October 2024

North Zumbro Sanitary Sewer District (NZSSD)

Volume 3:

Wanamingo Conveyance Facility Plan

WANAMINGO
MINNESOTA

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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.

Brandon Theobald, P.E.	2/27/24 Date	48229 License No.

This Facility Plan received MPCA Preliminary Approval on October 3, 2024. It has been recompiled to include the responses to MPCA comments and revised material in the appendix.

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1. Table of Contents

2. Executive Summary

2.1. Purpose

The cities of Goodhue, Pine Island, Wanamingo, and Zumbrota have wastewater treatment facilities (WWTFs) that are nearing the end of their life cycles and further deterioration of these facilities could limit growth and development opportunities for the communities.

An evaluation of the existing facilities concluded that centralized treatment will be the most economical and sustainable option for the communities to meet their current and future wastewater treatment needs compared to updating and keeping the four existing independent city WWTFs.

These four cities are in the planning stage of forming a new Sanitary District and centralized WWTF to serve their communities. The new district will be called the North Zumbro Sanitary Sewer District (NZSSD). The four cities will demolish their existing WWTFs and construct pumping stations to convey their wastewater to a new centralized WWTF in Zumbrota that will discharge to the North Fork Zumbro River.

The purpose of these facility plans is to document the design basis, cost, recommendations, and timeline for the NZSSD WWTF and conveyance projects.

2.2. Scope

The facility plans for the project are presented in a set of four volumes, one for each city. This plan (Vol. No. 3) covers the city-specific details for the project in Wanamingo.

The NZSSD District-wide project and city-specific details for the projects and alternatives in Goodhue, Pine Island, and Zumbrota are presented in Volumes No. 1, 2 and 4.

2.3. Design Capacity and Planning Period

NZSSD: Based on 2020 US Census counts, the combined population of the four cities is 9,853 people and has averaged 1.9% annual growth over the past twenty years.

The planning period for this project is twenty years (Design Year 2045). Design capacities are based on projected residential growth and industrial allocations provided by each city. Future growth for the combined populations of the four cities is projected to average 2.0% annually and includes the Prairie Island Indian Community in Pine Island. The combined Design Year 2045 population is projected to be 16,200 people.

The new WWTF will be designed to have an average wet weather capacity of 4.1 million gallons per day (MGD), which is a significant increase in the combined capacities of the four existing WWTFs of 2.326 MGD. The proposed WWTF site will also have room for future expansion which could double the capacity.

City of Wanamingo: The City of Wanamingo projects that its population will grow 1.1% annually from its current population of 1,113 people to 1,500 people in Design Year 2045.

The new Wanamingo pump station will be sized to accommodate this growth. The pump station will be designed to have a PIWW capacity of 1.116 MGD.

2.4. Treatment Process and Effluent Limits

Municipal wastewater from the four cities (including two significant industrial users, Land O' Lakes and Dairy Farmers of America) will be treated at the new WWTF.

Wastewater treatment at the new WWTF will include a flow retention basin, primary, secondary, and tertiary treatment, and UV disinfection. Biosolids will be disposed by land application to nearby agricultural fields.

Preliminary effluent limits for the new WWTF were issued by the Minnesota Pollution Control Agency (MPCA) in January 2024. The preliminary limits were as previously anticipated except for Phosphorus, which was more stringent than expected and added cost for tertiary treatment to the project. The preliminary limits may change before being finalized. MPCA could add a nitrate effluent limit. In anticipation of this, the consultant team is recommending a treatment unit capable of reducing effluent nitrate. The NZSSD also must submit an antidegradation report that may result in additional pollutants of concern becoming effluent limits. Any added treatment units and costs from this process will not be known until analysis and MPCA review has been completed.

2.5. Costs

The preliminary project cost for the new centralized WWTF is $83,300,000 based on 2024 construction costs plus 4% annual inflation to the year 2027. The preliminary project cost for the new conveyance systems is $28,000,000 using the same inflation basis. The total preliminary project cost is the sum of the WWTF and conveyance systems, totaling $111,300,000.

Operation and maintenance (O&M) costs for the WWTF are projected to be $961,000 per year. O&M for the conveyance systems are projected to be $163,000 per year. Adding operation and maintenance costs for a 20-year period, the net present worth cost of the new WWTF and conveyance systems is $133,780,000.

If the City of Wanamingo were to construct its new lift station, forcemain, and decommission the existing WWTF on its own, the cost would be $7,300,000. This specific number is important for funding possibilities such as the Point Source Implementation Grant (PSIG). PSIG can only be used by the individual cities for the projects located in their cities. Receipt of non-Capital Grant (Bonding Bill) funding, such as PSIG, would require reallocation of Bonding Bill money.

2.6. Funding

It is anticipated that the State of Minnesota will partially fund this project. In 2023 the State of Minnesota Bonding Bill included $10,000,000 for engineering and land acquisition. The 2024 allocation request is for an additional $44,800,000. A rounded value of $44,500,000 was used for a total of approximately $54,500,000. The remainder of the project will be funded by the NZSSD and other financial aid sources such as the

Clean Water State Revolving Fund. The State Bonding funding and NZSSD-funded portions of the project are presented below.

