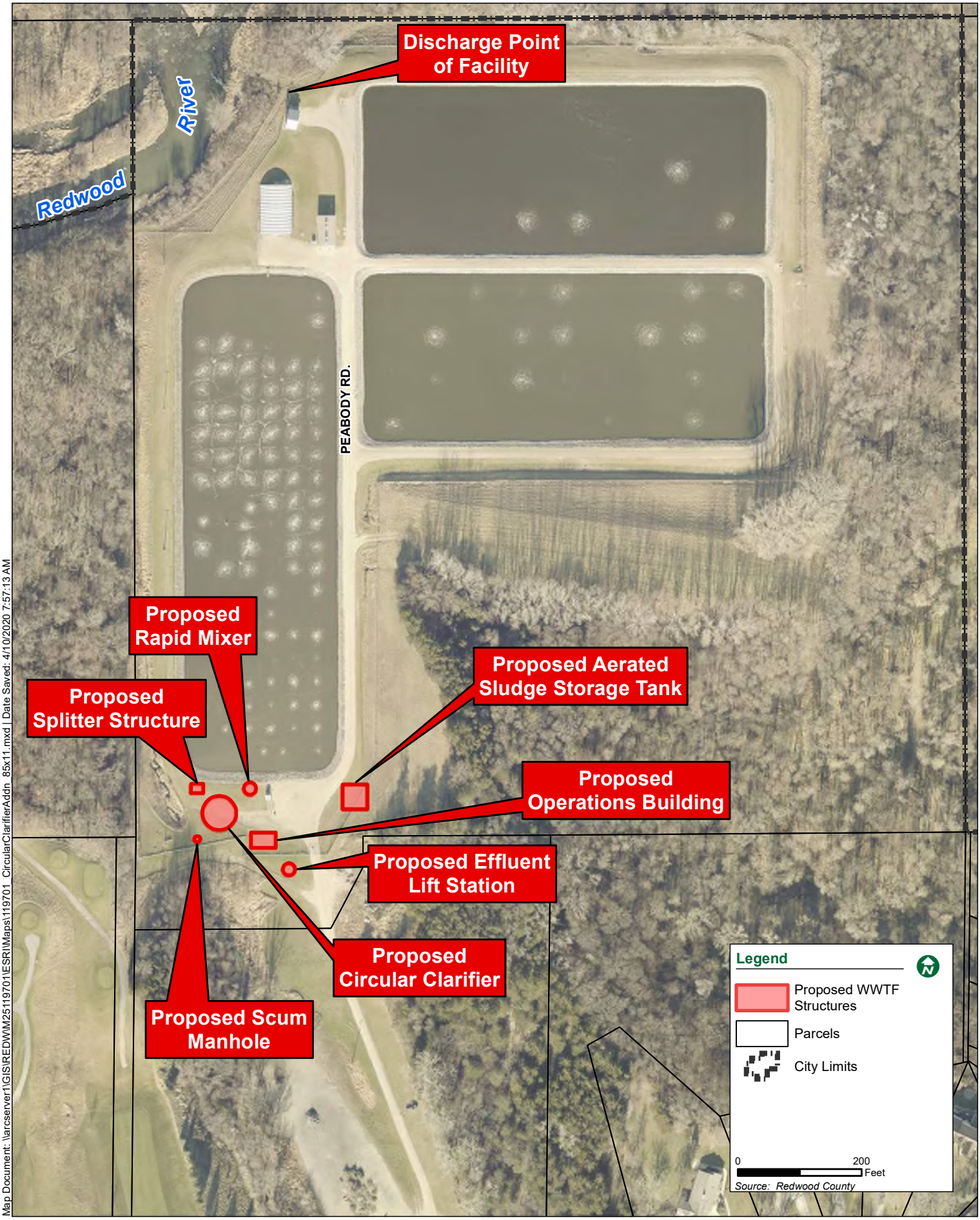

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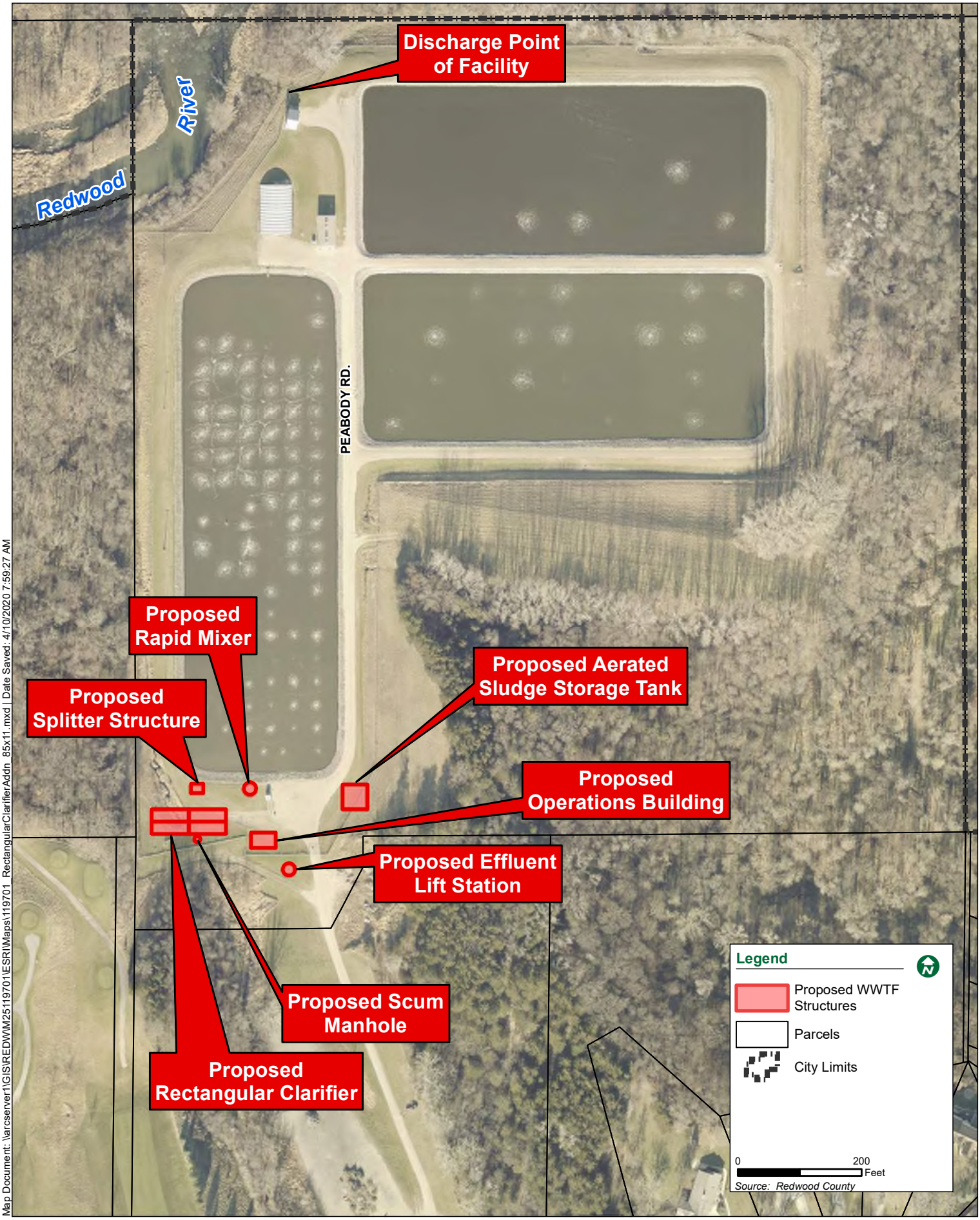

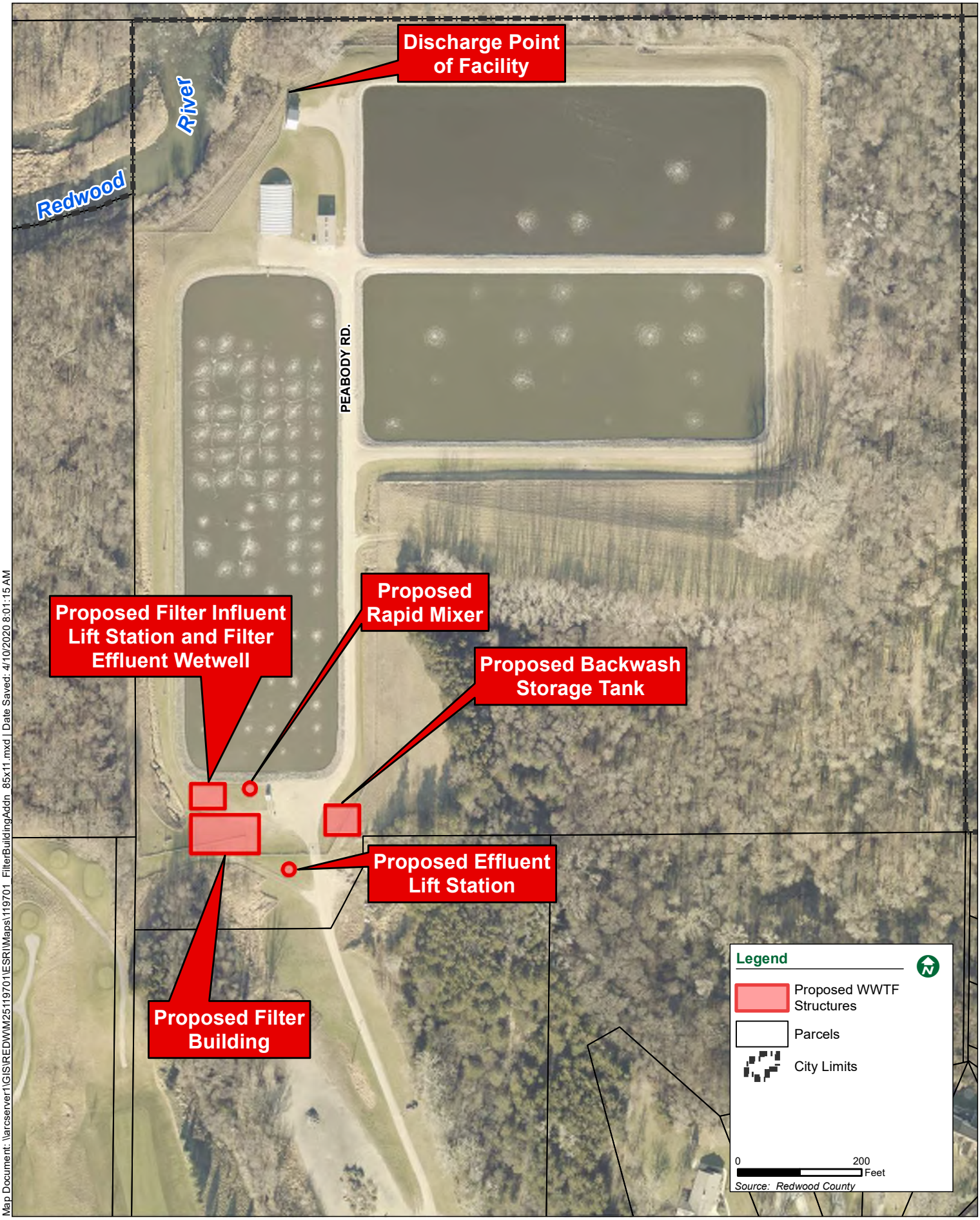

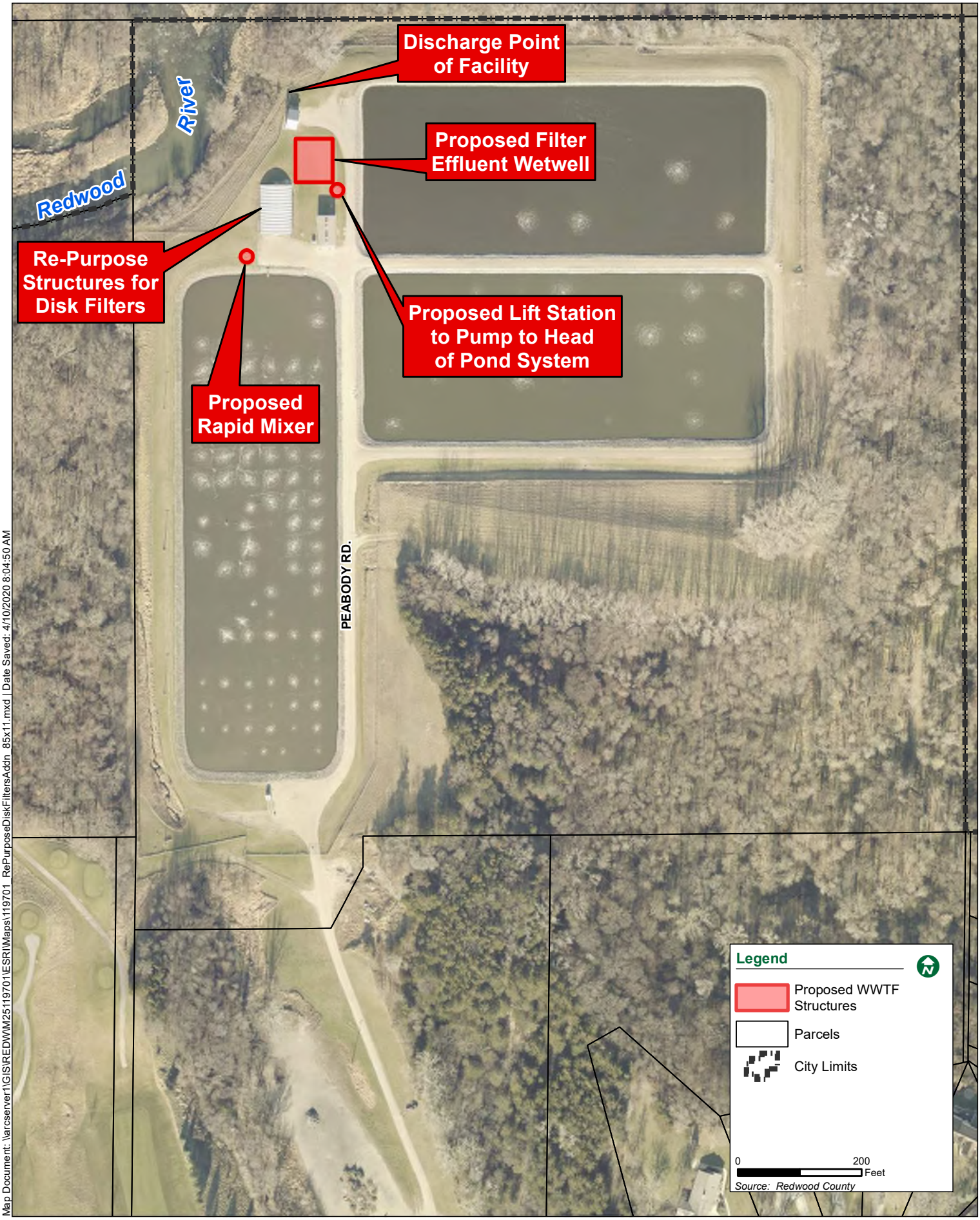

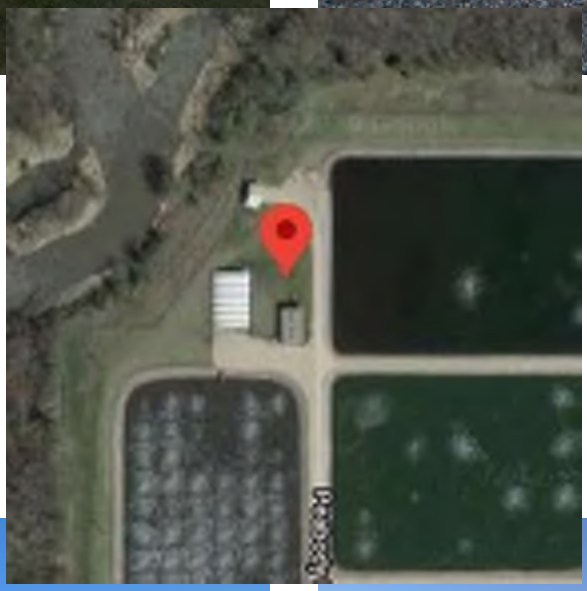

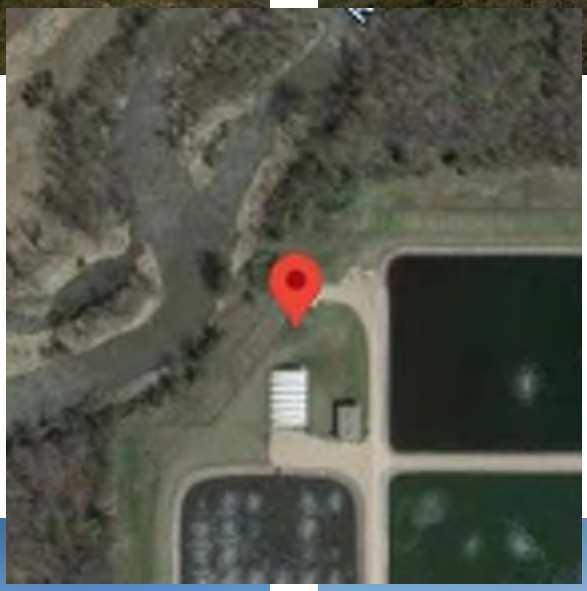

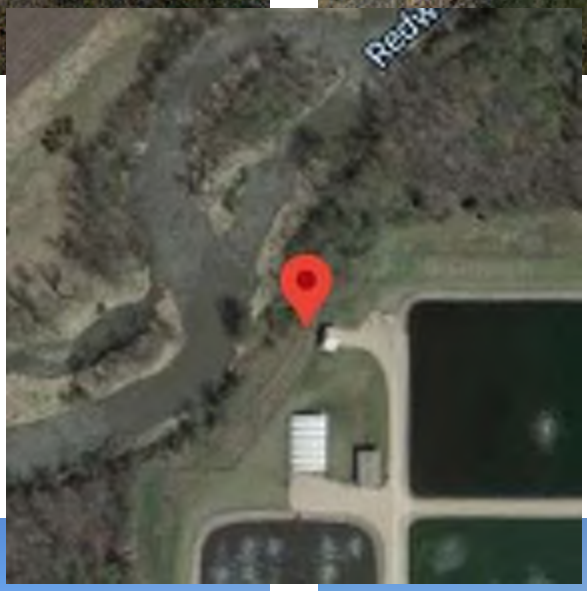
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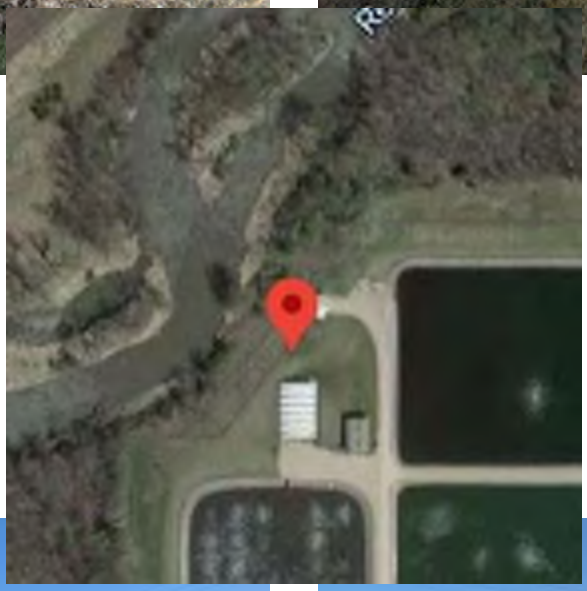