Table 1 State of Minnesota Bonding Bill and NZSSD-Funded Portions of Project

Item	Amount
WWTF Project	
Total WWTF Project Cost	$83,300,000
State of Minnesota Bonding Bill	**$40,790,000**
NZSSD-Funded	**$42,510,000**
Conveyance Project	
Total Conveyance Project Cost	$28,000,000
State of Minnesota Bonding Bill	**$13,710,000**
NZSSD-Funded	**$14,290,000**
Total Project	
Total Project	$111,300,000
State of Minnesota Bonding Bill (rounded)	**$54,500,000**
NZSSD-Funded	**$56,800,000**

2.7. Cost Allocation

Each member city will bear their proportional cost of the NZSSD-funded project. For preliminary planning in this Facility Plan, cost shares were allocated based on flows and organic loads from each city. The resultant capital and O&M cost shares are:

Table 2 Project Cost Shares for Member Cities

Item	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
WWTF Project					
Share %	8.0%	44.0%	9.0%	39.0%	100%
Amount	**$3,401,000**	**$18,704,000**	**$3,826,000**	**$16,579,000**	**$42,510,000**
Conveyance Project					
Share %	5.9%	42.5%	13.6%	38.0%	100%
Amount	**$847,000**	**$6,075,000**	**$1,936,000**	**$5,432,000**	**$14,290,000**
Total Project Cost Share Amount					
Amount	**$4,248,000**	**$24,779,000**	**$5,762,000**	**$22,011,000**	**$56,800,000**

Table 3 O&M Cost Shares for Member Cities

Item	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
WWTF O&M					
Share %	8.0%	44.0%	9.0%	39.0%	100%
Amount / year	**$77,000**	**$423,000**	**$86,000**	**$375,000**	**$961,000**
Conveyance O&M					
Share %	5.9%	42.5%	13.6%	38.0%	100%
Amount / year	**$10,000**	**$69,000**	**$22,000**	**$62,000**	**$163,000**
Total O&M Cost Share Amount					
Amount / year	**$87,000**	**$492,000**	**$108,000**	**$437,000**	**$1,124,000**

2.8. Schedule

2023: Bonding bill and funding planning, legislature presentations

2024: Facility planning, public hearings and input, agency review, land acquisition, and start of preliminary design

2025: Start of final design

2026: Complete final design, begin construction depending on availability of bonding bill funding

2027: Sanitary District formation complete (Date may vary based on input from the NZSSD Executive Committee, Cities, and State of Minnesota)

2028: Complete construction

2029: 1-year startup period

2030: Demolition of old facilities

2.9. Recommendations

It is recommended that:

- The four member cities review and approve this Facility Plan.
- The four member cities continue with forming the North Zumbro Sanitary Sewer District, proceed with acquiring the WWTF site, and building the new centralized WWTF and conveyance projects.
- Of the four alternatives presented in this facility plan for the new centralized WWTF, it is recommended that NZSSD proceed with Alternative 1, which is the Oxidation Ditch secondary treatment alternative. Oxidation ditches are within 2% of the lowest-cost alternative, they are flexible for variable flow and loading conditions, and are a non-proprietary technology proven to perform in Minnesota climate conditions. Several installations are in operation in nearby Southeast Minnesota communities.
- It is recommended that each member city apply for funding assistance through the State of Minnesota's Clean Water Revolving Fund, Point Source Implementation Grant, and other sources as appropriate.
- It is recommended that NZSSD review the cost share splits after funding sources have been secured and reallocate fundable sources as appropriate.

3. Introduction

3.1. Project Background

A regional approach to collecting and treating wastewater began with staff members from the cities of Goodhue and Zumbrota discussing their wastewater treatment needs. From the first discussions it was discovered that both communities were facing similar issues with their current wastewater treatment facilities. Large capital costs for improvements to the facilities and the possibility of facing tighter permit limits led to discussions about alternatives to conventional methods of providing wastewater treatment for their individual communities.

One of the options explored involved the inclusion of the cities of Pine Island, Wanamingo, and Mazeppa into the discussion. Each of these communities had wastewater treatment facilities that were nearing the end of their life cycles and it was perceived that further deterioration of their facilities could limit growth and development opportunities for the communities.

Since then, in a collaborative effort the communities of Goodhue, Pine Island, Wanamingo and Zumbrota have been evaluating the expected costs and feasibility of a regional sanitary sewer district to process the municipal wastewater.

Benefits of a regional facility include:

- gained efficiencies due to an economy of scale
- lower cost per gallon for treatment
- staff efficiencies and possible better wastewater operator retention
- one single point of discharge into a public receiving water
- one wastewater discharge permit to manage and comply with
- decreased long term financial pressure on each of the communities.