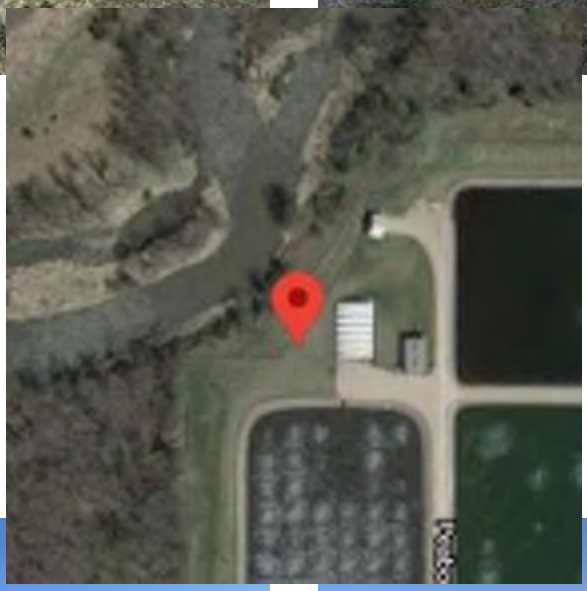

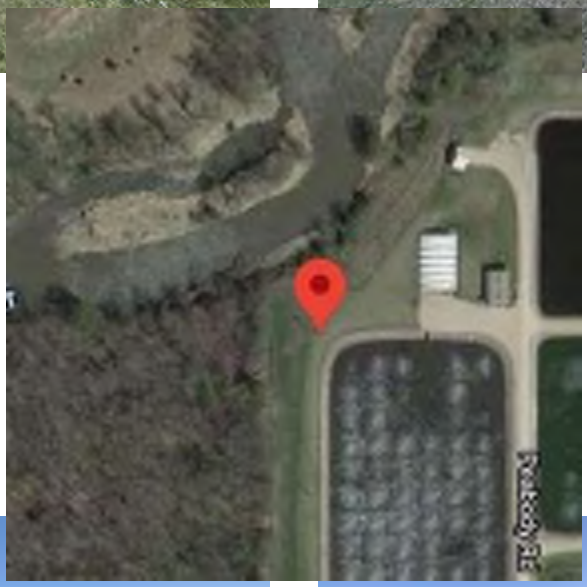
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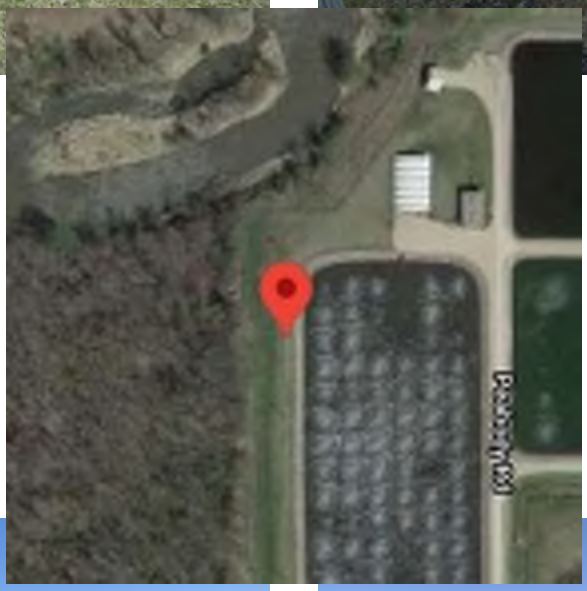

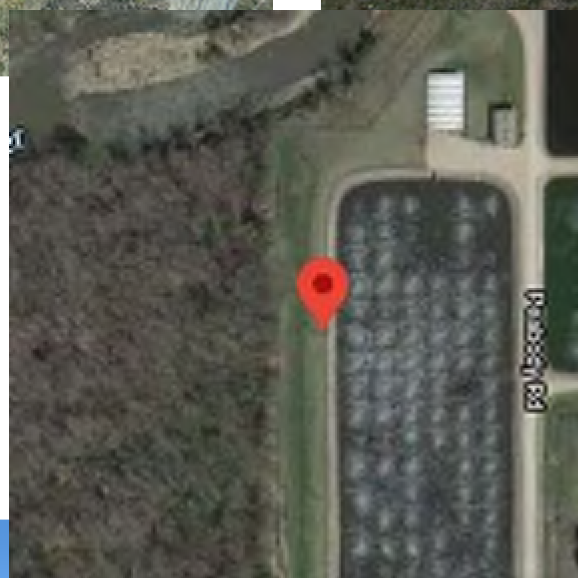

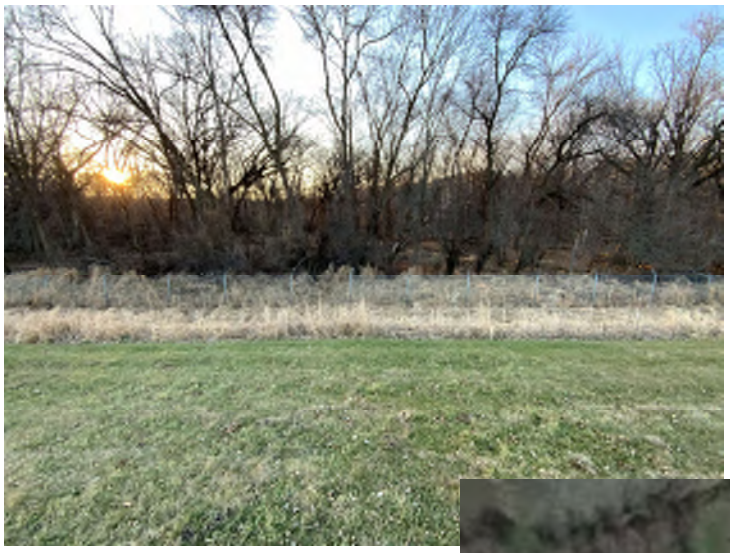

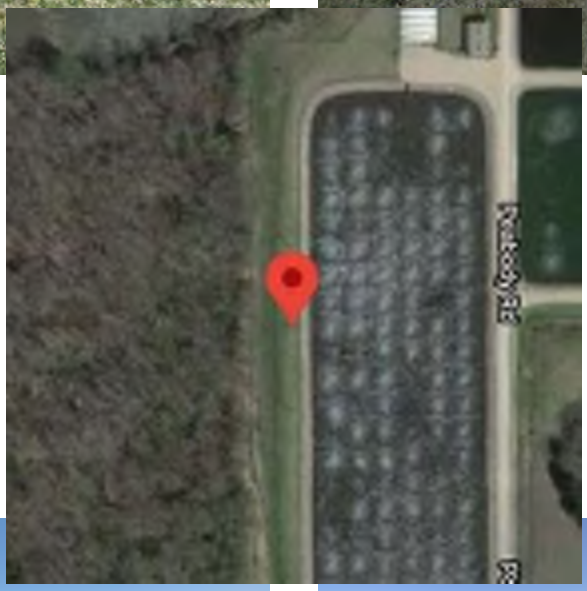
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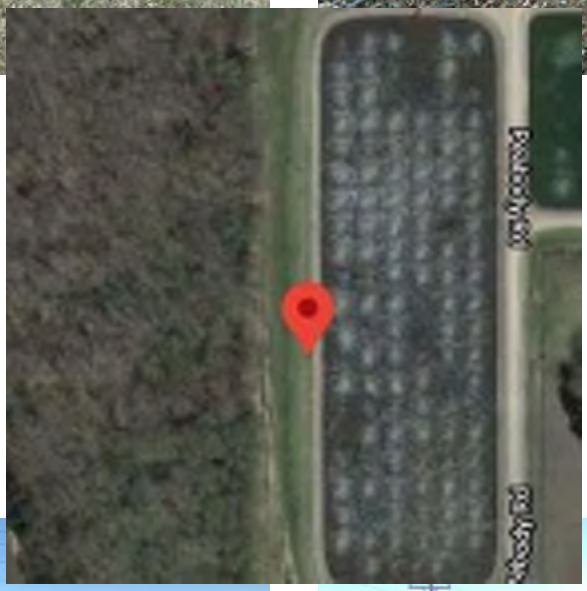
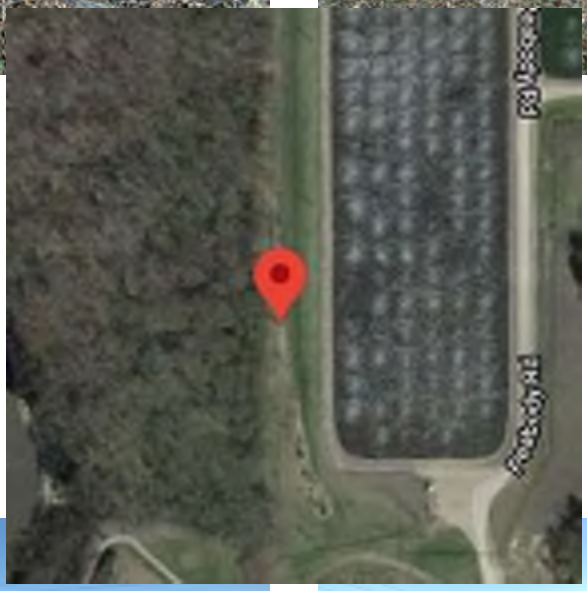
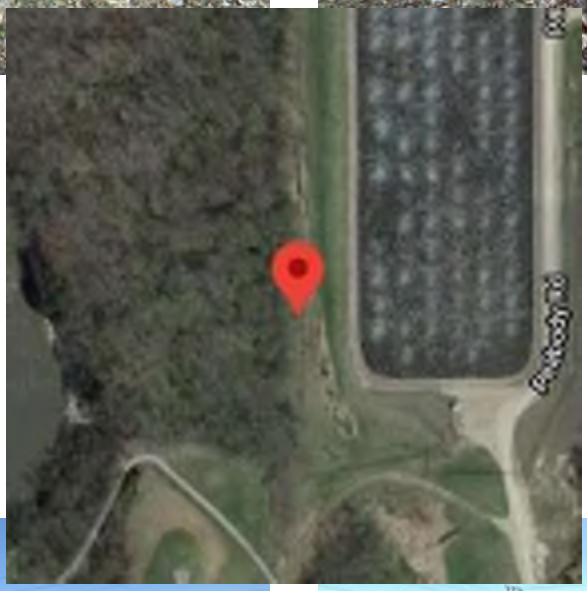
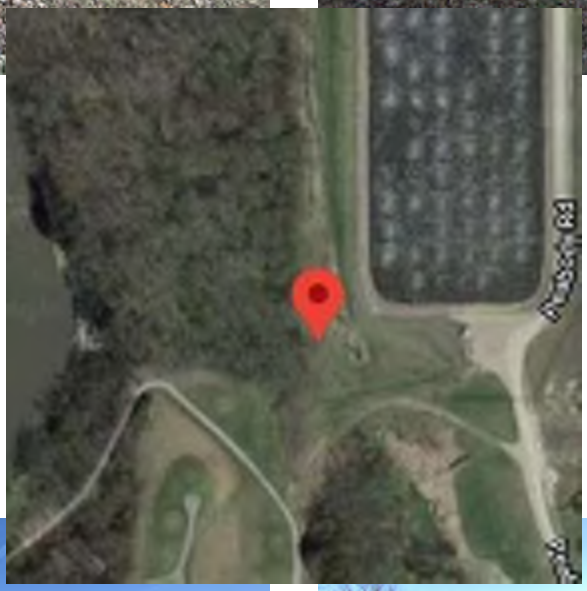
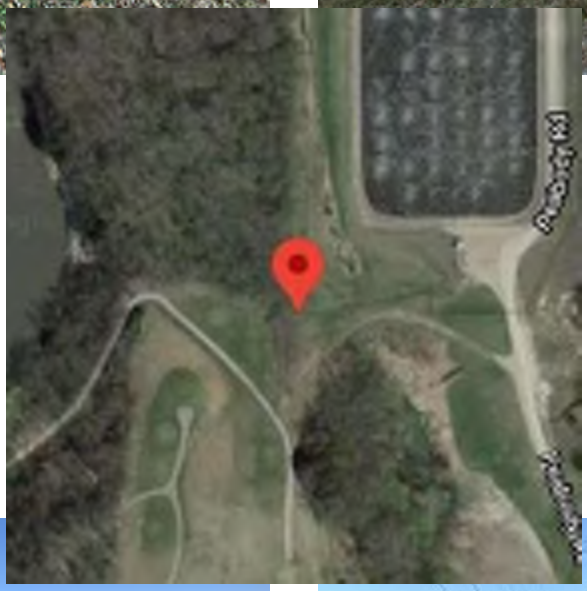
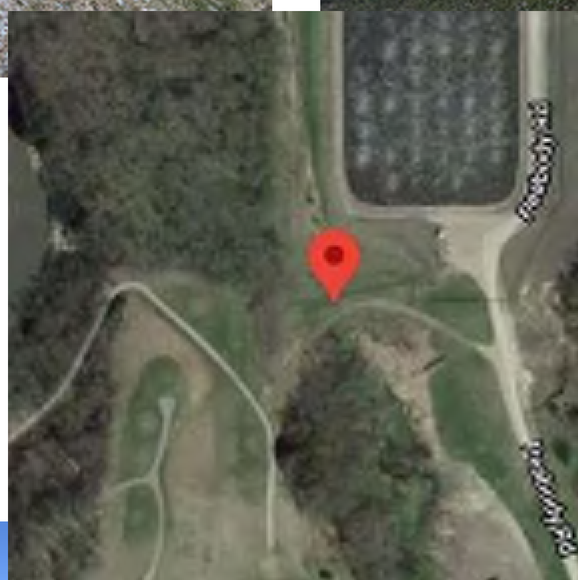

Peabody St
Peabody St

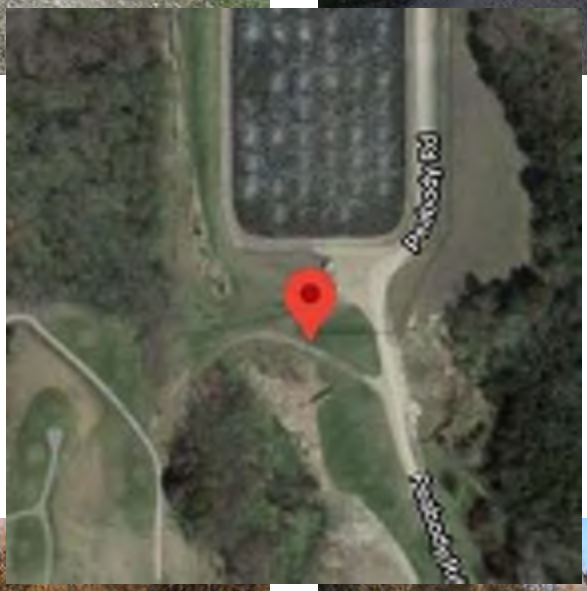








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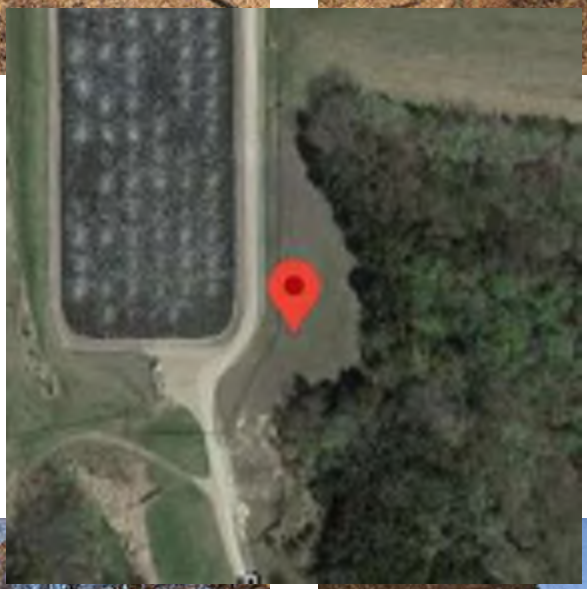