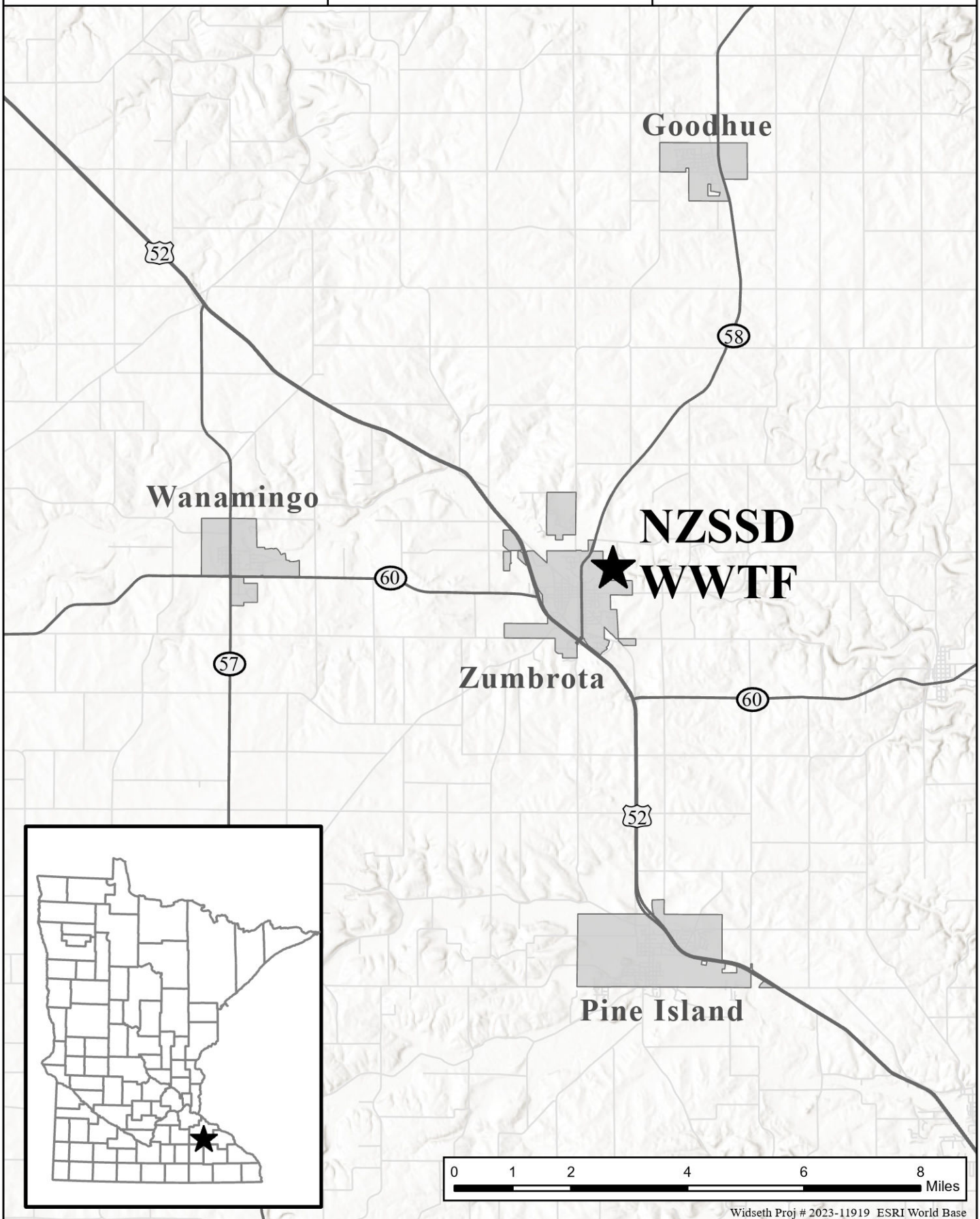
The joint effort to form a Sanitary District is the best long-term solution for the communities involved and will result in cost savings and efficiencies over the long term as well as work to improve the water quality of the Zumbro River.

3.2. North Zumbro Sanitary Sewer District

Goodhue, Pine Island, Wanamingo, and Zumbrota are currently forming a sanitary district called the North Zumbro Sanitary Sewer District.

The currently envisioned regional system consists of a new centralized wastewater treatment facility (WWTF) located in Zumbrota and pumping stations located in each of the four member cities to convey (pump) wastewater to the new WWTF. Figure 3-1 below shows the location of the member cities and the proposed general location for the new centralized WWTF.

NZSSD WWTF	NZSSD Location Map	Figure 3.1



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The centralized WWTF, four pump stations, and four forcemains will comprise the sanitary assets of the North Zumbro Sanitary Sewer District. Management of these facilities will become a function of the NZSSD Joint Powers Board and ultimately the new District after its creation.

Cities will still own and operate their own city sanitary sewer collection systems. Gravity interceptor sewers will need to be built in each city to convey wastewater to the new pump stations. These proposed gravity interceptors will be owned and operated by each city.

With ownership of each city's sanitary sewer collection system being retained by each city, it will remain the responsibility of each city to manage new and existing sewer connections. New industrial users will be managed by the Cities and the District. A determination regarding who will be party to future SIU agreements has not been finalized.

3.3. Consulting Engineers

The NZSSD has hired a consulting engineering team consisting of WHKS & Co., ISG, and Widseth, for this project. This consulting team will provide feasibility analysis, preliminary and final design services for the proposed centralized WWTF, and the proposed city conveyance projects.

3.4. Facility Plan Scope

This facility plan covers the City of Wanamingo's proposed construction of a new pump station and forcemain, and demolition of Wanamingo's existing WWTF.

Each of the other cities will produce their own facility plan to cover the details of their proposed conveyance projects.

The facility plans for the project are listed below and the Minnesota Pollution Control Agency (MPCA) project numbers are listed in parentheses:

- North Zumbro Sanitary Sewer District Wastewater Treatment Facility and Zumbrota Conveyance Facility Plan (MPCA #280812)
- Pine Island Conveyance Facility Plan (MPCA #280825)
- **Wanamingo Conveyance Facility Plan (MPCA #280813)**
- Goodhue Conveyance Facility Plan (MPCA #280820)

3.5. Planning Period

Wastewater treatment facilities are often a significant capital investment for a community and having adequate wastewater treatment capacity can directly impact on a community's ability to accommodate population and industrial growth. For this reason, wastewater treatment facilities are often designed with a planning period of 20 years. For the NZSSD WWTF, the planning period is 20 years, and the design year is 2045.

4. Design Flows

4.1. Format of this Section

This section provides a summary for the City of Wanamingo's Design Year 2045 flows:

- Average Daily Flow (AVG)
- Average Dry Weather (ADW)
- Average Wet Weather (AWW)
- Max Wet Weather (MWW)
- Peak Instantaneous Wet Weather (PIWW)
- Peak Hourly Wet Weather (PHWW)

This section includes the design flows of the other cities to provide context. Please refer to the NZSSD WWTF Facility Plan for analysis of historic flow data and future flow projections for all cities in more detail.

Design loads for $CBOD_5$, TSS, TKN, and TP are presented in the NZSSD WWTF Facility Plan.

4.2. Definitions

Average Daily Flow (AVG, Average Day) is the average flow in a continuous 12-month period. Historic data presented are the average annual flows measured at each city's existing WWTF.

Average Dry Weather (ADW) is the lowest average flow in a continuous 30-day period. Historic values were calculated by averaging each years' December, January, and February flows between 2013-2023.

Average Wet Weather (AWW) is the highest average flow in a continuous 30-day period. Historic data presented are the maximum 30-day value (max month) measured each year between 2013-2023.

Maximum Wet Weather (MWW, Max Day) is the total maximum flow received in any 24-hour period when groundwater is high, and runoff is occurring. Historic data presented are the maximum daily values measured each year between 2013-2023 after removing extreme outliers.

Peak Instantaneous Wet Weather Flow (PIWW) is the maximum flow received during one (1) hour when the groundwater is high, runoff is occurring from the 25-year storm, and the domestic, commercial, and industrial flows are at their peak. Historic data do not exist but historic flows were estimated and used as a basis for future projections.

Peak Hourly Wet Weather Flow (PHWW, Peak Hour) is the maximum flow received during one (1) hour when the groundwater is high, runoff is occurring from the 5-year storm, and the domestic, commercial, and industrial flows are at their peak.

PIWW and PHWW records do not exist for all the cities, so an investigation was conducted to produce approximate historic numbers. The investigation reviewed the existing treatment plant and interceptor sewer capacities and chart recorder logs, analyzed lift station pump curves, obtained histories of bypassing and surcharge through interviews with operators, calculated approximations of peak flows using documented MWW flows, and reviewed reference values from design standards and textbooks. The most reasonable values from the investigation were used as each city's historical PIWW and PHWW.

Million Gallons per Day (MGD) is a measure of flow. Daily flows (AVG, ADW, AWW, MWW) use it as the amount of flow received in a 24-hour period. Peak flow rates (PIWW, PHWW) use it as a flow rate during a 1-hour period.

Gallon Per Capita Per Day (GPCPD) is a measure of flow produced by each person on a per capita basis.

4.3. Population

All loading projections use historical records and the cities' residential and industrial growth projections, which are summarized in Table 4.

Based on the 2020 US Census count, the population of Wanamingo was 1,113 people. Historically, the city's population has averaged 0.5% annual growth based on US Census counts over the past twenty years.

The planning period is twenty years. The Design Year is 2045. Design capacity is based on projected residential growth and industrial allocations as provided by the city. Wanamingo's future growth is projected at 1.1% annually and their Design Year 2045 population is projected at 1,500 people (rounded). Wanamingo does not project significant industrial users within the planning period.

Table 4 Population Growth and Industry for Design Year 2045

City	Avg. Pop. 2010-20	Pop. 2020	Historic Growth	Future Growth	Design Pop. 2045	Existing Industries	Ind. Growth Projection
Goodhue	1,211	1,245	2.4%	1.5%	1,800		
Pine Island	3,516	3,769	2.4%	2.5%	7,500	LO'L	LO'L + reserve
Wanamingo	1,100	1,113	0.5%	1.1%	1,500		
Zumbrota	3,489	3,726	1.5%	1.5%	5,400	DFA	DFA + reserve
Total	**9,316**	**9,853**	**1.9%**	**2.0%**	**16,200**		

4.4. Design Year 2045 Flows

Design Year 2045 flows are summarized below.

4.4.1. Average Annual Flow (AVG)

In Wanamingo, the historic average annual (AVG) flow for the historic lookback period was 0.147 MGD, which is 134 gallons per person per day (GPCPD) on a per capita basis. The Design Year 2045 AVG flow projections assumed that existing systems would maintain the historic flow and per-capita rates, and the per capita flow for new areas will

be 100 GPCPD. The design flows for Wanamingo are a summation of the historic flows plus the projected growth rates for residential users. The resultant Design Year 2045 AVG flow for Wanamingo is 0.182 MGD as shown in Table 5.

Table 5 AVG Average Daily Flow Design Year 2045, MGD

City	Historic Residential AVG	Historic / Growth GPCPD	Design 2045 Residential AVG	Historic Industrial AVG	Design 2045 Industrial AVG	Design 2045 AVG
Goodhue	0.066 MGD	54 / 100	0.122 MGD	0	0	0.122 MGD
Pine Island	0.309 MGD	88 / 100	0.681 MGD	0.040 MGD	0.350 MGD	1.033 MGD
Wanamingo	0.147 MGD	134 / 100	0.182 MGD	0	0	0.182 MGD
Zumbrota	0.435 MGD	125 / 100	0.603 MGD	0.261 MGD	0.695 MGD	1.298 MGD
Total	**0.956 MGD**	**103 / 100**	**1.588 MGD**	**0.301 MGD**	**1.045 MGD**	**2.633 MGD**

4.4.1. Average Dry Weather Flow (ADW)

Historic residential average dry weather (ADW) flow was 0.103 MGD (94 GPCPD). Like AVG, the Design Year 2045 ADW flow projections assumed that existing systems maintain their historic flow and per-capita rates, and the per capita flow for new areas will be 100 GPCPD. The resultant Design Year 2045 ADW flow for Wanamingo is 0.138 MGD, shown in Table 6.