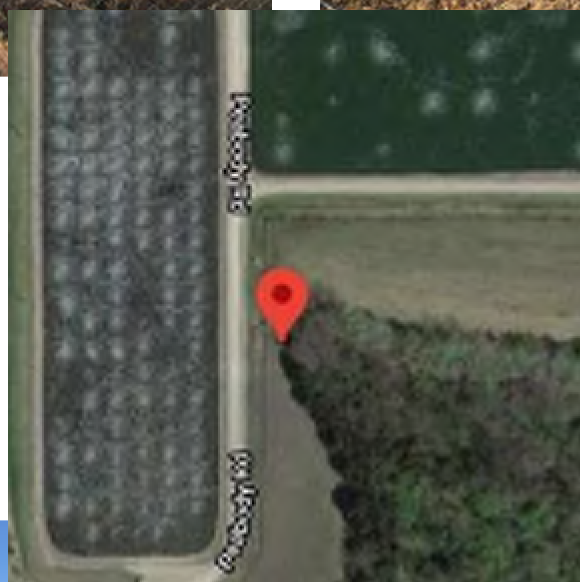

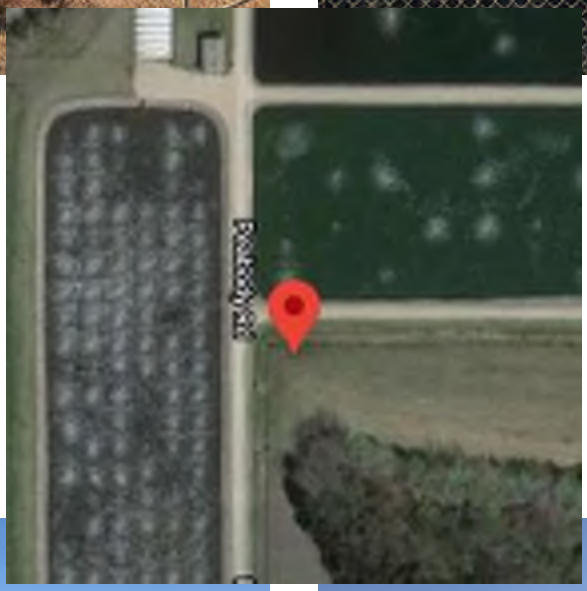

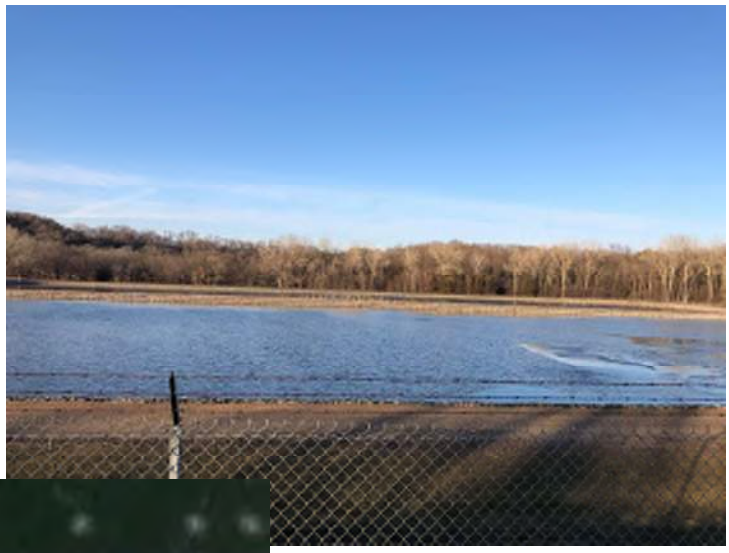

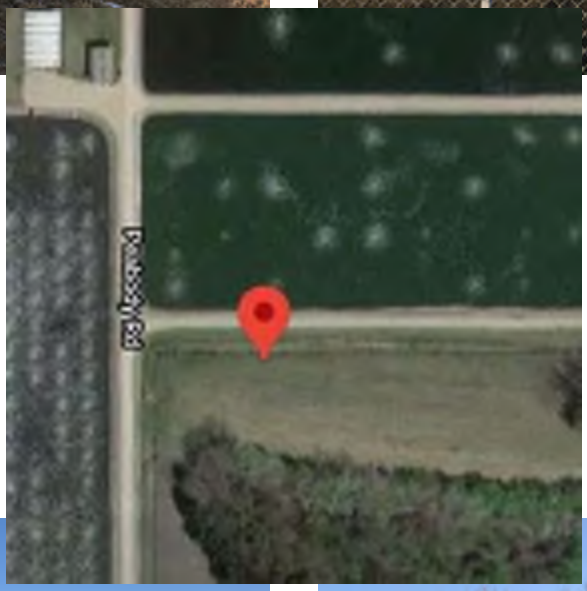
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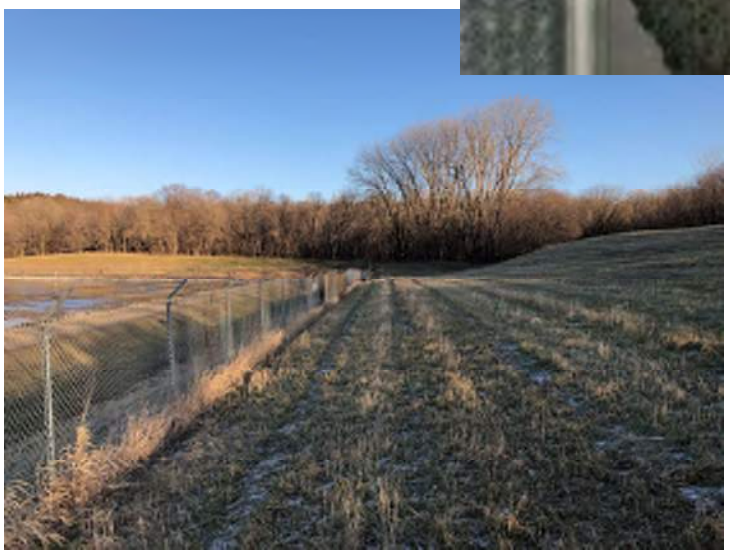
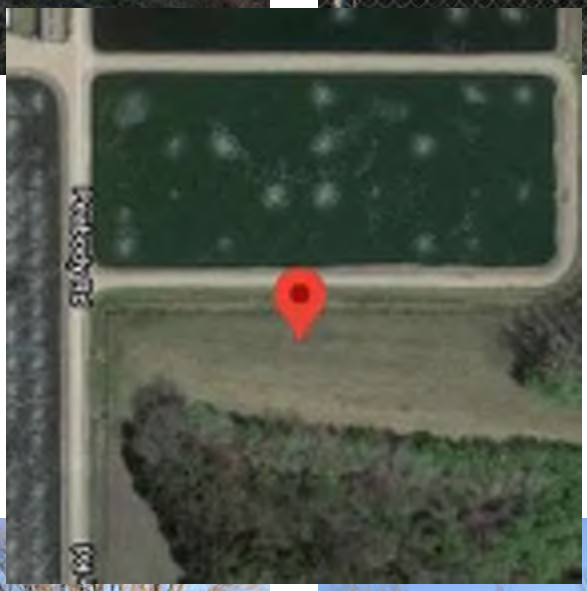
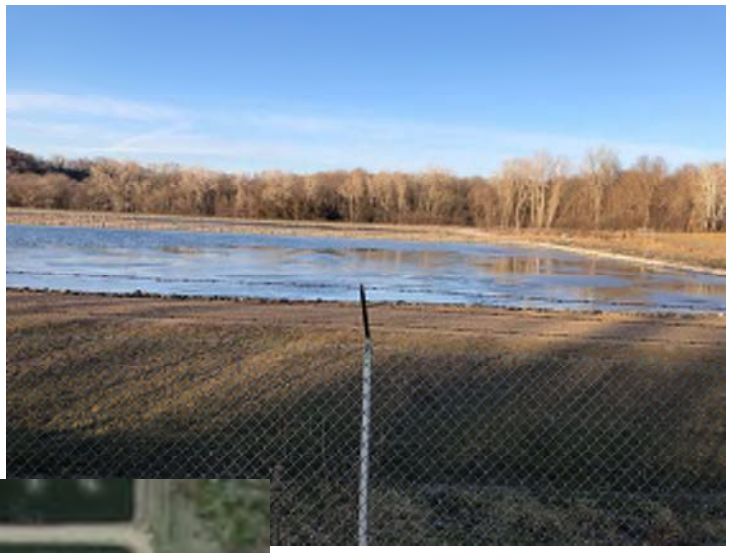
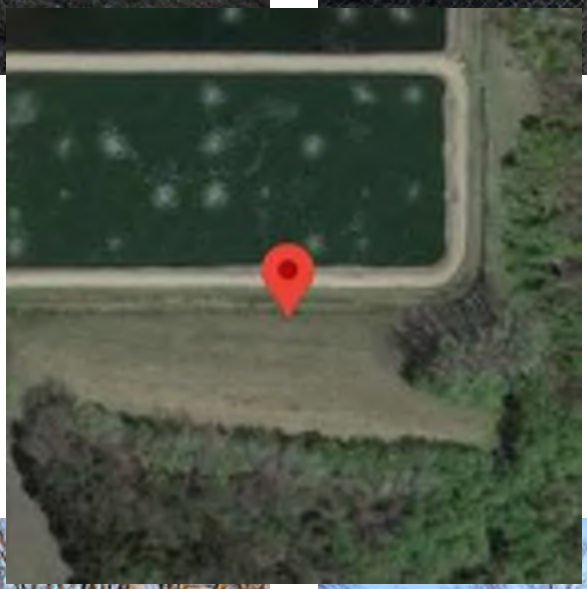
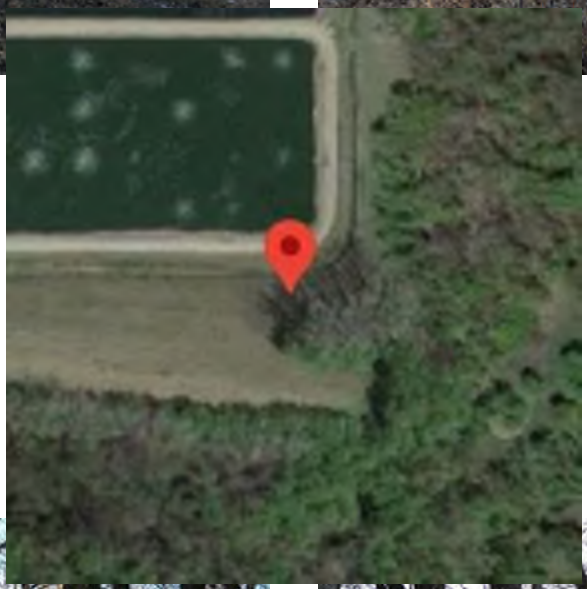
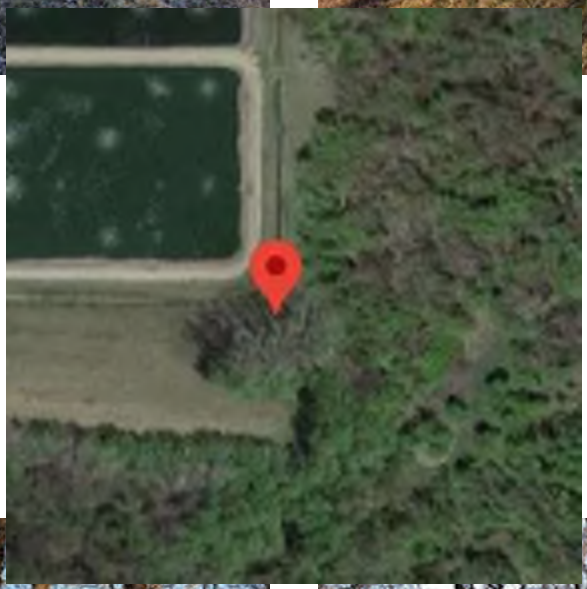


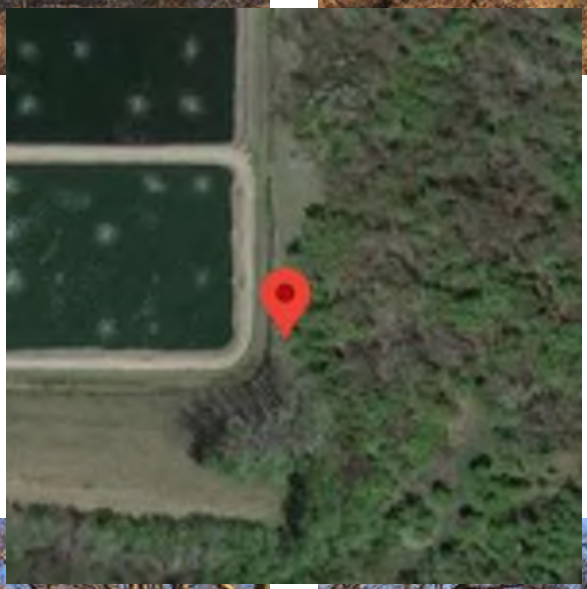


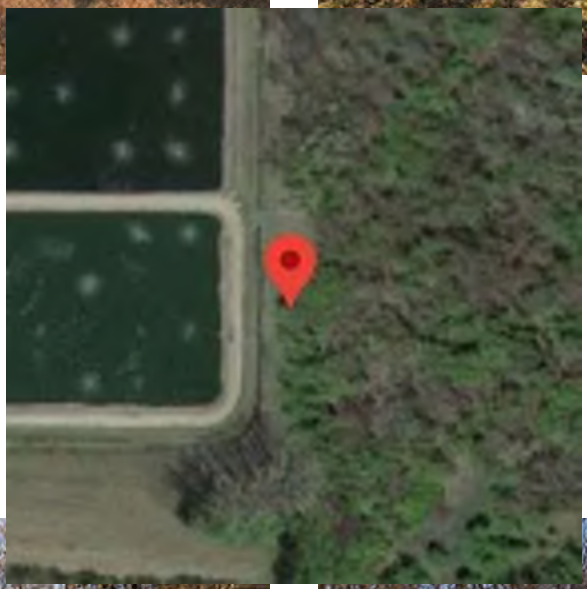




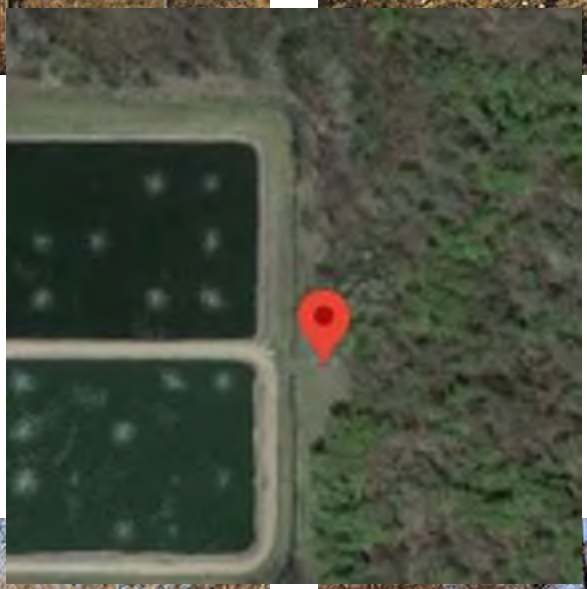


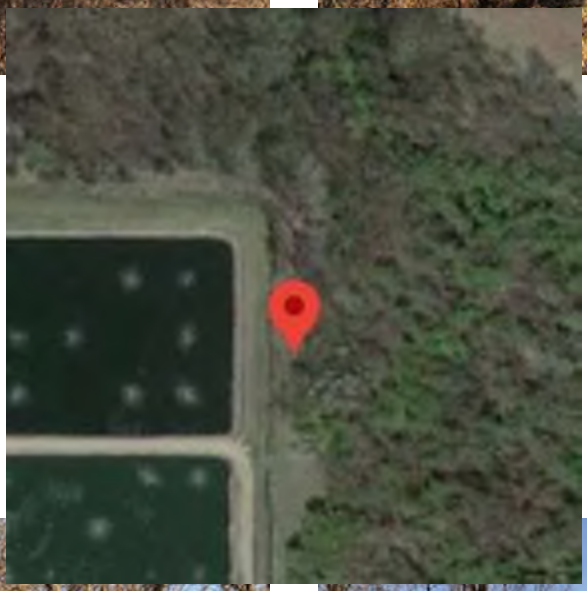


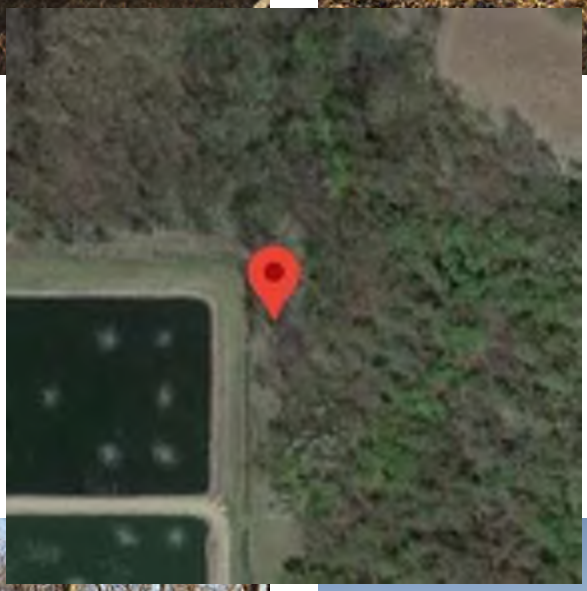


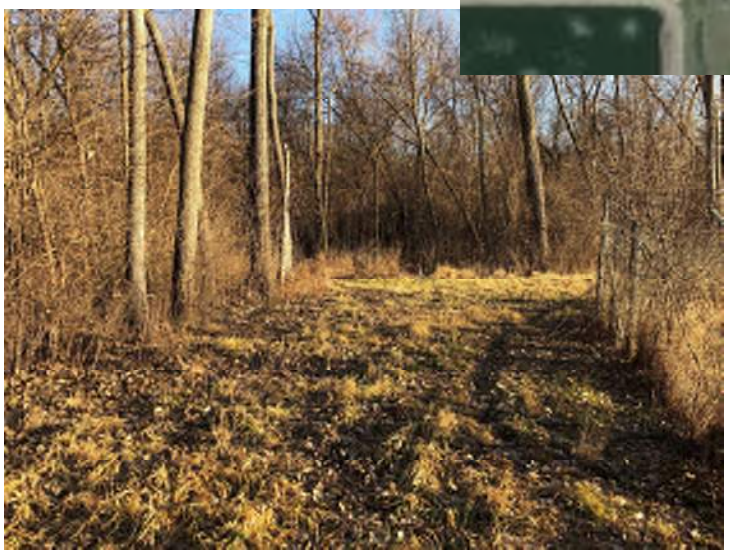


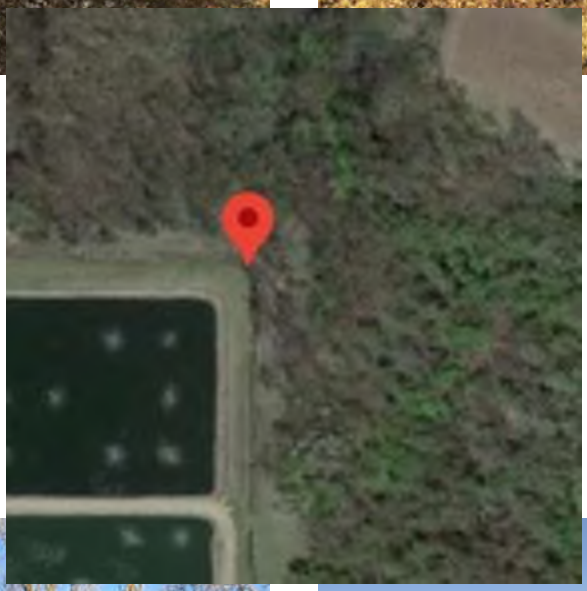

NO TRESPASSING

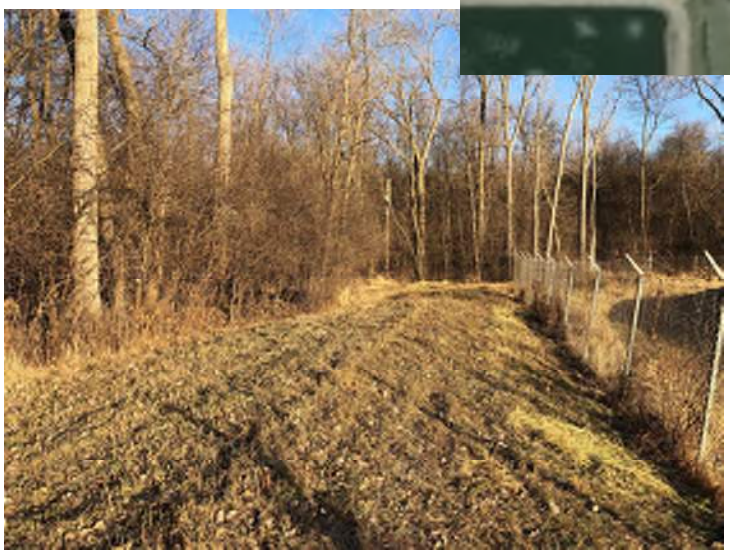


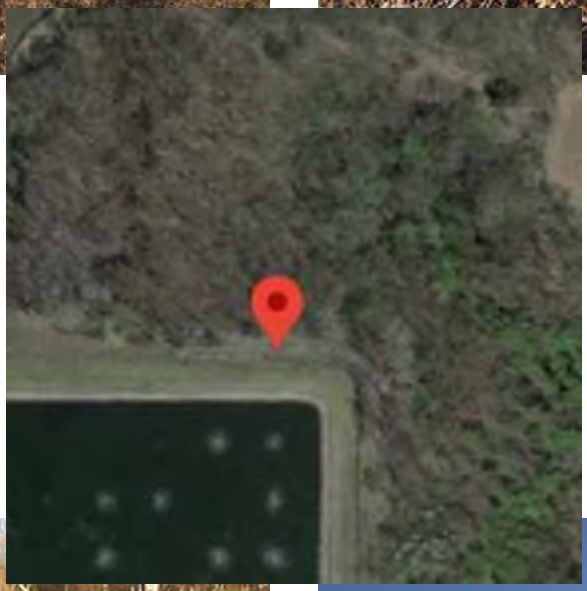


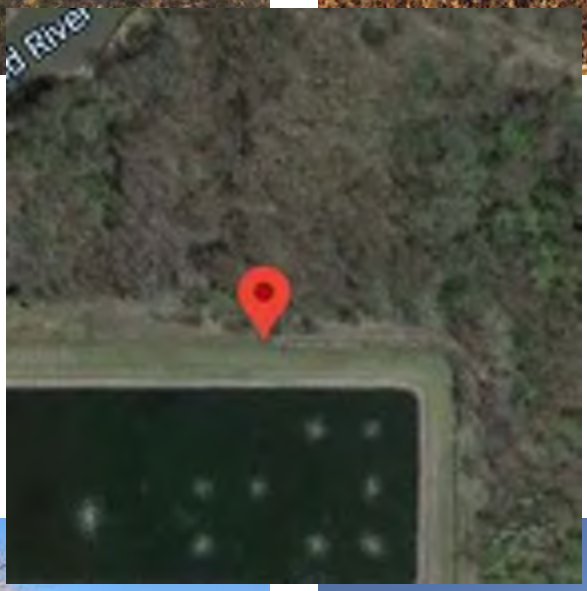








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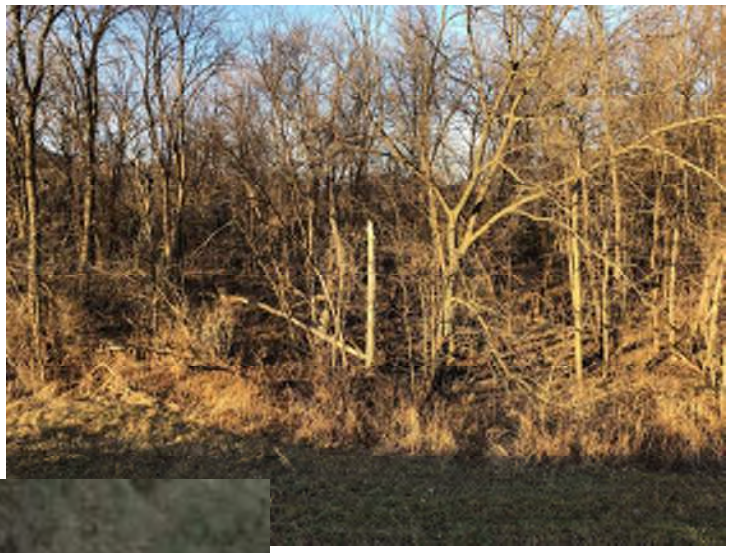

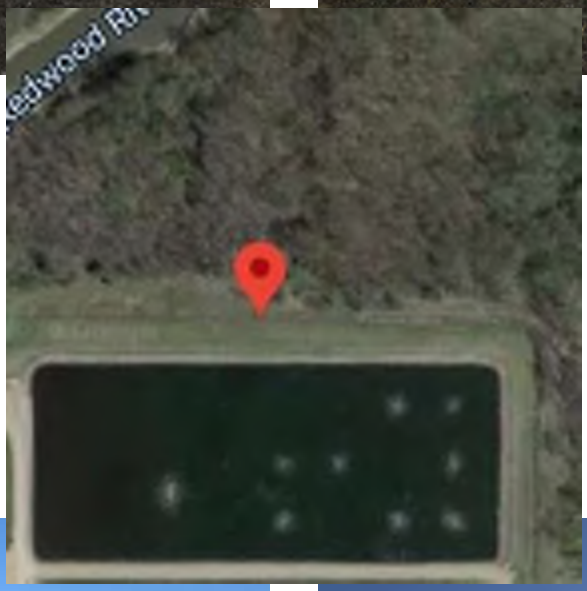
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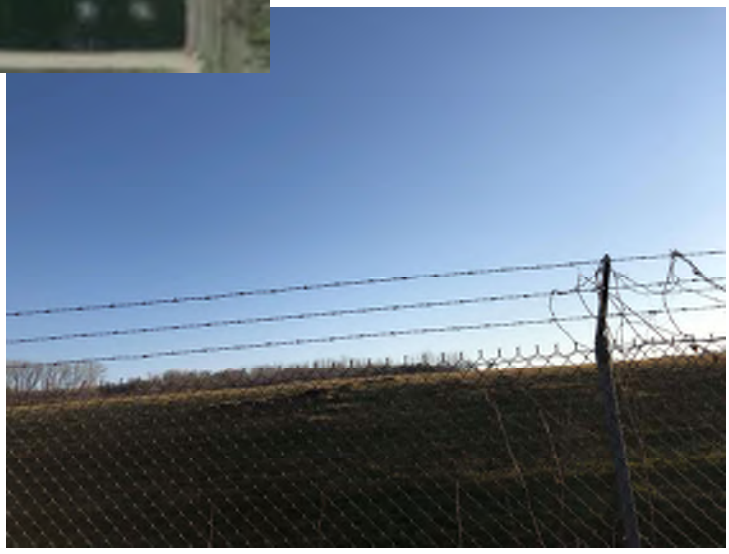