Table 6 ADW Average Dry Weather Flow Design Year 2045, MGD

City	Historic Residential ADW	Historic / Growth GPCPD	Design 2045 Residential ADW	Historic Industrial ADW	Design 2045 Industrial ADW	Design 2045 ADW
Goodhue	0.0646 MGD	53 / 100	0.121 MGD	0	0	0.122 MGD
Pine Island	0.249 MGD	71 / 100	0.621 MGD	0.040 MGD	0.350 MGD	0.970 MGD
Wanamingo	0.103 MGD	94 / 100	0.138 MGD	0	0	0.138 MGD
Zumbrota	0.426 MGD	122 / 100	0.595 MGD	0.197 MGD	0.695 MGD	1.290 MGD
Total	**0.843 MGD**	**91 / 100**	**1.475 MGD**	**0.237 MGD**	**1.045 MGD**	**2.520 MGD**

4.4.1. Average Wet Weather Flow (AWW)

Historic residential average wet weather (AWW) flow was 0.346 MGD (315 GPCPD). The Design Year 2045 AVG flow projections assumed that existing City systems maintain their historic flow and per-capita rates, and the per capita flow for new areas in Wanamingo will be 150 GPCPD based on modern sanitary construction materials and plumbing codes. The resultant Design Year 2045 AWW flow for Wanamingo is 0.400 MGD in Table 7.

Table 7 AWW Average Wet Weather Flow Design Year 2045, MGD

City	Historic Residential AWW	Historic / Growth GPCPD	Design 2045 Residential AWW	Historic Industrial AWW	Design 2045 Industrial AWW	Design 2045 AWW
Goodhue	0.091 MGD	75 / 100	0.150 MGD	0	0	0.150 MGD
Pine Island	0.707 MGD	201 / 150	1.260 MGD	0.046 MGD	0.350 MGD	1.610 MGD
Wanamingo	0.346 MGD	315 / 150	0.400 MGD	0	0	0.400 MGD

Zumbrota	0.953 MGD	273 / 150	1.210 MGD	0.393 MGD	0.695 MGD	1.900 MGD
Total	**2.097 MGD**	**225 / 144**	**3.020 MGD**	**0.439 MGD**	**1.045 MGD**	**4.100 MGD**

4.4.1. Max Wet Weather (MWW)

Historic residential max wet weather (MWW) flow was 0.734 MGD (667 GPCPD). Future projections assumed that existing areas maintain their historic flows and per capita rates, i.e., no I&I reduction in existing areas is included in future projections. Future projections assumed per capita residential flows in new areas will be lower than in existing areas, based on modern sanitary construction materials and plumbing codes. The assumed per capita rate for new areas is 250 GPCPD for Wanamingo. The resultant Design Year 2045 MWW flow for Wanamingo is 0.822 MGD, shown in Table 8.

Table 8 MWW Max Wet Weather Flow Design Year 2045 (Transport), MGD

City	Historic Residential MWW	Historic / Growth GPCPD	Design 2045 Residential MWW	Historic Industrial MWW	Design 2045 Industrial MWW	Design 2045 MWW
Goodhue	0.179 MGD	148 / 148	0.262 MGD	0	0	0.262 MGD
Pine Island	1.362 MGD	387 / 250	2.292 MGD	0.046 MGD	0.350 MGD	2.642 MGD
Wanamingo	0.734 MGD	667 / 250	0.822 MGD	0	0	0.822 MGD
Zumbrota	1.798 MGD	515 / 250	2.218 MGD	0.424 MGD	0.695 MGD	2.913 MGD
Total	**4.073 MGD**	**437 / 241**	**5.594 MGD**	**0.470 MGD**	**1.045 MGD**	**6.639 MGD**

4.4.2. Peak Instantaneous & Peak Hourly Wet Weather (PIWW, PHWW)

Estimated historic residential Peak Instantaneous Wet Weather Flow (PIWW) was 0.976 MGD. The historic ratio of peak to average flows (peak factor) for Wanamingo was 6.6.

Future projections assume that existing areas maintain their historic peak factors, i.e., no I&I reduction in the existing systems is included in future projections. Future projections assume that new areas will be drier based on modern sanitary construction materials and plumbing codes. The assumed peak factor for new areas is 4.0 applied to 100 GPCPD based on the textbook reference values in Metcalf & Eddy (5th Ed.). These are standard textbook planning values based on population.

The resultant Design Year 2045 PIWW flow for Wanamingo is 1.116 MGD, shown in Table 9.

Table 9 PIWW Peak Instantaneous Wet Weather Flows for Design Year 2045, MGD

City	Historic Residential PIWW Est.	Historic / Growth Peak Factor	Design 2045 Res. PIWW	Historic Ind. MWW	Design 2045 Ind. MWW	Design 2045 PIWW
Goodhue	0.264 MGD	4.0 / 4.0	0.488 MGD	0	0	0.488 MGD
Pine Island	1.738 MGD	5.6 / 3.8	3.152 MGD	0.046 MGD	0.350 MGD	3.502 MGD
Wanamingo	0.976 MGD	6.6 / 4.0	1.116 MGD	0	0	1.116 MGD
Zumbrota	1.798 MGD	4.1 / 3.8	2.436 MGD	0.424 MGD	0.695 MGD	3.131 MGD
Total	**4.776 MGD**	**5.2 / 3.8**	**7.192 MGD**	**0.470 MGD**	**1.045 MGD**	**8.237 MGD**

The estimated historic PHWW flow was 0.881 MGD (6.0 peak factor). Like PIWW, PHWW assumes existing areas will maintain their existing flows and peak factors, and peak factor for new areas will be 4.0 applied to 100 GPCPD. The resultant Design Year 2045 PHWW for Wanamingo is 1.021 MGD, shown in Table 10.