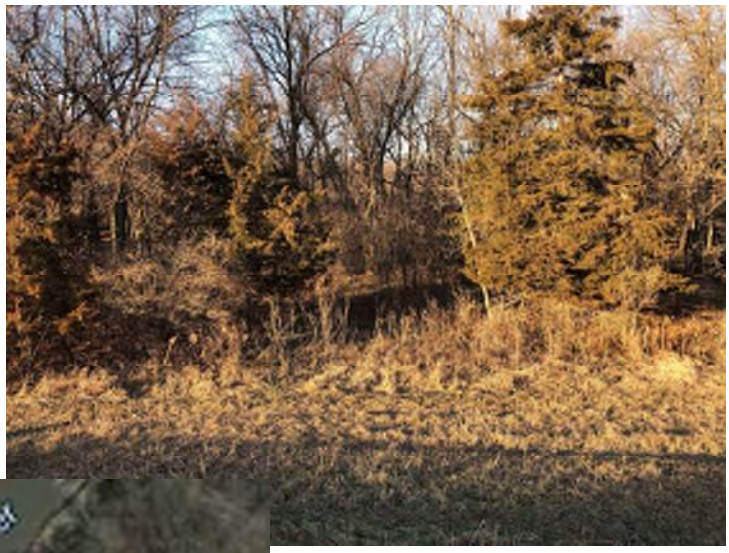

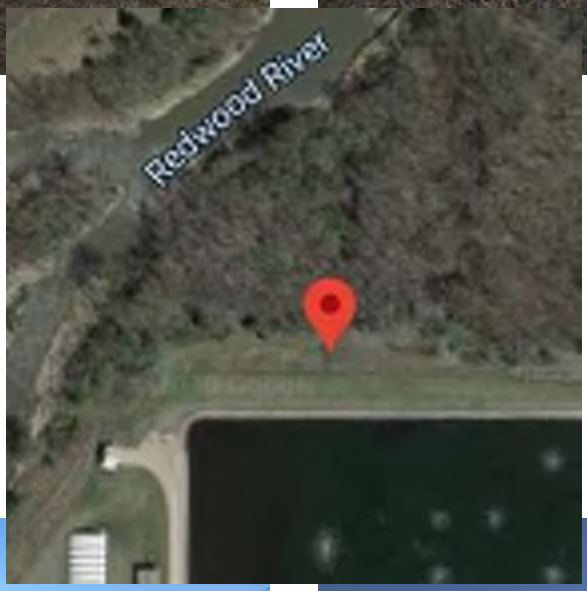
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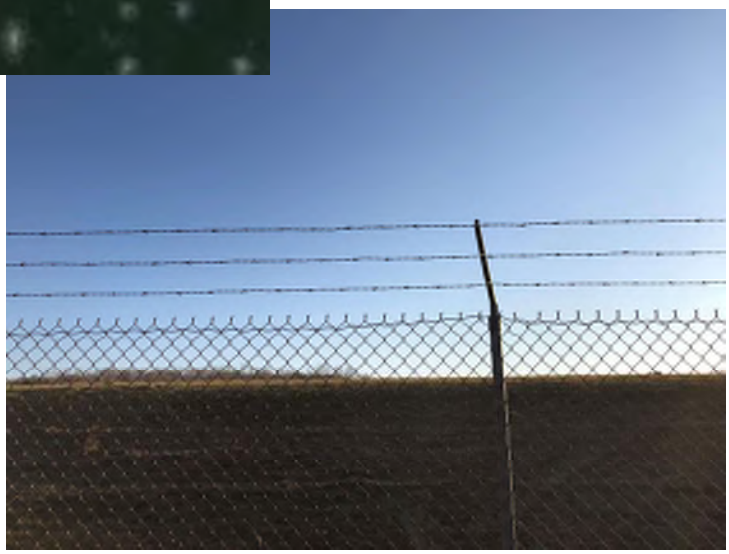

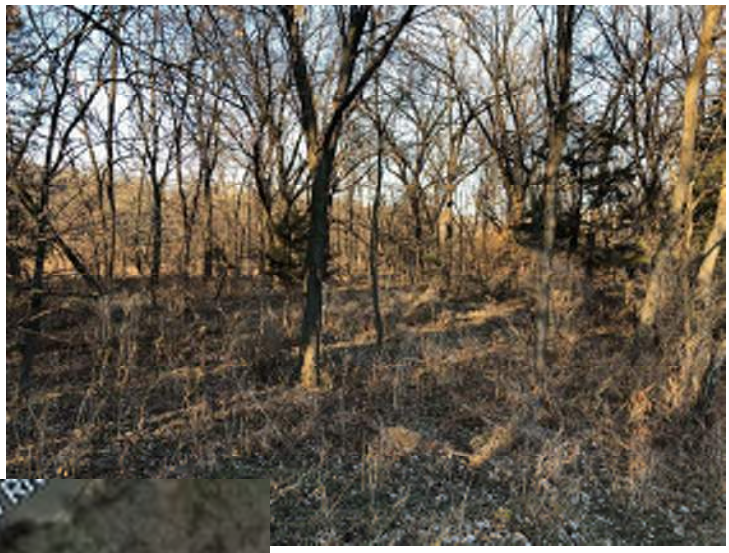

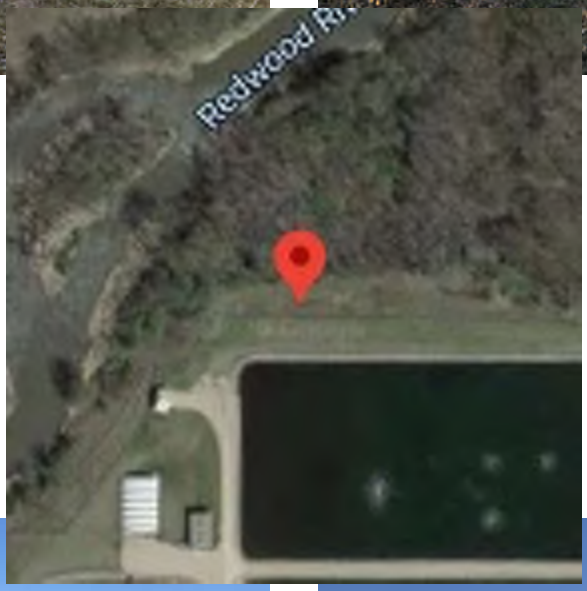
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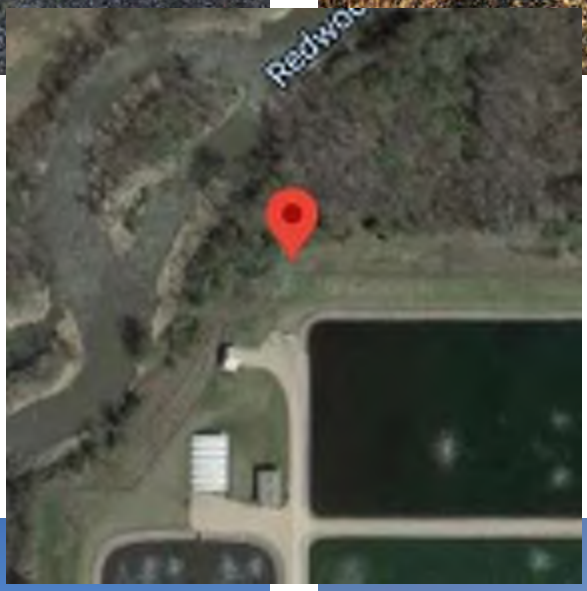

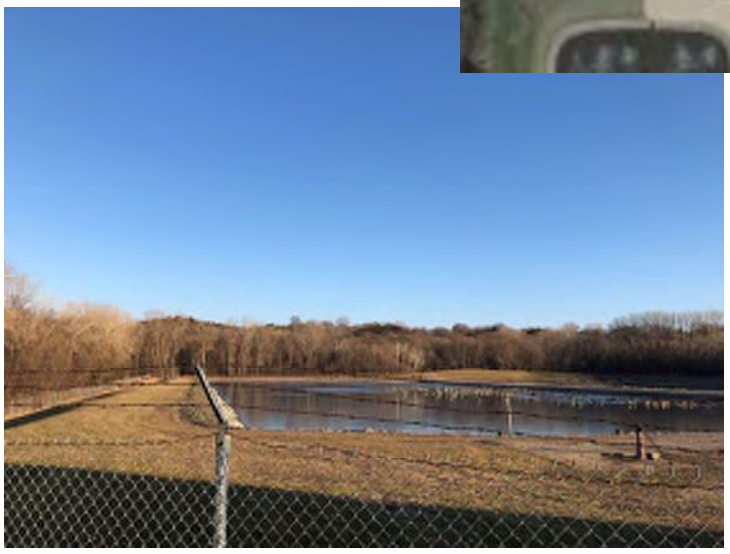

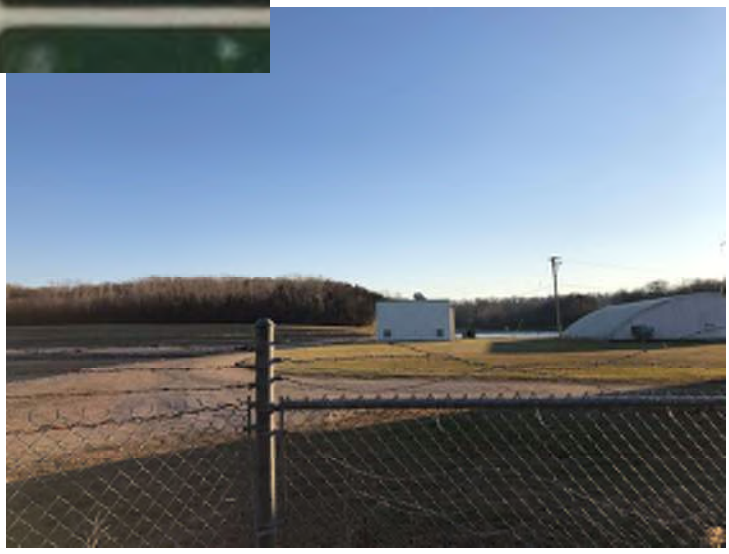

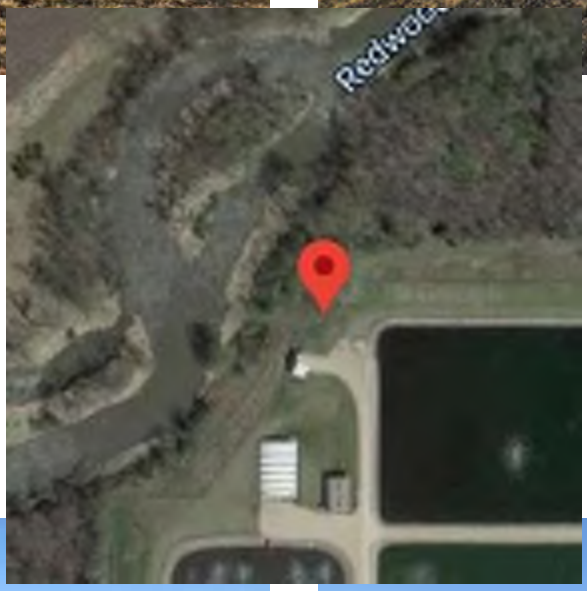
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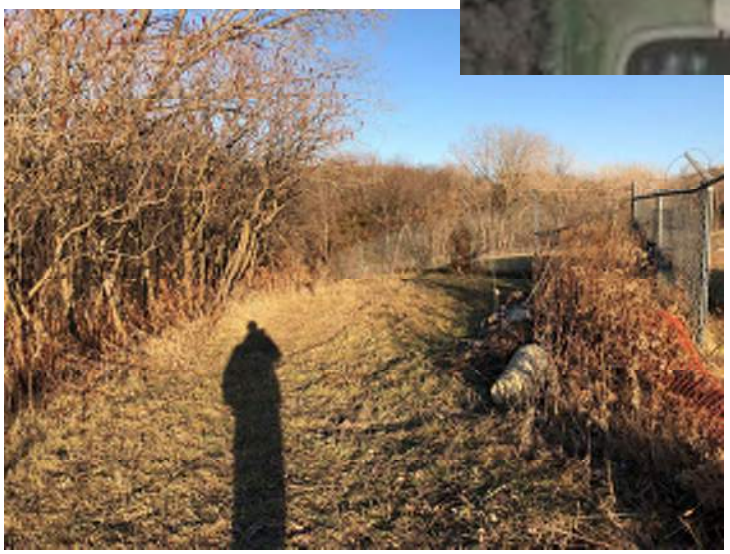

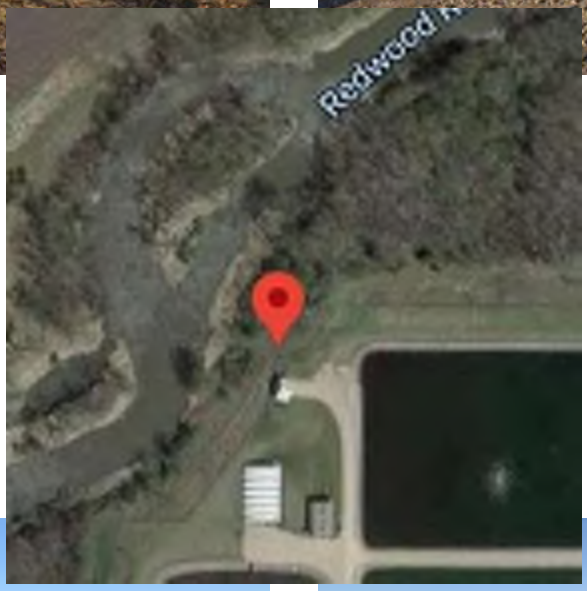
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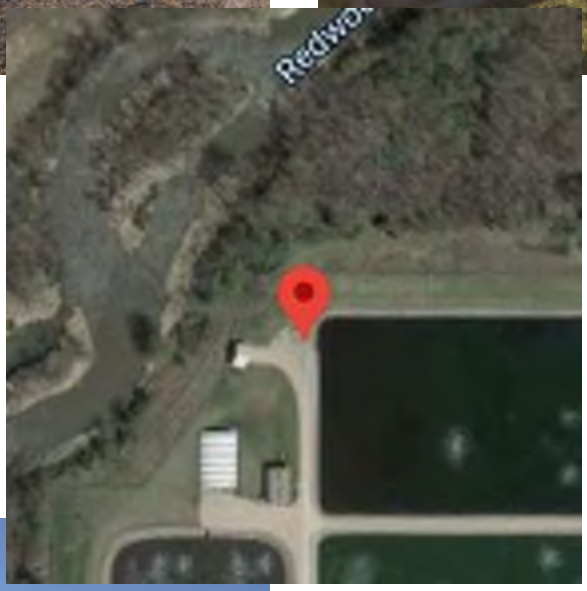
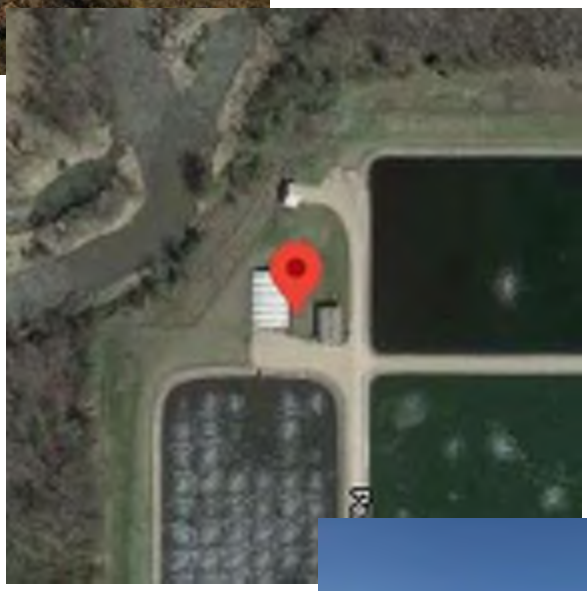




BOLTON & MENK
Real People. Real Solutions.

1960 Premier Drive
Mankato, MN 56001-5900

Ph: (507) 625-4171
Fax: (507) 625-4177
Bolton-Menk.com

January 13, 2021

Attn: Tribal Historic Preservation Officer
Lower Sioux Indian Community of Minnesota
P.O. Box 308
39527 Res. Hwy 1
Morton, MN 56270

RE: Wastewater Treatment Facility Improvements
City of Redwood Falls, Redwood County
Project No: 0M2.122673
NW ¼ T113, R 35, Section 31

The above project is proposed to be funded with federal dollars and is therefore subject to Section 106 of the National Historic Preservation Act and implementing regulations at 36 CFR 800.

The US Environmental Protection Agency has delegated the environmental review responsibilities for this project to the State of Minnesota who has in turn delegated it to the City. The City has directed us as their Consultant Engineer to act as their agent in completing the environmental review including initiating review of the project for compliance with Section 106.

Please accept this letter on behalf of the City as a formal request for any comments or information you feel appropriate to share concerning the proposed project.

The City is considering four options for improvements to the existing wastewater treatment system. Figures 1-4b are included and show the proposed location and description of work for each of the options being considered. In addition, a USGS location map and photos are included. The Area of Potential Effect has been chosen to include all of the options under consideration.

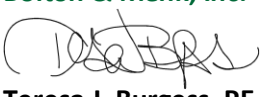
A review of the MN State Historic Preservation Office (SHPO) database was done but does not show any cultural resources near or in this project area. It is suspected that there may be cultural resources in the vicinity of this project based on past correspondence with your office for previous projects.

No work is proposed to the existing fence or outside of the fence of the wastewater treatment facility. The area inside the existing fence was extensively graded during the construction of the existing pond system.

Please let me know any questions or concerns that should be addressed in the environmental review at:

Teresa Burgess
Bolton & Menk, Inc.
1960 Premier Drive
Mankato, MN 56082
Teresa.burgess@bolton-menk.com
507-625-4171 ext. 2638

Sincerely,
Bolton & Menk, Inc.



Teresa J. Burgess, PE, CPESC
Senior Project Engineer

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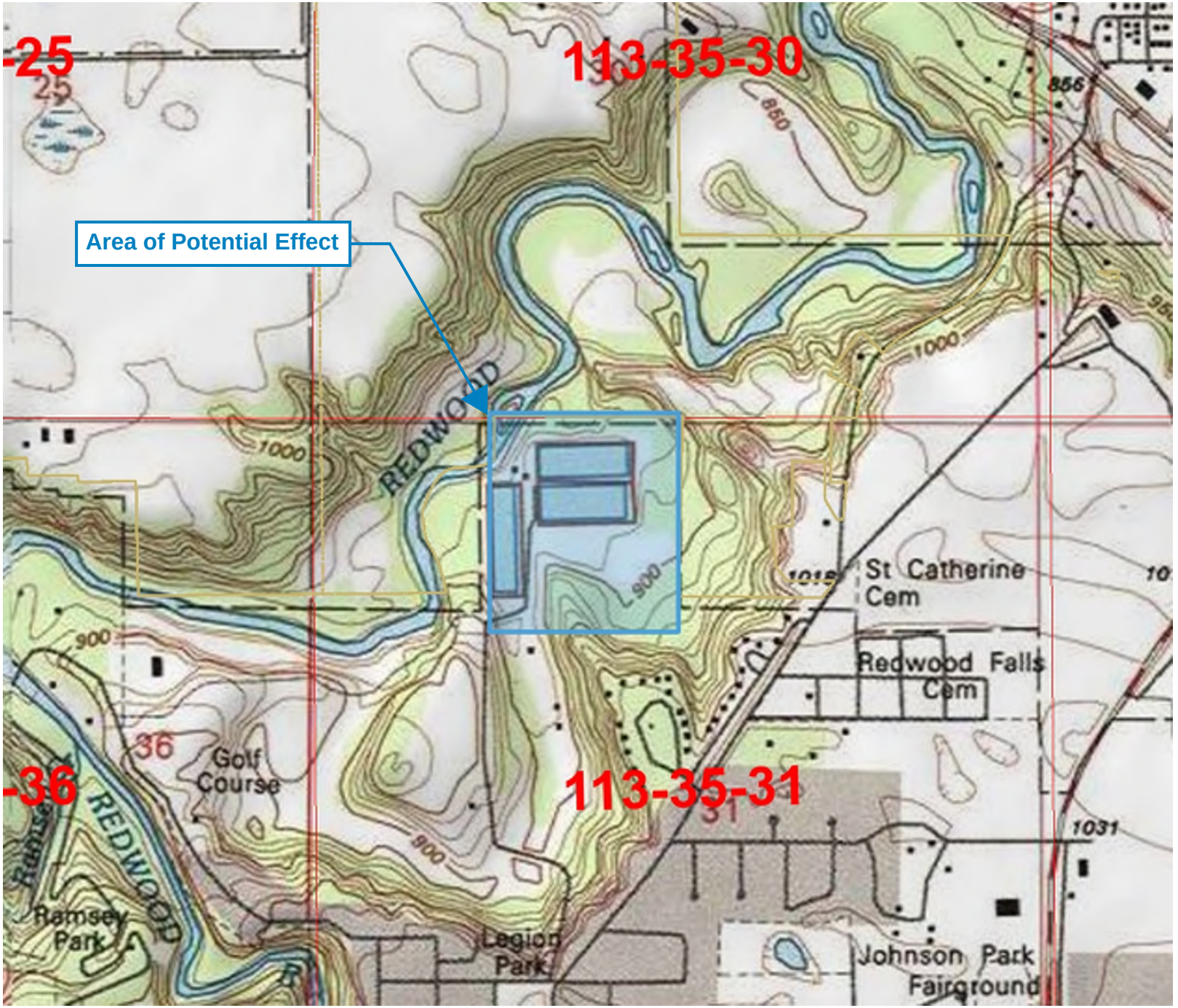
Clean Water Revolving Fund

City of Redwood Falls

Wastewater Treatment Facility

0M2122673



0 1,000 Feet

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Legend

- Municipal Boundaries
- Sections
- County Boundaries

USGS Project Location Map

Disclaimer:

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information, and data located in various city, county, and state offices, and other sources affecting the area shown, and is to be used for reference purposes only. Bolton & Menk, Inc. is not responsible for any inaccuracies herein contained.