Table 10 PHWW Peak Hour Wet Weather Flows for Design Year 2045, MGD

City	Historic Residential PHWW Est.	Historic / Growth Peak Factor	Design 2045 Res. PHWW	Historic Ind. MWW	Design 2045 Ind. MWW	Design 2045 PHWW
Goodhue	0.247 MGD	3.7 / 4.0	0.471 MGD	0	0	0.471 MGD
Pine Island	1.591 MGD	5.1 / 3.8	3.005 MGD	0.046 MGD	0.350 MGD	3.355 MGD
Wanamingo	0.881 MGD	6.0 / 4.0	1.021 MGD	0	0	1.021 MGD
Zumbrota	1.176 MGD	2.7 / 3.8	1.814 MGD	0.424 MGD	0.695 MGD	2.509 MGD
Total	**3.895 MGD**	**4.5 / 3.8**	**6.311 MGD**	**0.470 MGD**	**1.045 MGD**	**7.356 MGD**

4.5. Hydraulic Capacity for Transport

Hydraulic capacity design criteria for Wanamingo's proposed conveyance are presented in Table 11.

Table 11 Hydraulic Capacity for Transport, Design Year 2045, MGD

Parameter	Type	Units	Value
Average Dry Weather ADW Existing	Monthly Avg.	MGD	0.103
Average Dry Weather ADW Design 2045	Monthly Avg.	MGD	0.138
Average Wet Weather AWW Design 2045	Monthly Avg.	MGD	0.400
Max Wet Weather MWW Design 2045	Max Day	MGD	0.822
Peak Instant. Wet Weather PIWW Design 2045	Max Hour	MGD	1.116

All design flows shown here are transport flows. The proposed retention basin at the new centralized WWTF will have no impact to pumping and forcemain capacity in the conveyance systems because the flow retention basin will be downstream of all conveyance.

5. Proposed Location

Location of the proposed Wanamingo pumping station is at the existing Wanamingo WWTF site.

Location of the proposed Wanamingo conveyance project, to convey wastewater from the Wanamingo pump station to the NZSSD WWTF, is shown in Figure 5-1, Figure 5-2, and Figure 5-3 on the following pages.

Wanamingo Conveyance	Location Map	Figure 5.1

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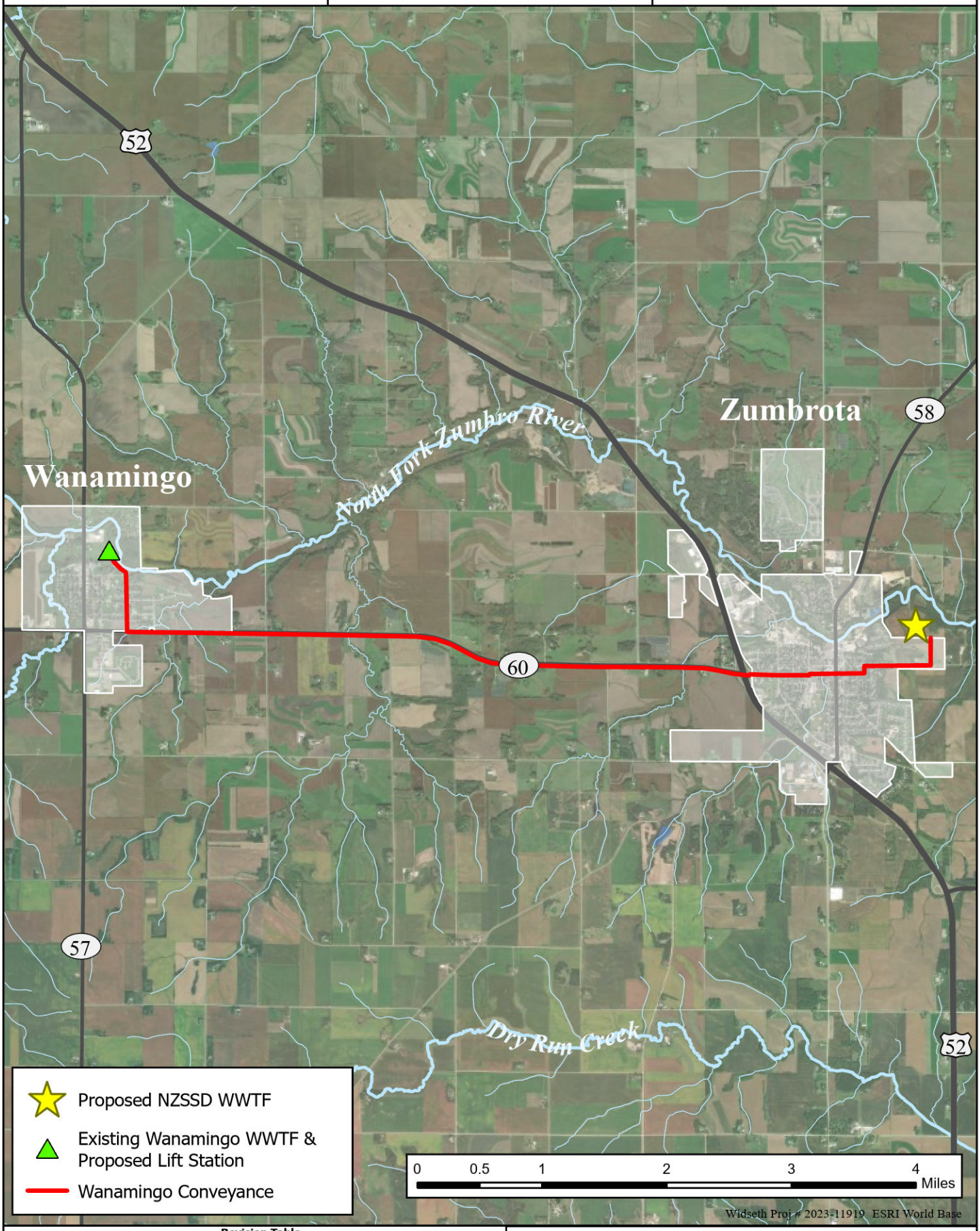
Wanamingo Conveyance	Preliminary Plan	Figure 5.2