City of Redwood Falls

Wastewater Treatment Evaluation

City of Redwood Falls

Figure 1 – Circular Clarifier Addition

April 2020

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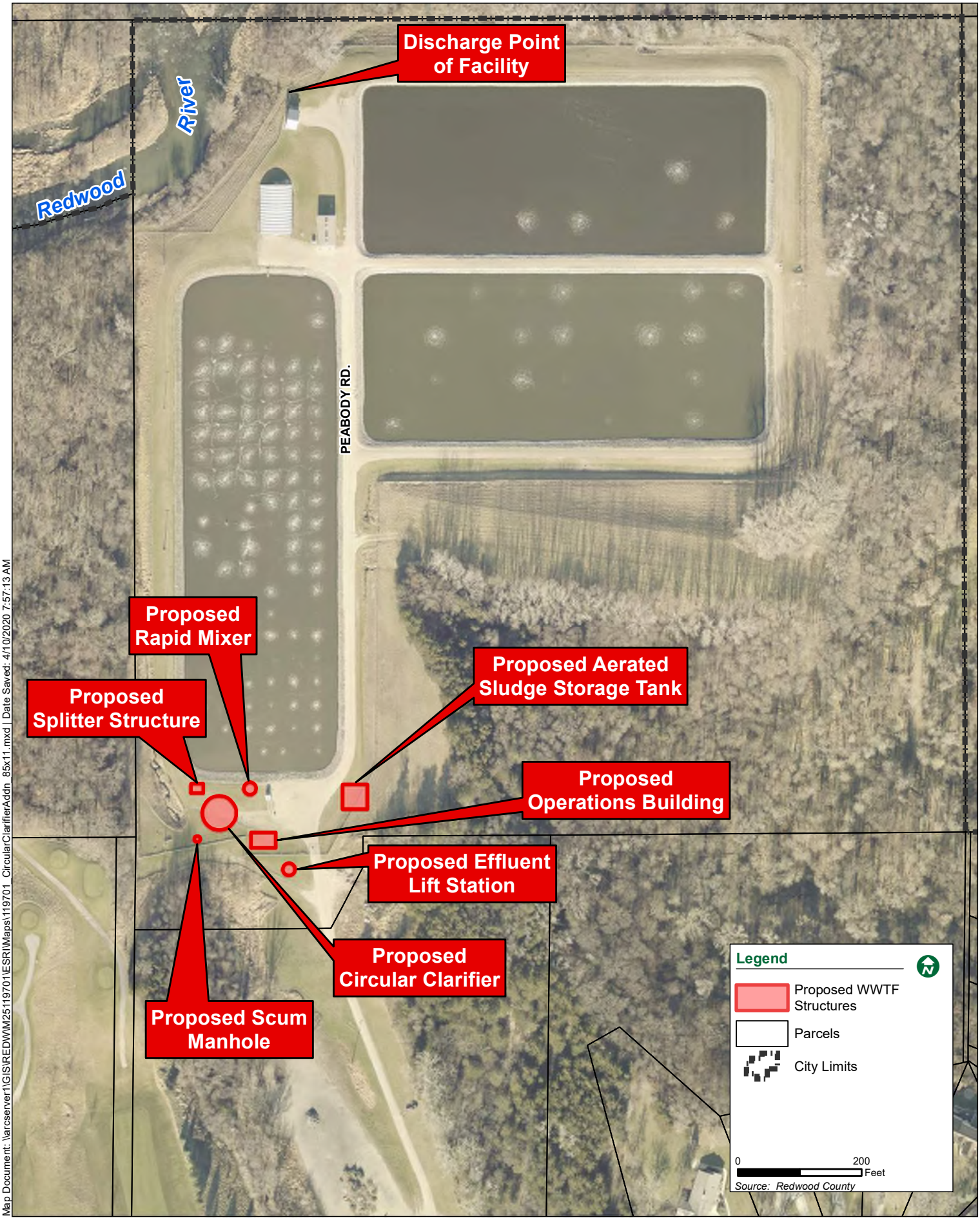

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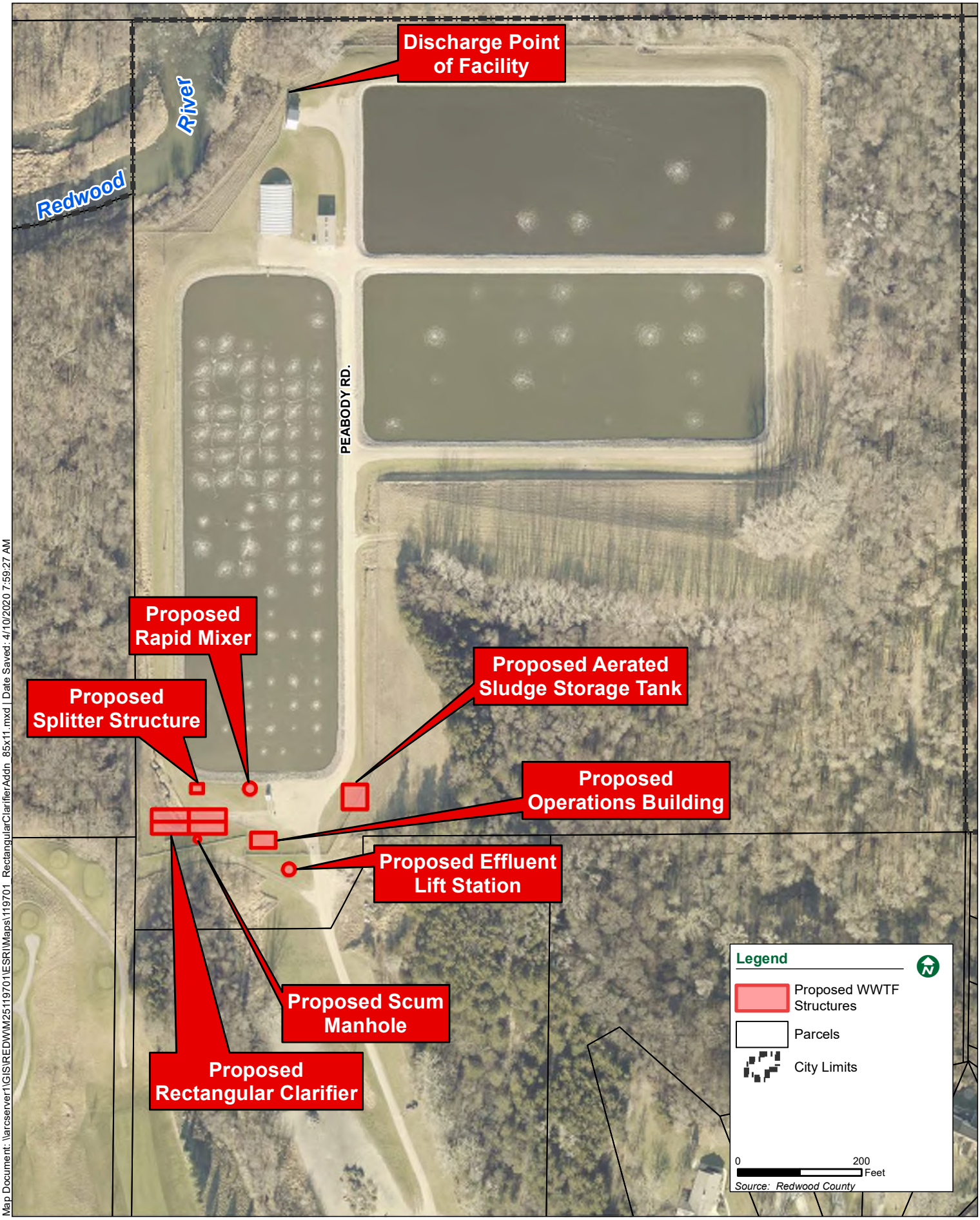

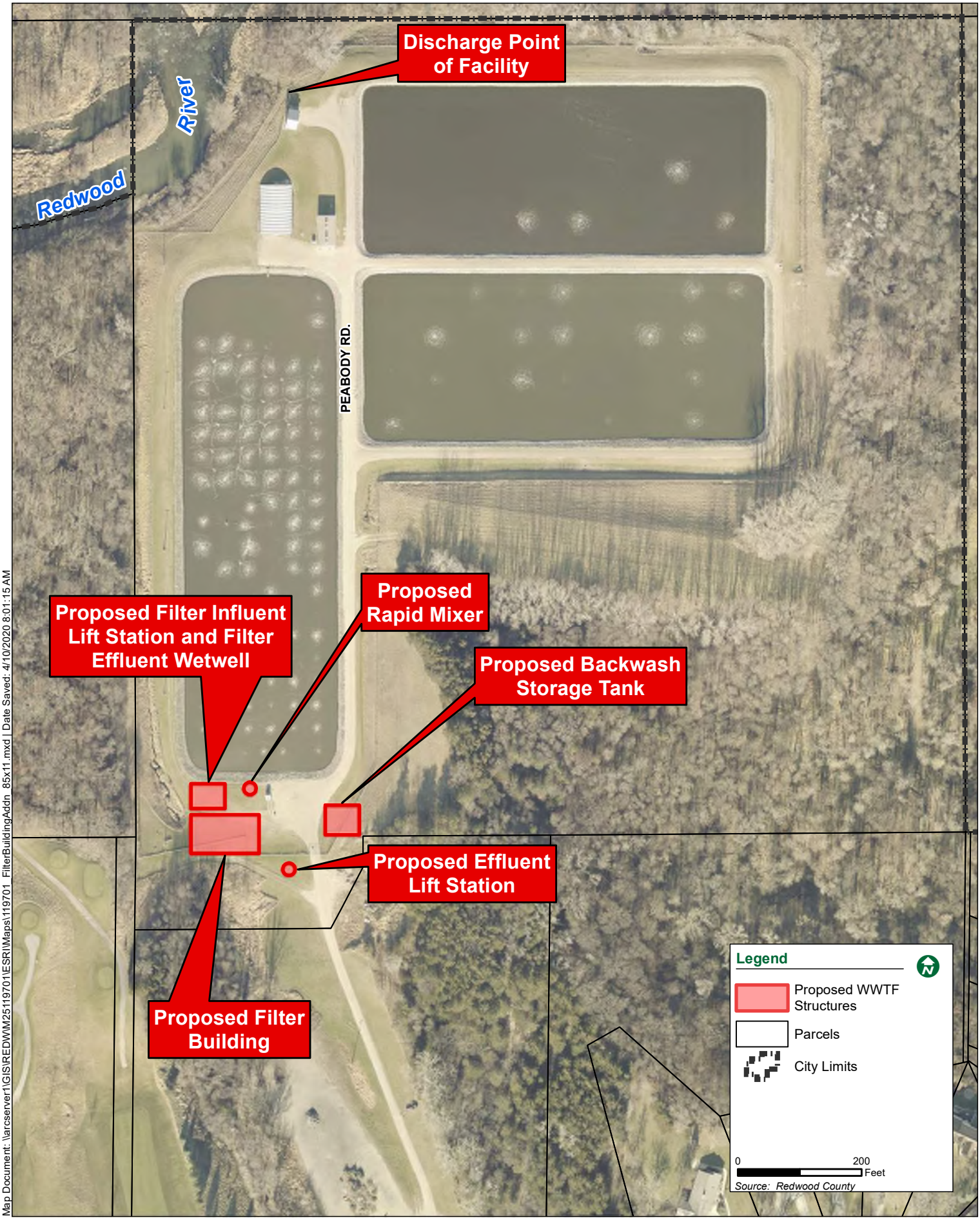

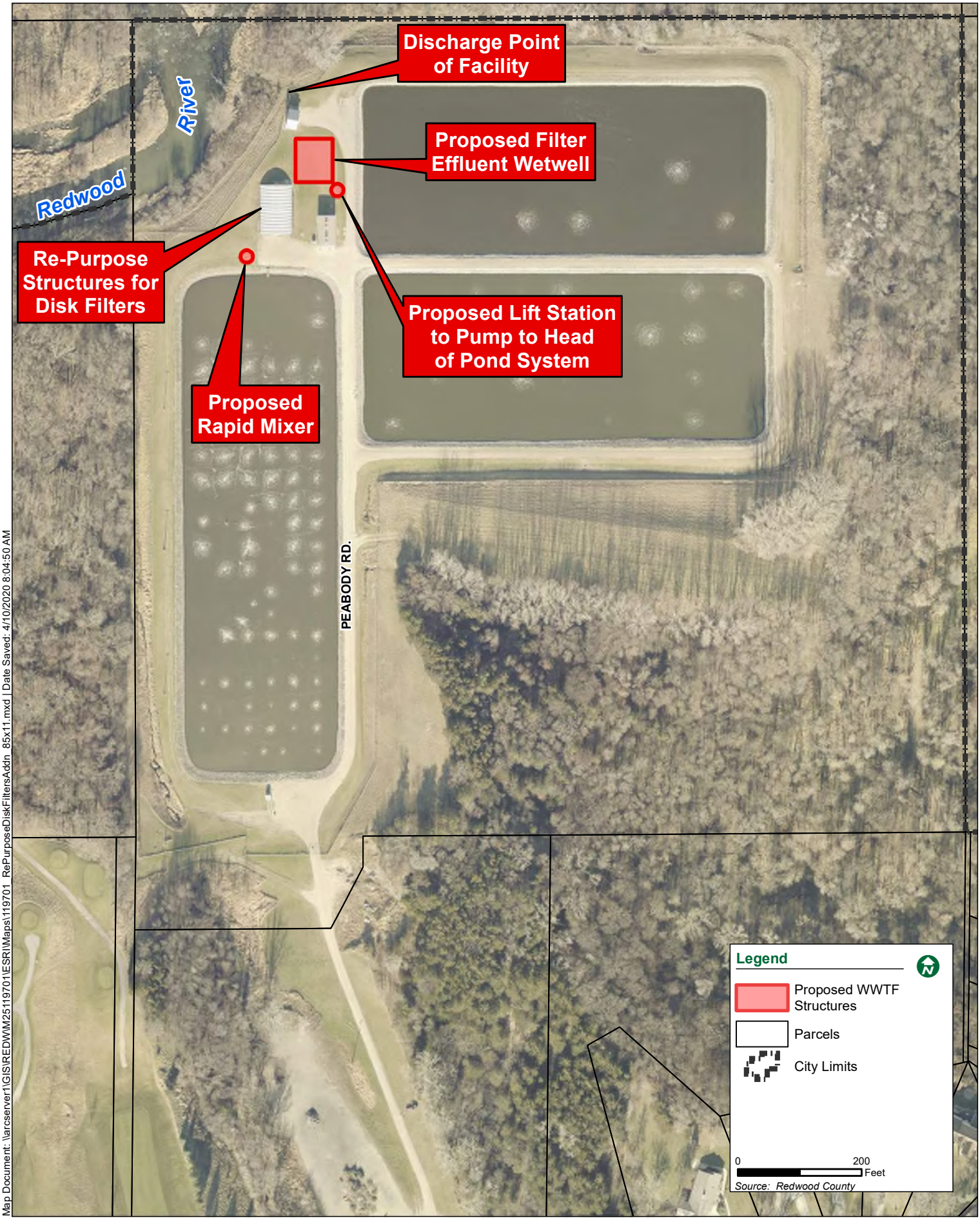

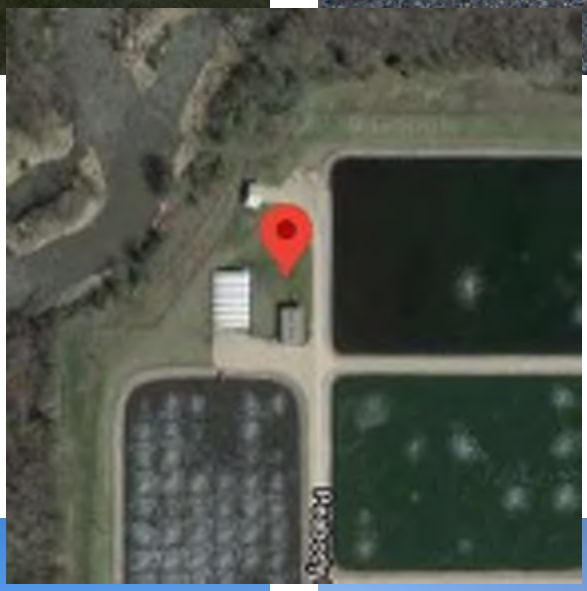

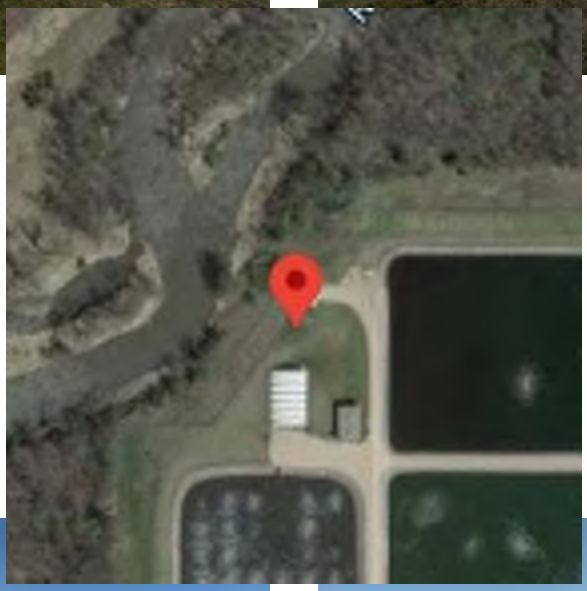

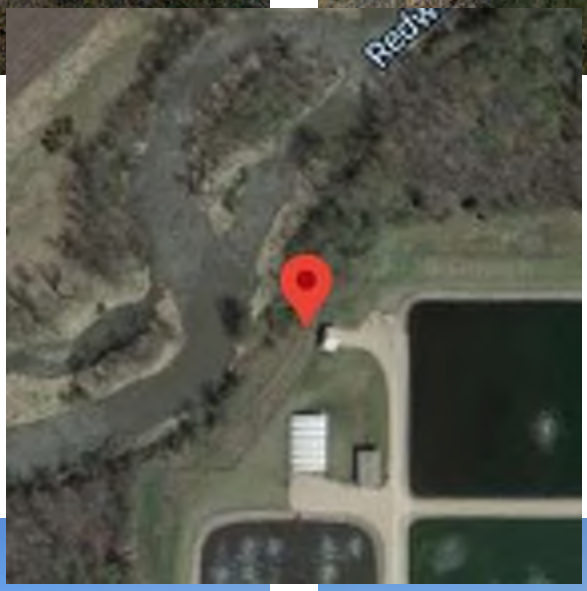
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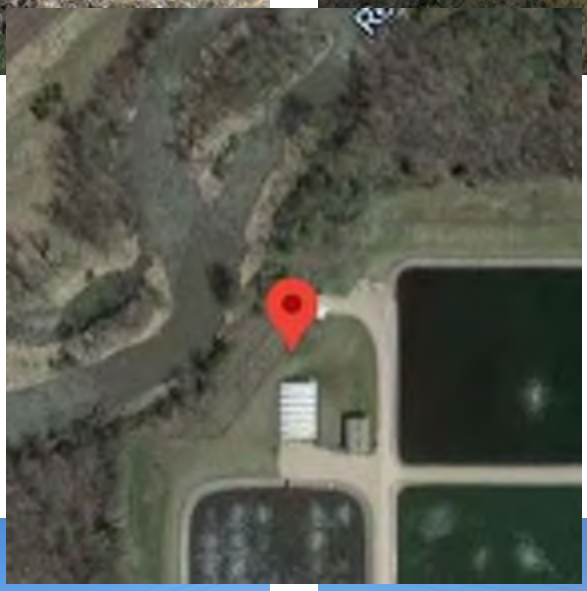

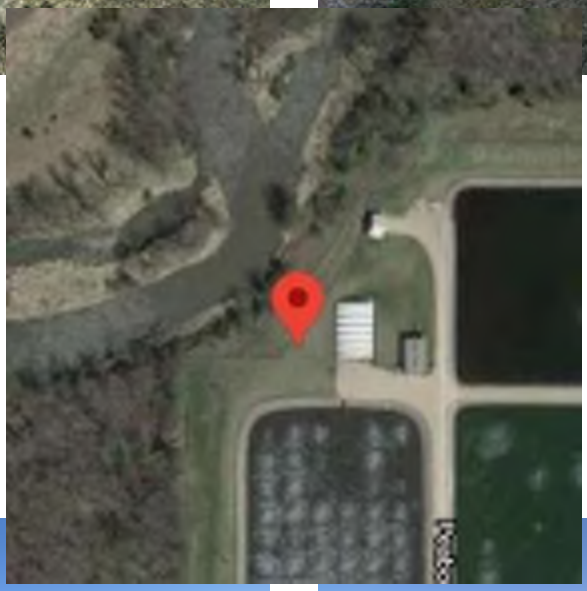

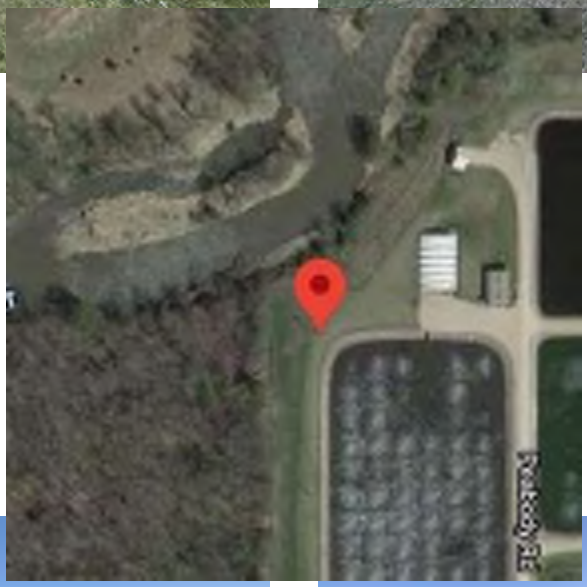
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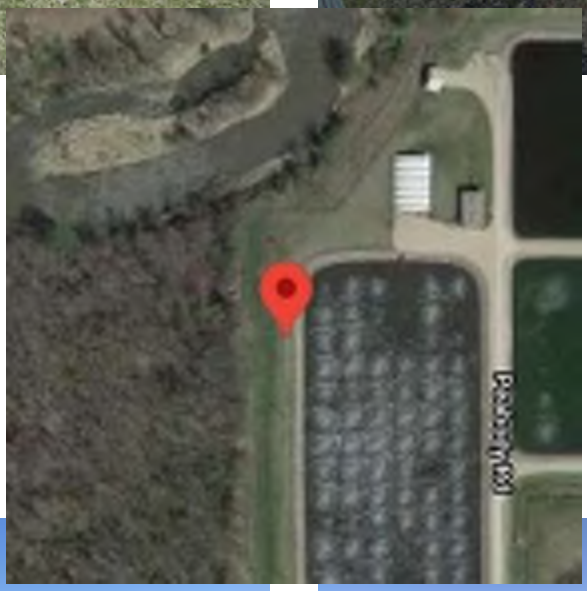

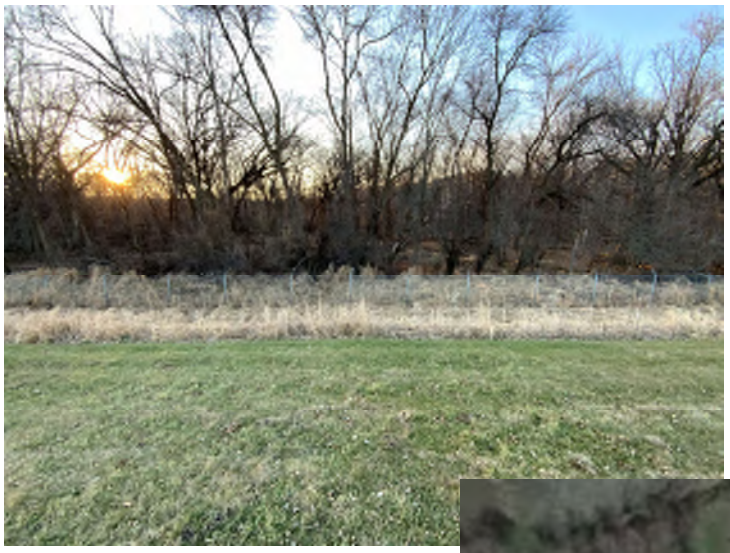

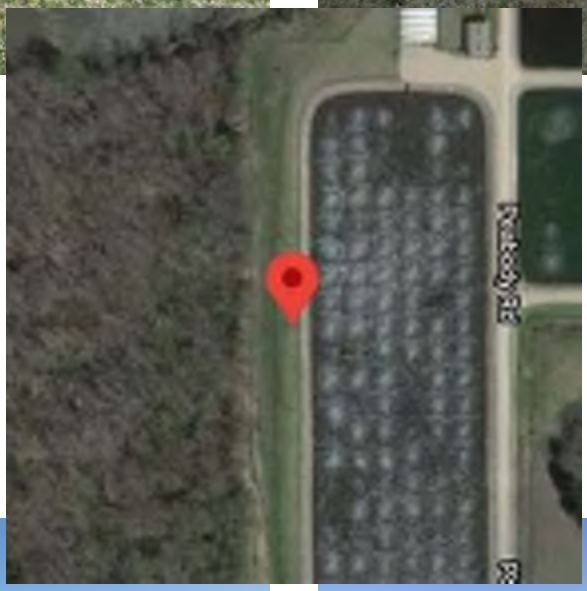
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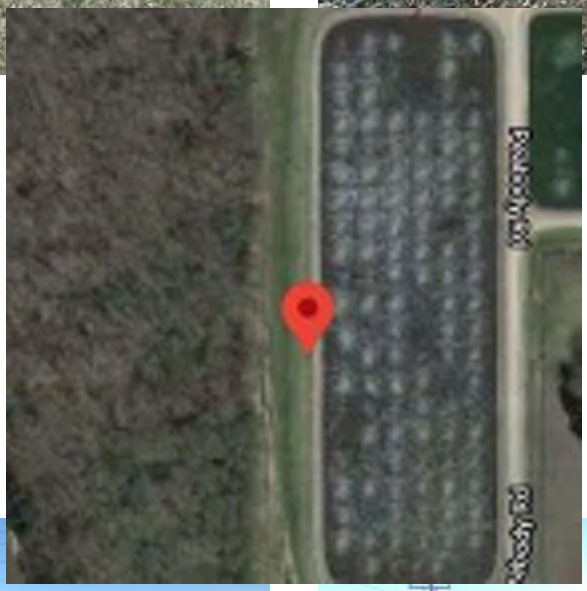
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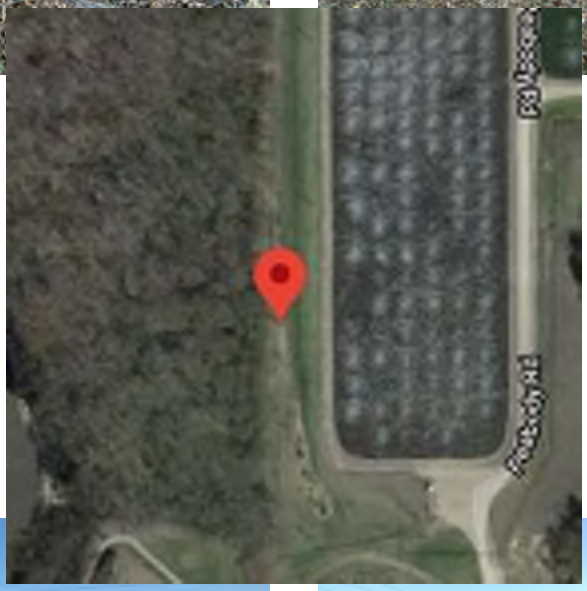
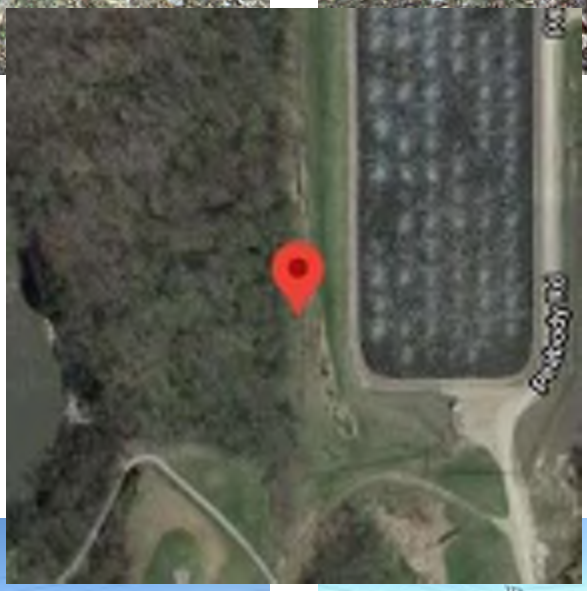
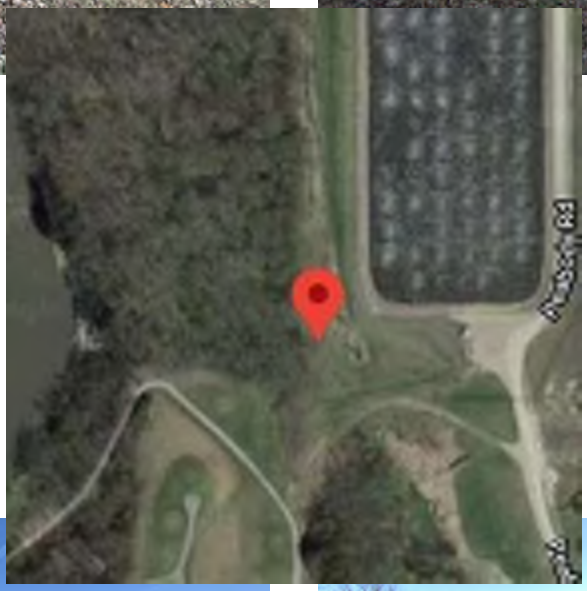
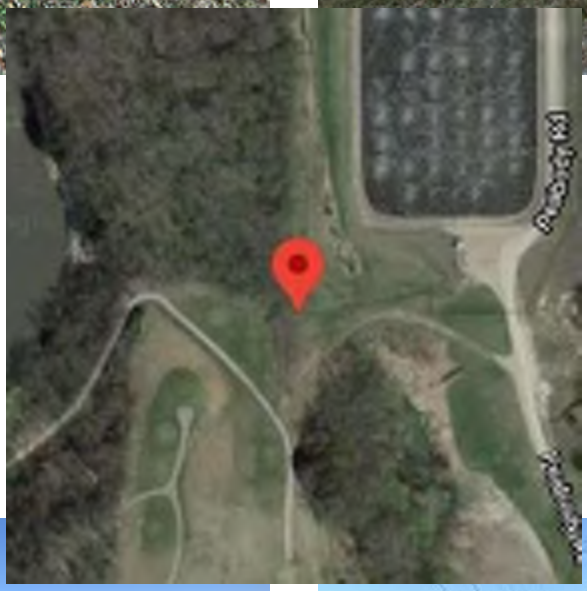
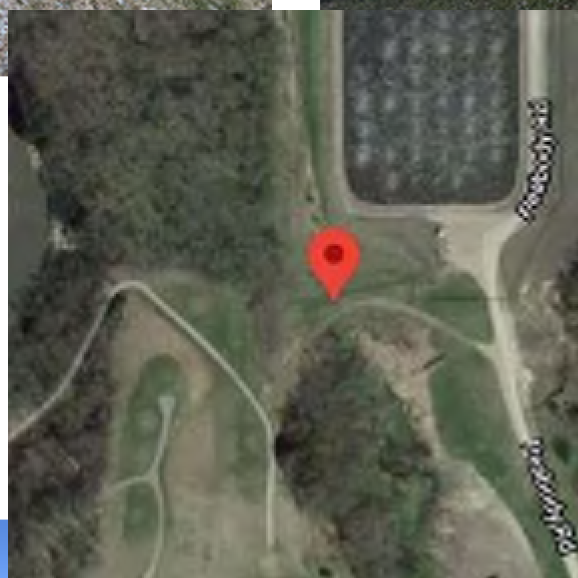
Peabody St

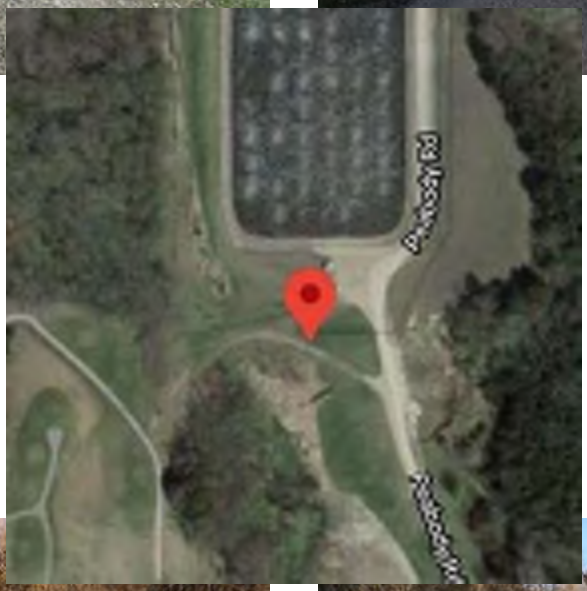








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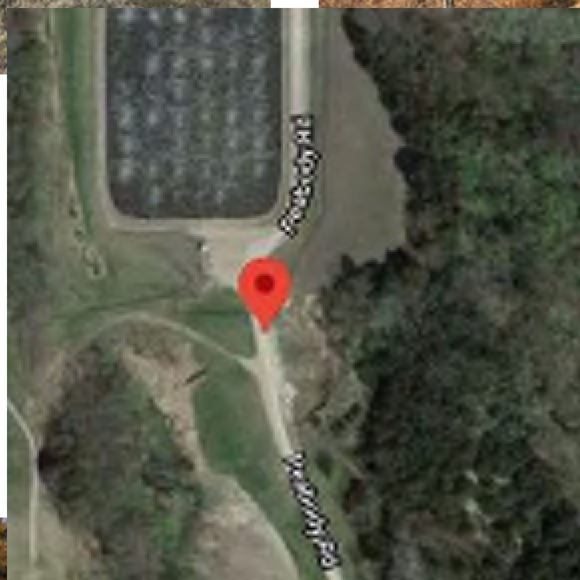
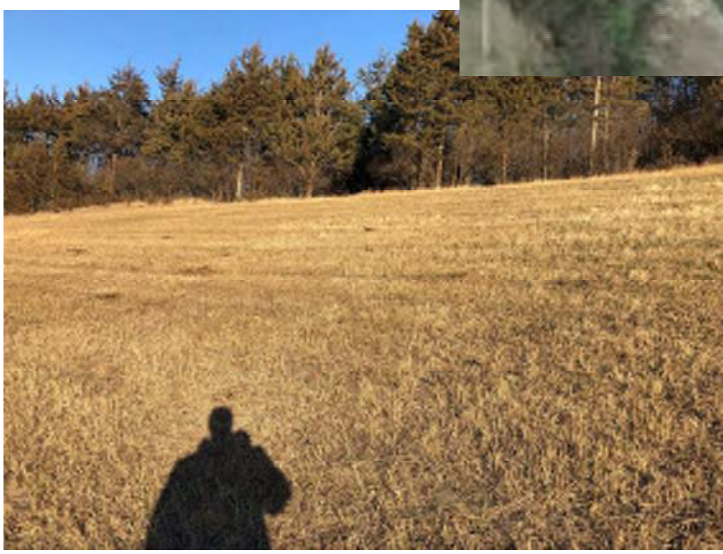