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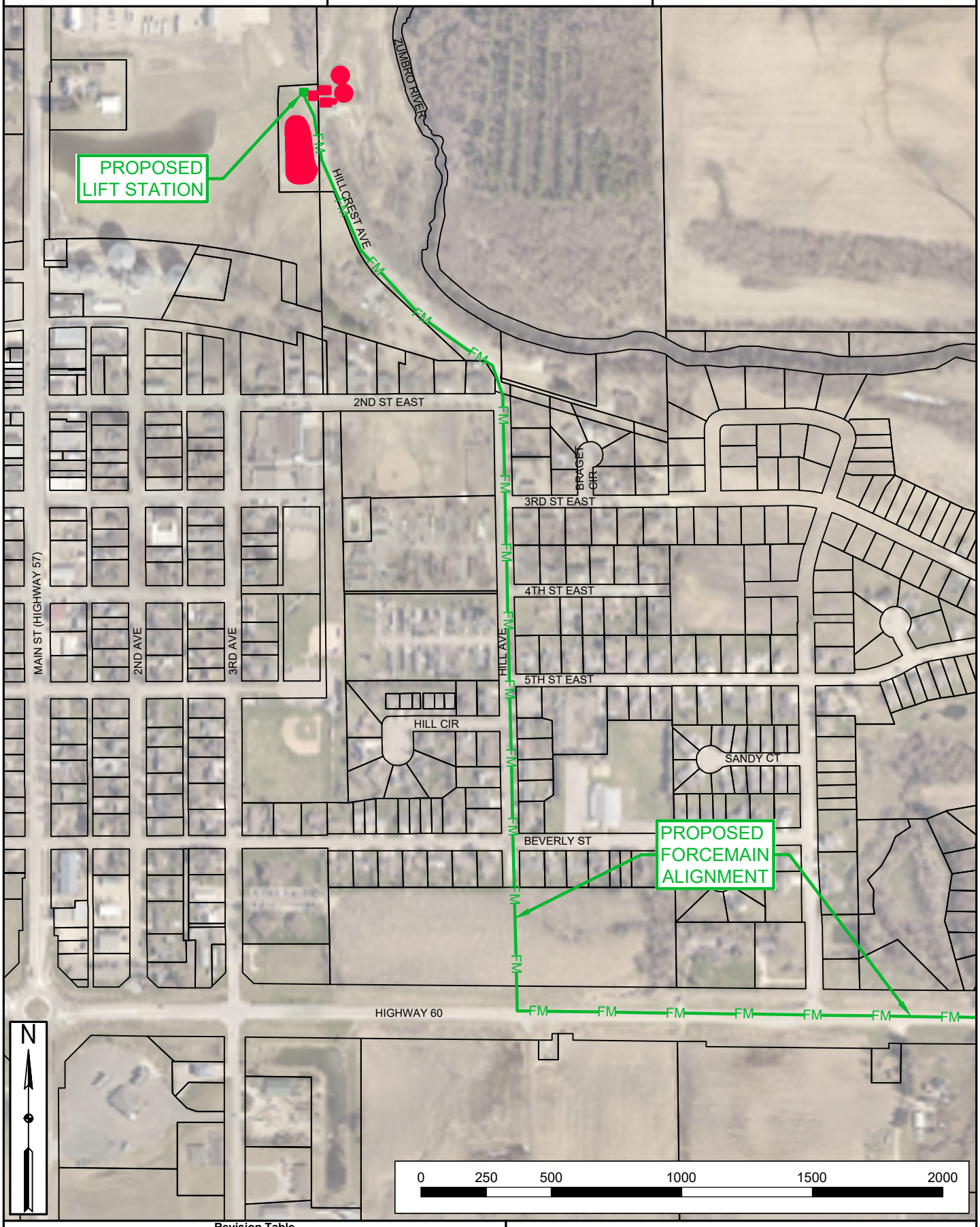
Wanamingo Conveyance	Forcemain Alignment	Figure 5-3



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6. Proposed Wastewater Pumping Station

6.1. General Considerations

6.1.1. Flooding

Lift Station structure including all electrical and mechanical equipment will be located and set at an elevation such that they are protected from a 100 year flood.

6.2. Design

6.2.1. Type

Wastewater Pumping Station will be a submersible lift station with a wet well and separate valve pit structure.

6.2.2. Structures

6.2.2.1. Separation

Wet well and valve pit will be separate structures separated a minimum of ten feet.

6.2.2.2. Equipment Removal

Removal of pumps shall be accommodated utilizing a truck mounted hoist.

6.2.3. Construction Materials

Wet well and valve pit structures will be constructed of cast in place concrete and or precast MH Structures. To minimize corrosion due to hydrogen sulfide gases the inside of the wet well will be coated with a spray on coating system and all ductile iron piping, fittings and valves will be painted.

6.3. Pumps

6.3.1. Firm Capacity

Lift station shall be supplied with two or three submersible pumps with each pump sized to meet the Peak Instantaneous Wet Weather Flow (PIWW). Each pump will be sized for 775 gallons / minute at 266' Total Dynamic Head.