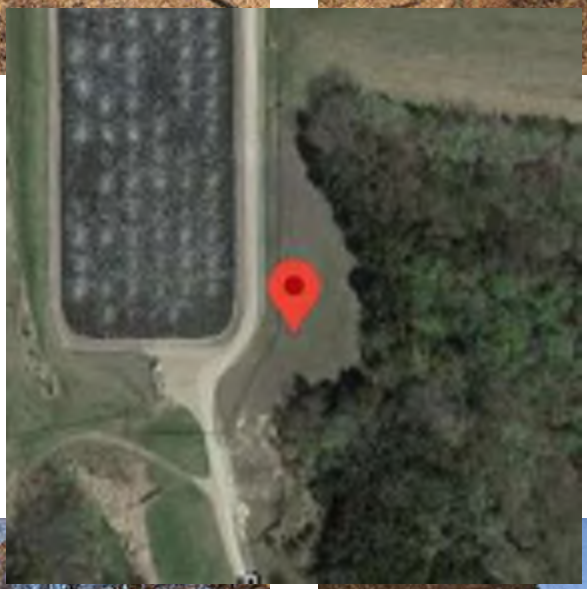

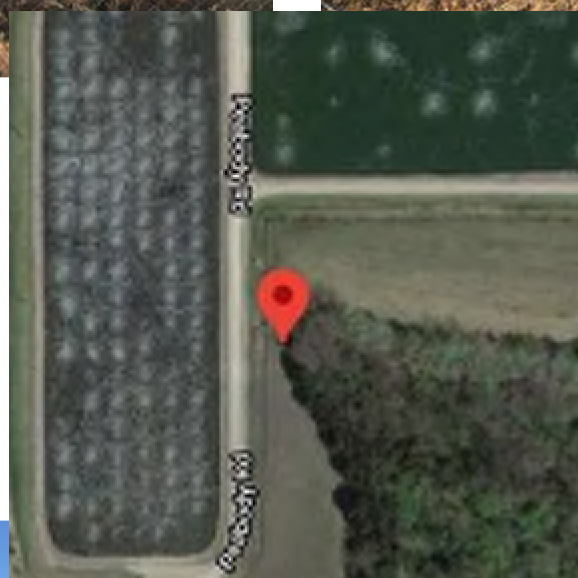

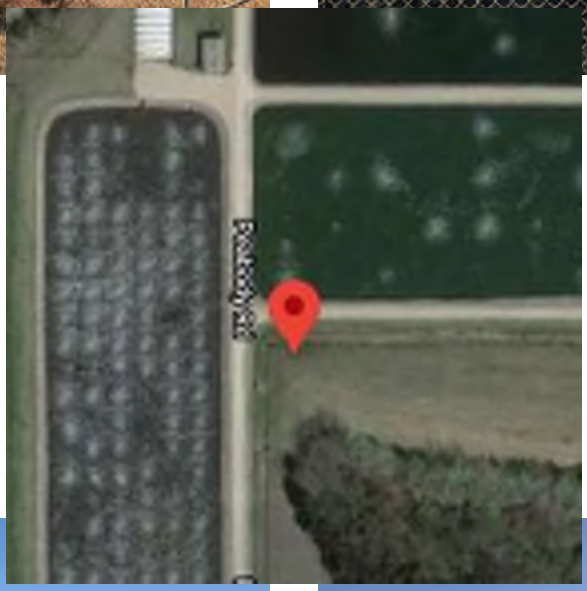

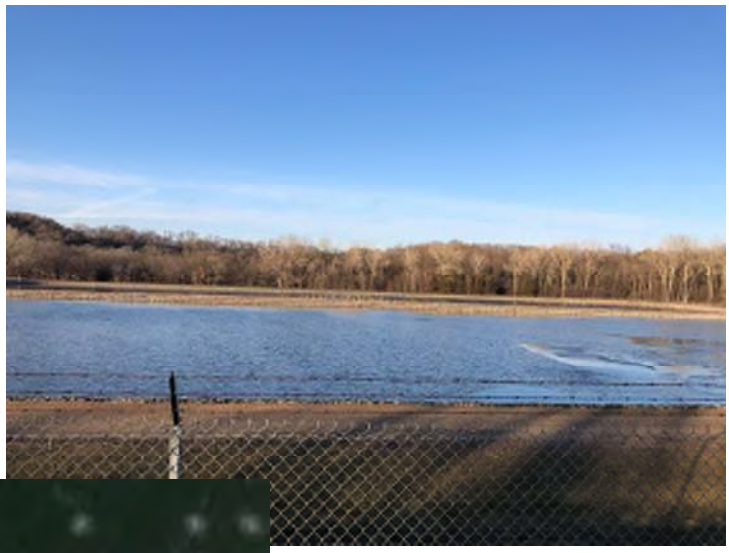

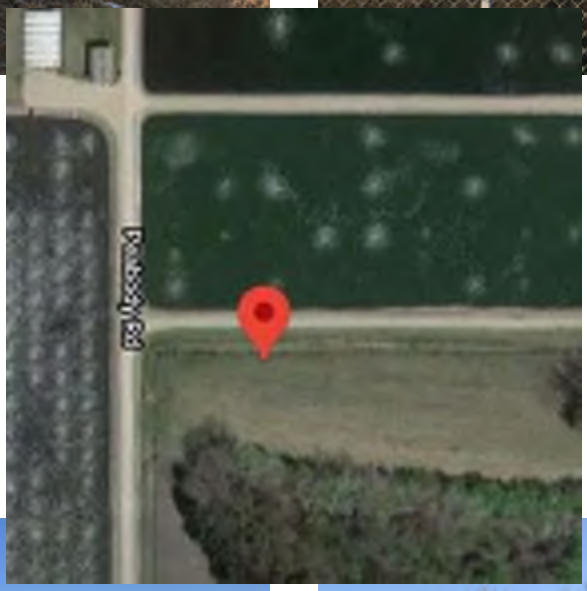
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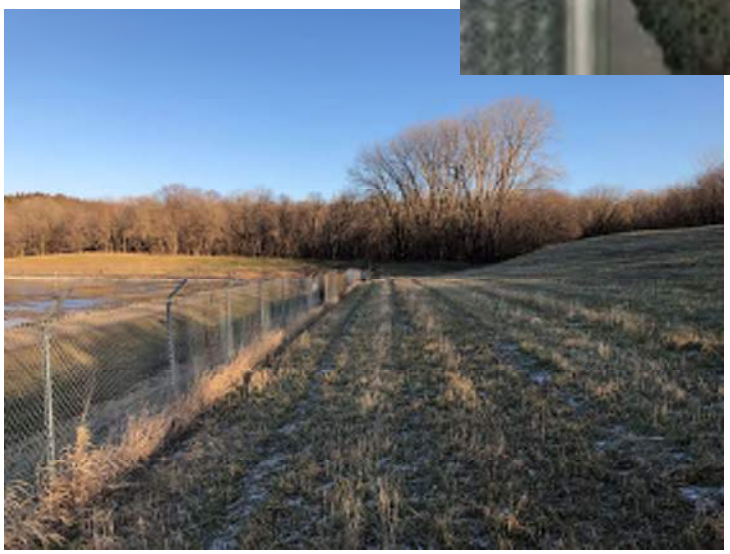
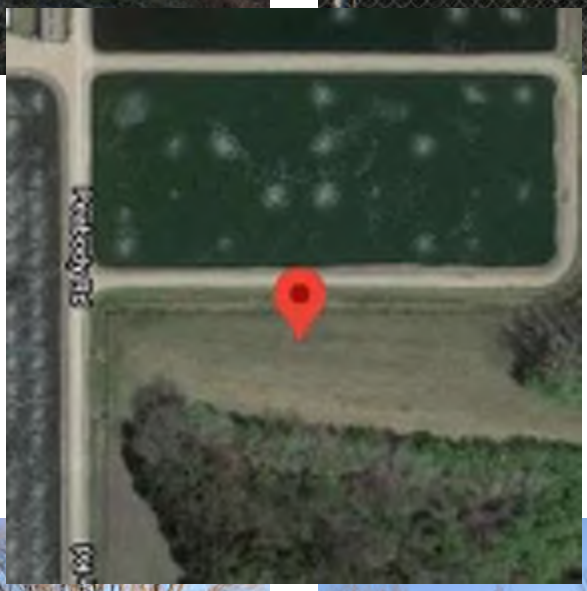
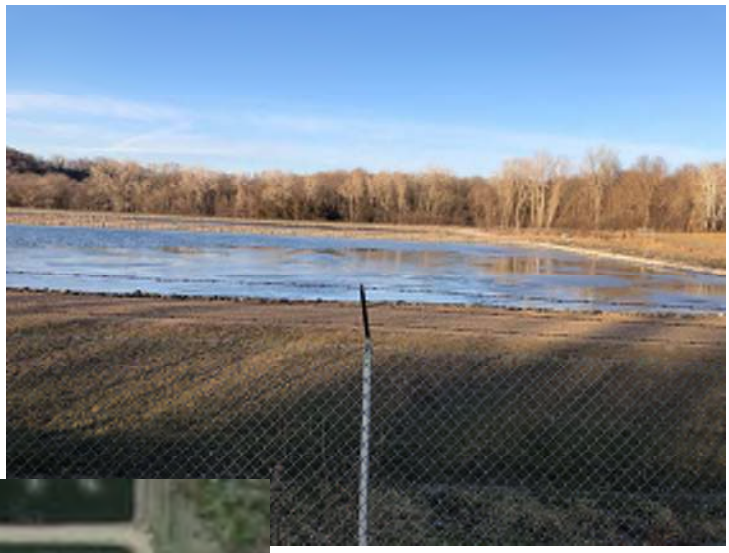
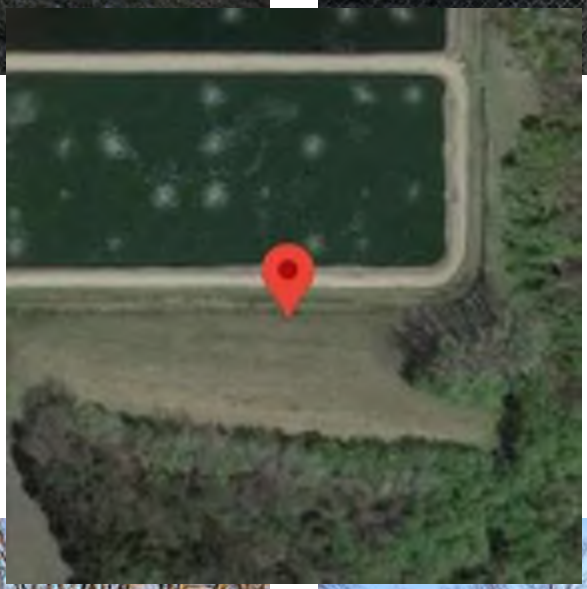
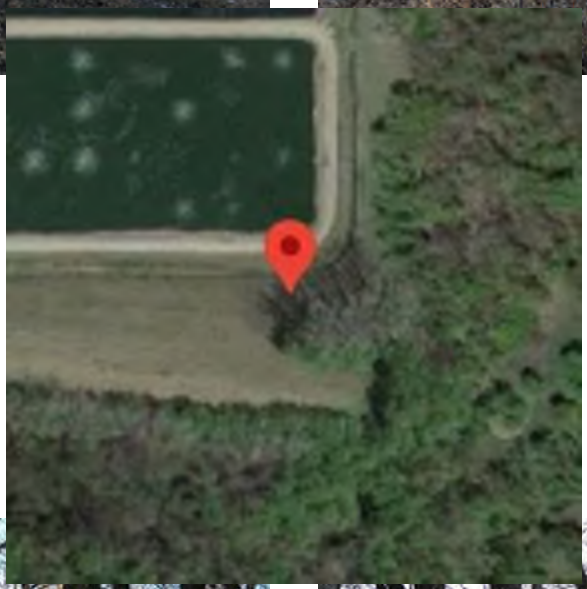
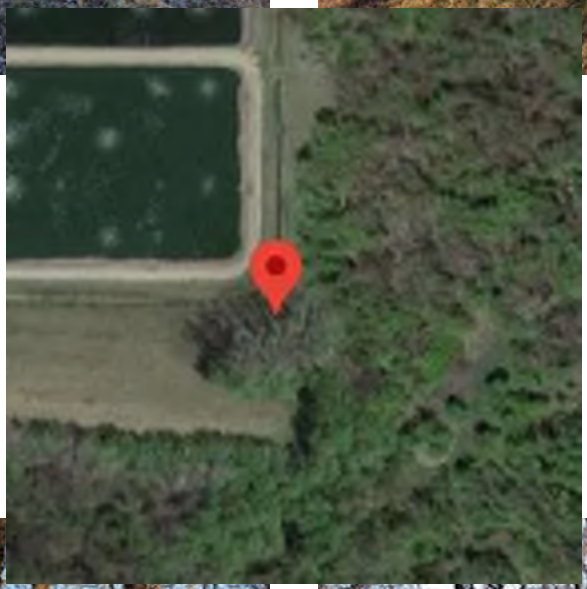


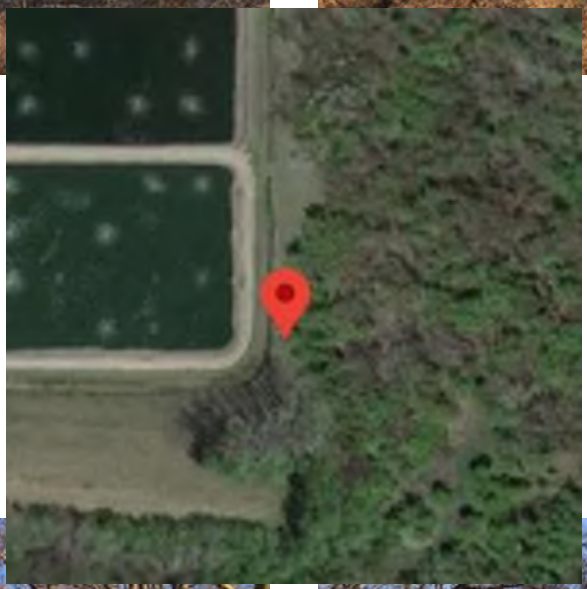


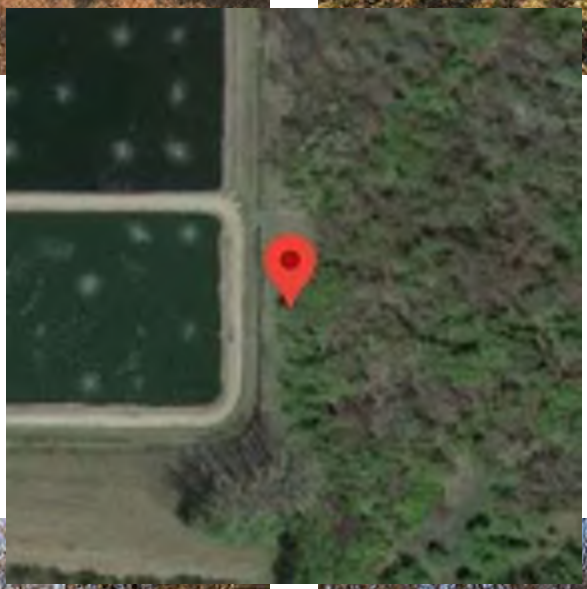




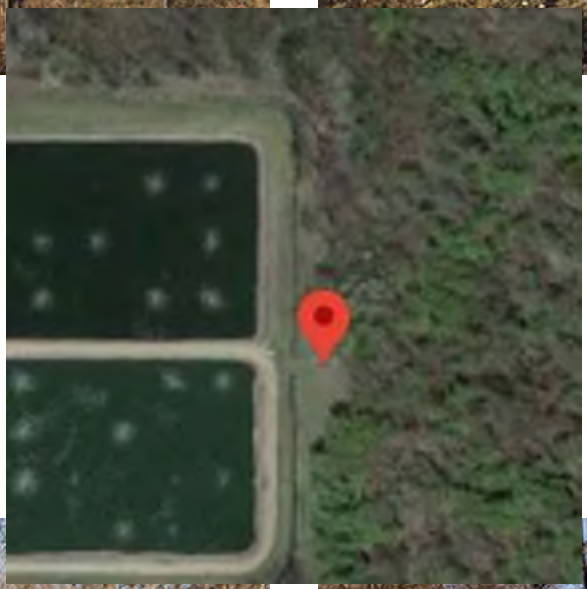


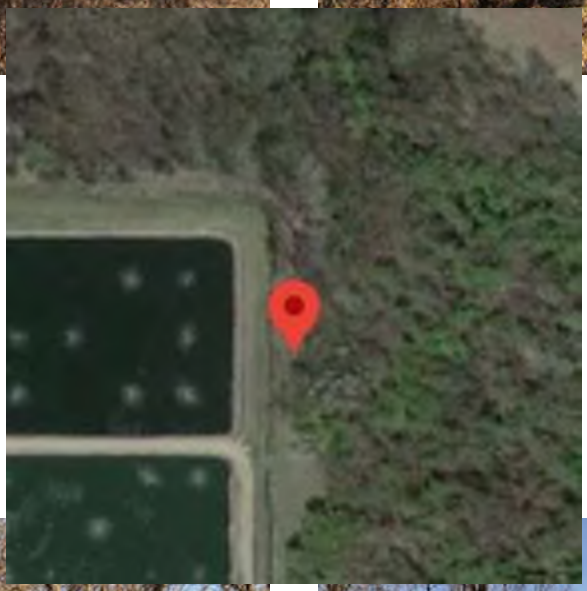


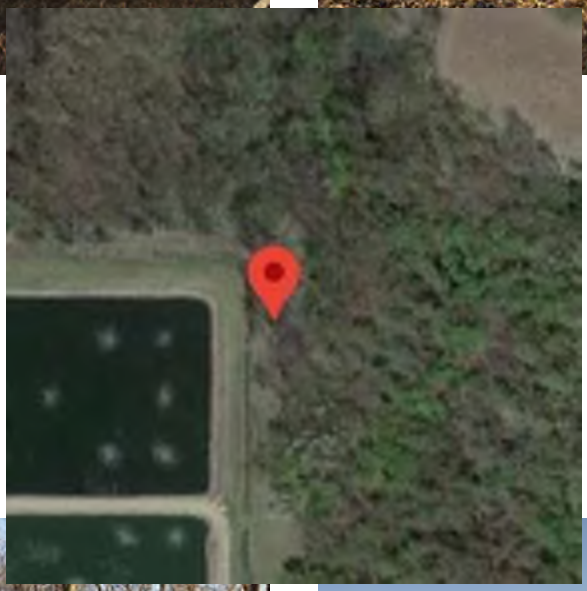


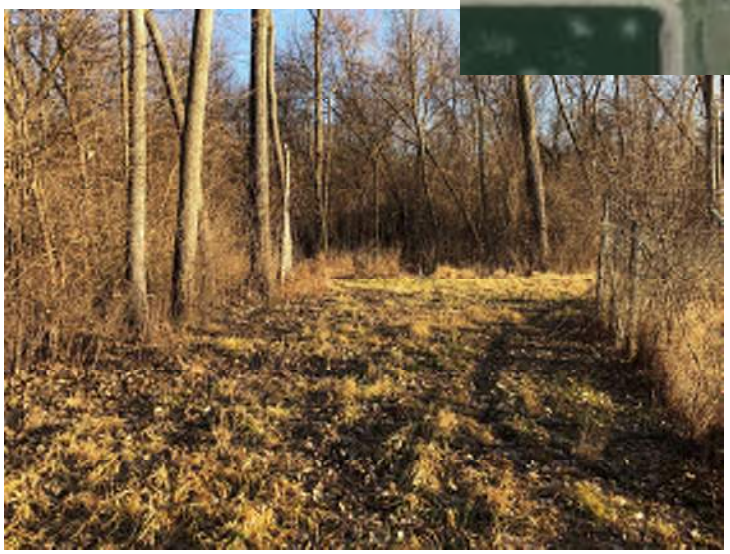


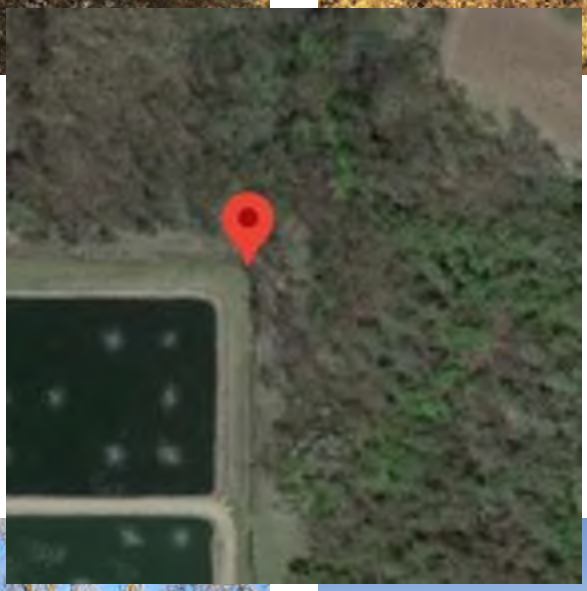

NO TRESPASSING

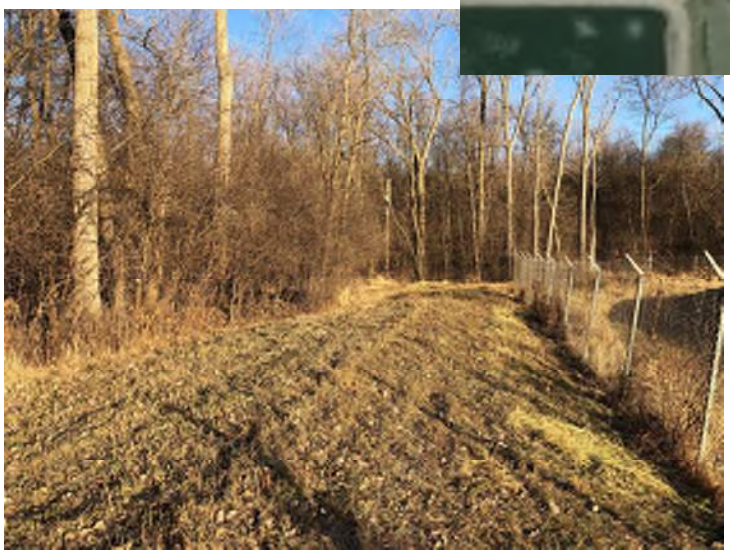


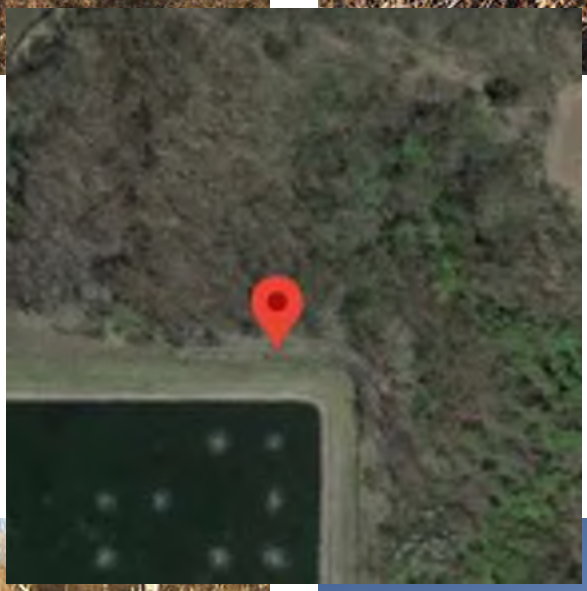


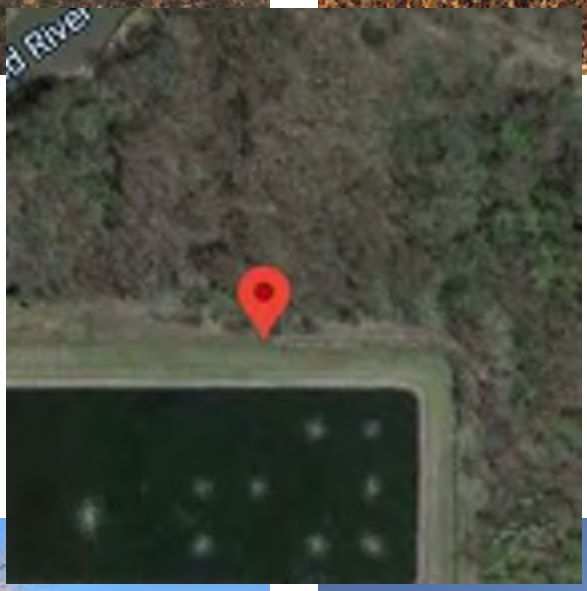








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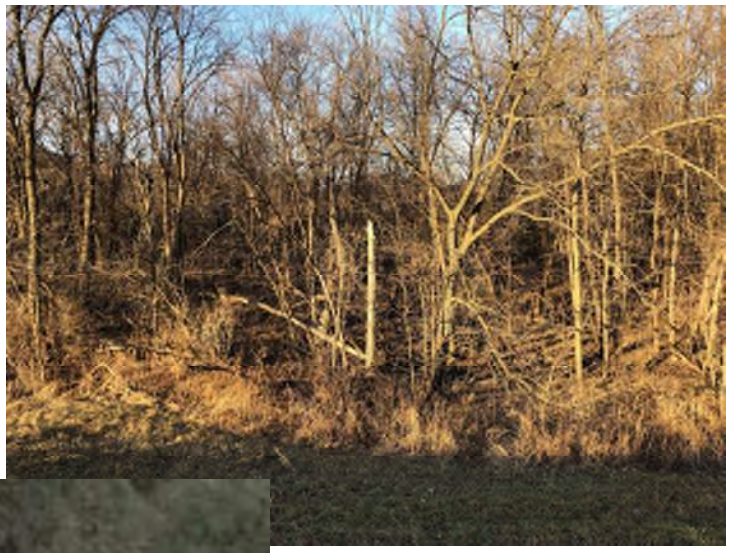

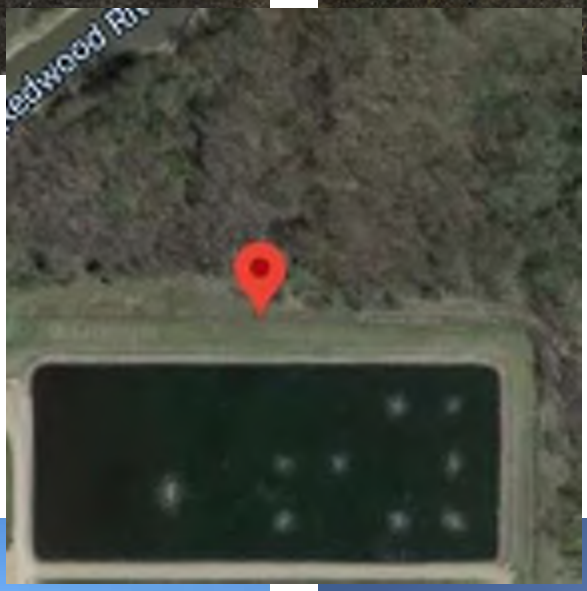
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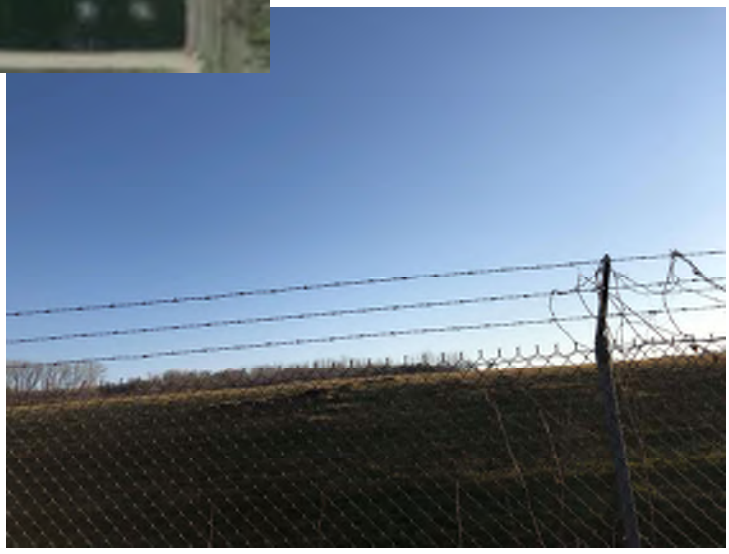
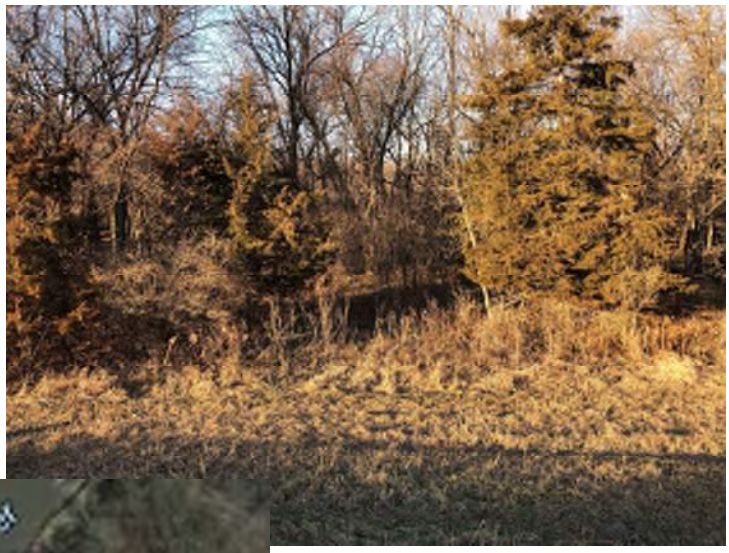
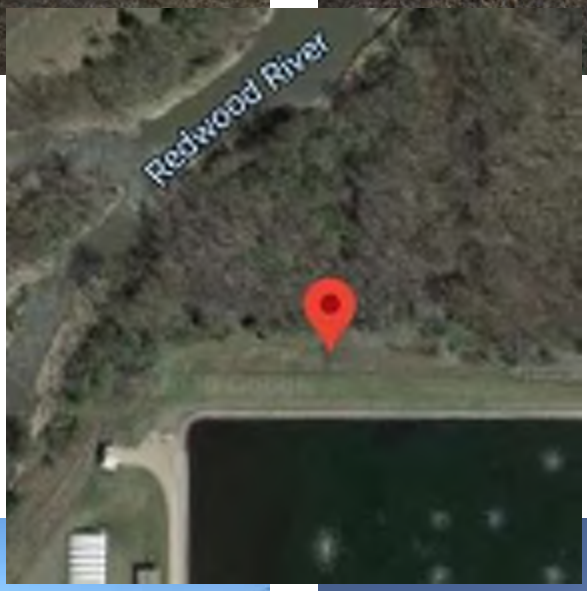
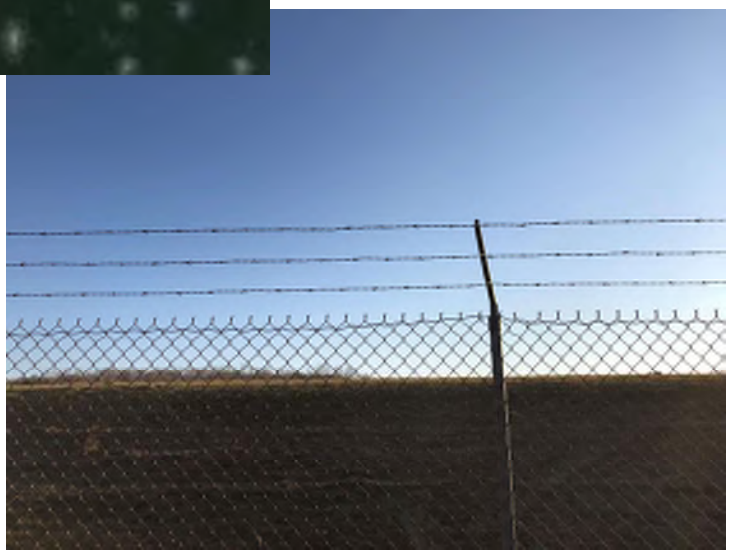
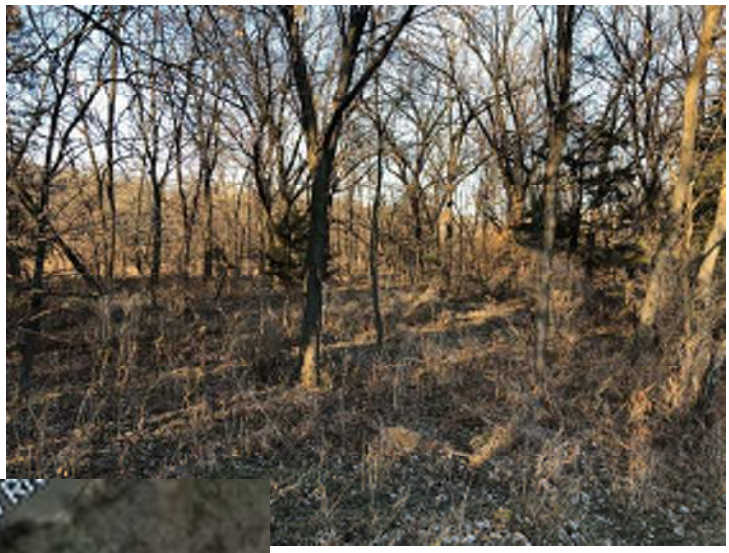
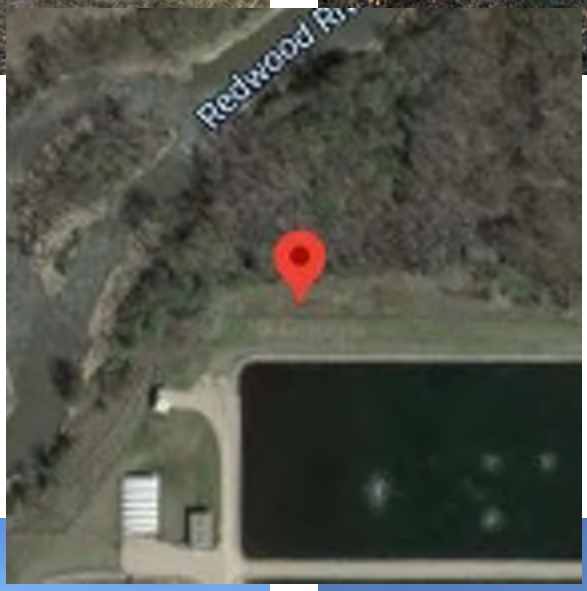





Redwood River



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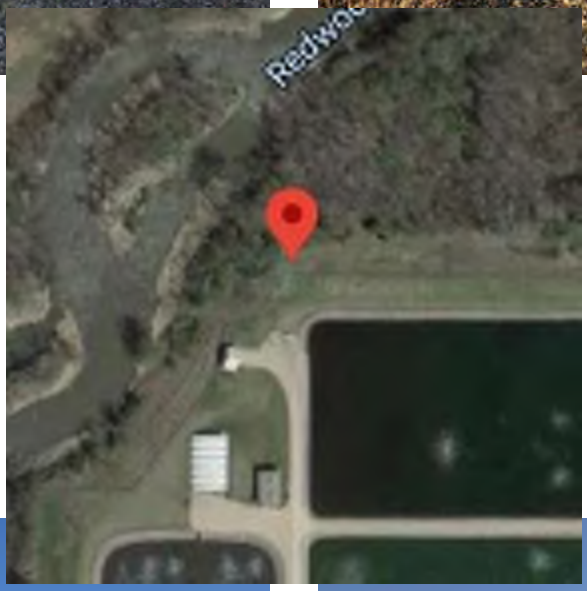

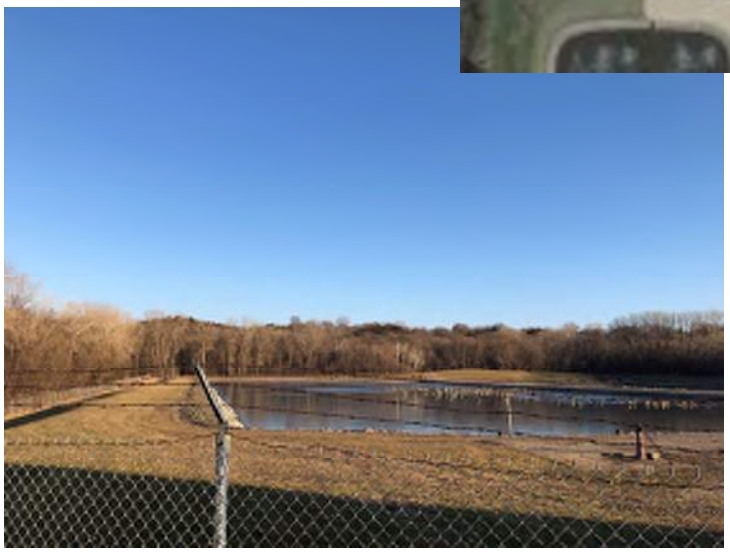

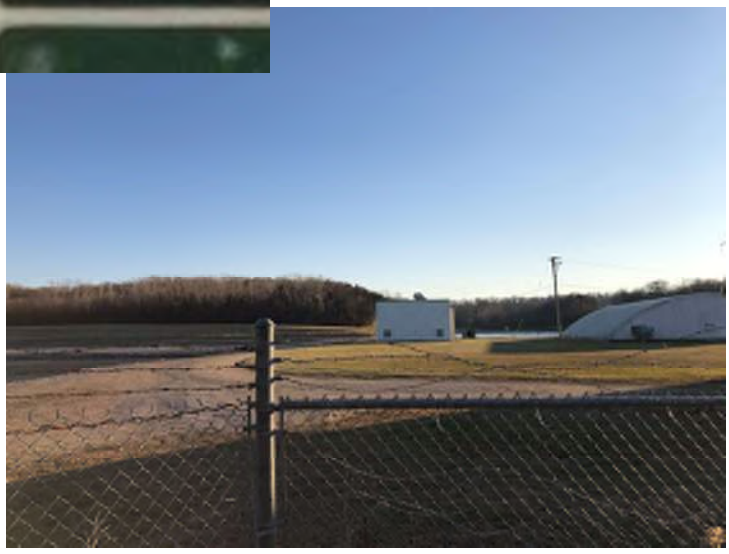

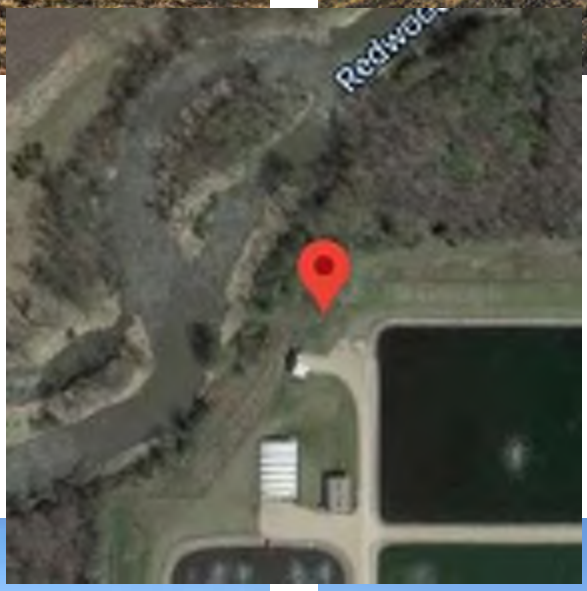
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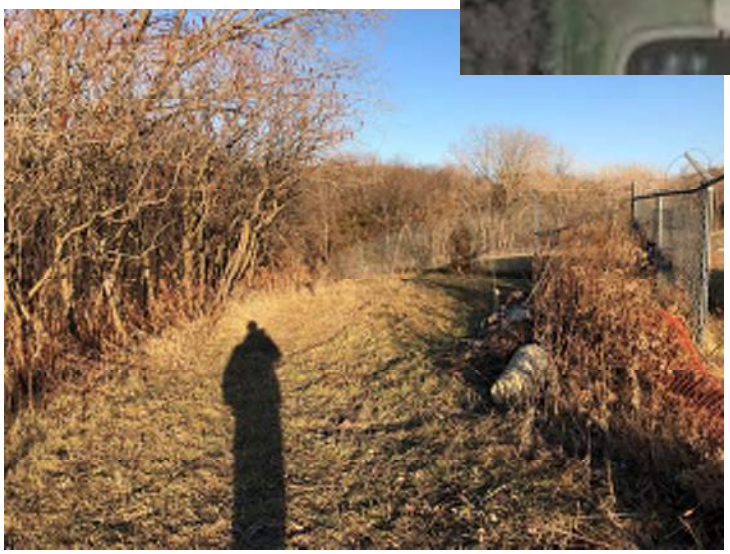

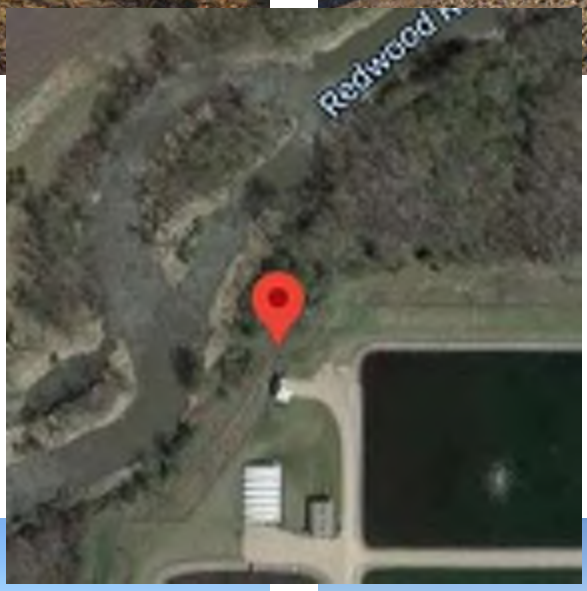
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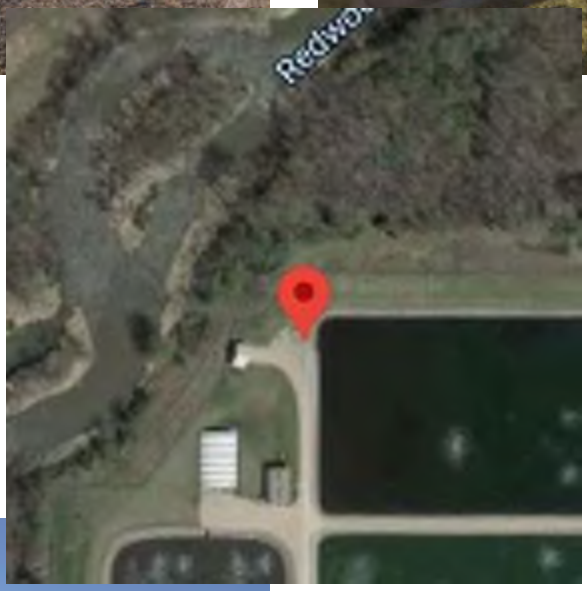

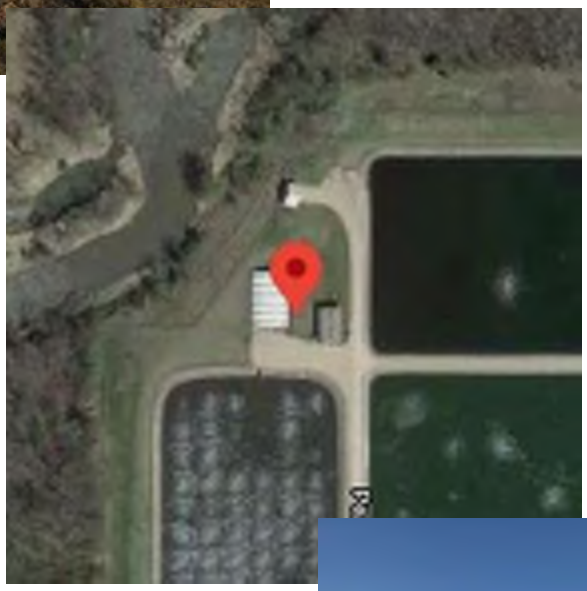

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

February 9, 2021

Ms. Teresa J. Burgess
Bolton & Menk, Inc.
1960 Premier Dr
Mankato, MN 56001-5900

RE: Bolton & Menk Project # 0M2.122673
Wastewater Treatment Facility Improvements
T113 R35 S31, Redwood Falls, Redwood County
SHPO Number: 2021-0801

Dear Ms. Burgess:

Thank you for the opportunity to review and comment on the above referenced project. Information received on January 13, 2021 has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800, pursuant to the provisions of the Memorandum of Understanding among the Minnesota Public Facilities Authority, the Minnesota Pollution Control Agency and the State Historic Preservation Office, and pursuant to the responsibilities given the State Historic Preservation Office by the Minnesota Historic Sites Act (Minn. Stat. 138.665-666) and the Minnesota Field Archaeology Act (Minn. Stat. 138.40).

We have reviewed the documentation included with your January 13th submittal, and based on information that is available to us at this time, we have determined that **no historic properties will be affected** by the project as it is currently defined.

Implementation of the undertaking in accordance with this finding, as documented, fulfills the agency's responsibilities under Section 106. If the project is not constructed as proposed, including, but not limited to, a situation where design changes to the currently proposed project diverts substantially from what was presented at the time of this review, the agency will need to reopen Section 106 consultation with our office pursuant to 36 CFR 800.5(d)(1).

Please contact Kelly Gragg-Johnson in our Environmental Review Program at kelly.graggjohnson@state.mn.us if you have any questions regarding our review of this project.

Sincerely,

Sarah J. Beimers
Environmental Review Program Manager

cc: Bill Dunn, Minnesota Pollution Control Agency

Appendix M: CWRF B3 SB 2030 Exemption Form

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

CWRF B3 SB 2030 exemption form

Clean Water Revolving Fund (CWRF) Program
Wastewater Projects
(Minn. Stat. § 216B.241, sub. 1-10 and 16B, sub. 1-4)

Instructions: If at least one of the "**Yes**" statements is checked, the project is considered to have completed these requirements and is not required to submit additional information to meet the Building, Benchmarks, and Beyond (B3) provisions of the Sustainable Building (SB) 2030 Guidelines (B3 SB 2030). Sign and send the completed form to the Minnesota Pollution Control Agency (MPCA) project engineer.

If the answer to **all of the statements is "No"**, the project will submit a preliminarily approved Facilities Plan [Minn. R. 7077.0272] to B3 SB 2030 Wastewater Treatment Plant Review. Sign and send the completed form to the MPCA project engineer.

Project information

Project name: Redwood Falls

MPCA review engineer: Abram Peterson MPCA project number: _____

Exempt criteria	Yes	No
1. The project is limited to environmental study.	☐	☒
2. The project is limited to planning and design.	☐	☒
3. The project is for emergency/disaster relief and/or protection.	☐	☒
4. The project is limited to minor modifications to an existing treatment facility.	☒	☐
5. The project is limited to modifications within a new or an existing building less than 10,000 square feet.	☐	☒
6. The project is limited to a new or existing collection system including lift stations.	☐	☒
7. The project is limited to pond system.	☒	☐
8. The project is limited to installation of a backup power generator.	☐	☒
9. The project is limited to a stormwater project	☐	☒

If "Yes" to any of 1- 9 above, please provide a brief written description of the project and complete the Certification Statement below.

The project adds tertiary filters to an existing pond system to meet phosphorus limits. It does not increase design flows or WWTP site footprint as it will be contained within the existing fenceline.

Certification statement

I certify that the information provided on this form is complete and accurate and that this project:

☒ Meets the exempt criteria established by the Minnesota Pollution Control Agency.

☐ Does not meet the exempt criteria and a preliminary approved Facilities Plan will be sent to the B3 SB 2030 Wastewater Treatment Plant Review

Project Representative or Professional Engineer

Print name: John Graupman

Organization: Bolton & Menk

Signature: John Graupman

Date (mm/dd/yyyy): 3/02/2022