6.3.2. Pump Openings

Pumps will be capable of passing a solid sphere of at least 3 inches in diameter. Pump discharge opening will be at least 4 inches in diameter.

6.3.3. Pumping Rates

The pumps will be provided with Variable Frequency Drives. Pumping rates will be adequate to provide a minimum velocity of 2 ft per second in the proposed forcemain.

6.4. Valves

6.4.1. Locations

On the discharge line of each pump inside the valve pit will be a plug valve which is manually operated with a handwheel and a check valve. Check valve will be placed

between the plug valve and the pump. Valves will be placed in a horizontal position approximately 2' above the valve pit floor to allow for easy access and maintenance.

6.5. Wet Wells

6.5.1. Size

In sizing of the wet well, design fill time and minimum pump cycle times will be considered. The effective volume of the wet well will be based on a design average flow over a 12 month period with a filling time not to exceed 30 minutes. The pump manufacturers duty cycle recommendations will be utilized in selecting the minimum cycle time.

6.6. Emergency Operation

6.6.1. Emergency Backup Generator

See Chapter 14 Electrical, Alarms and Supervisory Control and Data Acquisition.

6.7. Corrosion Protection for Lift Stations

To minimize corrosion due to hydrogen sulfide gases the inside of the wet well will be coated with a spray on coating system and all ductile iron piping, fittings and valves will be painted

7. Proposed Force Main

A forcemain needs to be extended from the proposed pump station at the existing Wanamingo WWTF to the proposed NZSSD WWTF in Zumbrota. The proposed forcemain route is shown in Figure 13-1 on page 30. The length of the proposed forcemain is approximately 38,500 linear feet.

The forcemain will be installed within public right of way where possible. Utility easements will be acquired where forcemain needs to be installed outside of public right of way.

7.1. Velocity and Diameter

Ten States Standards requires minimum 4 inch forcemain diameter and recommends a minimum forcemain velocity of 2 feet per second to cleanse solids from the pipe and maximum velocity of 8 feet per second to avoid high head loss and protect valves. The proposed forcemain will be 9.87 inch inside diameter pipe with a velocity of 3.25 feet per second at the proposed lift station design flow rate of 775 gallons per minute.

7.2. Air and Vacuum Relief Valves

Air valves will be installed at high points and maximum one half to three quarter mile intervals to allow air to escape the forcemain. The air valves will be installed in manholes for access to maintain and replace the air valves.

7.3. Pipe and Design Pressure

The proposed forcemain pipe will be 10" AWWA C900 DR 18 PVC pipe with a 235 pound per square inch pressure rating. The inside diameter of 10 inch AWWA C900 DR 18 pipe is 9.87 inches.

7.4. Special Construction

Chapters 10 and 11 of this report include discussion regarding special construction considerations for the proposed forcemain.

7.5. Identification

The American Public Works Administration (APWA) has established a uniform utility color code used for marking and identifying utilities. The uniform color for sanitary sewer utilities is green. Green tracer wire, tracer wire access stations and marker posts will be installed along the forcemain for identification as a sanitary sewer utility.

7.6. Leakage Testing

The forcemain will be leak tested in accordance with the City Engineers Association of Minnesota (CEAM) standards. CEAM requires hydrostatic pressure testing at two times

the design operating pressure, but not less than 100 pounds per square inch, for a period of one hour. The requirement for a passing test is a maximum pressure drop of 5 pounds per square inch over the duration of the test.

7.7. Maintenance Considerations

Isolation valves will be installed at key locations along the forcemain to allow segments of the forcemain to be removed from service for maintenance or repairs with draining excessive lengths of the forcemain.

7.8. Cover

The proposed forcemain will be installed with a minimum of 7 ½ feet of ground cover to prevent freezing where possible. The forcemain will be insulated at locations where 7 ½ feet of ground cover cannot be achieved and other locations where the potential for freezing exists such as storm sewer crossings.

8. Proposed Interceptor Sewer

The proposed Wanamingo lift station will be located next to the headworks of the existing Wanamingo WWTF. The city has an existing 21”-diameter gravity interceptor sewer leading to the headworks. The existing interceptor sewer is in good condition with adequate capacity, so no additional interceptor sewer construction will be needed. The end point of the existing interceptor sewer will be modified to connect to the new lift station, details for which will be included in final design of the lift station and forcemain project.

9. Proposed Manholes

No additional gravity interceptor manhole construction will be needed. Details for connecting to the new lift station will be included in final design of the lift station and forcemain project.

10. Sewers/Forcemains in Relation to Streams

10.1. Location of Sewers in Streams

The proposed forcemain will cross several unnamed streams between Wanamingo and Zumbrota. The proposed stream crossings will comply with Ten States Standards cover and alignment requirements. Utility Crossing Licenses will be needed from the Minnesota Department of Natural Resources (DNR) for forcemain crossings of any public waters identified on DNR Public Water Inventory maps.

10.2. Construction

The proposed stream crossings will be installed by trenchless directional drilling methods. Construction of the crossings will comply with Ten States Standards stream crossing construction and erosion requirements.

11. Protection of Water Supplies

The proposed forcemain will pass by numerous homes with private wells. In addition, the forcemain with pump station starts in Wanamingo which has municipal wells. Consideration must be given to wells in the area.

To protect wells, Minnesota Rules under Chapter 4725 has isolation distance for wells. The isolation distance from a sanitary sewer pipe must be a minimum of 50 feet from a private or municipal well. If the well is a sensitive water supply well, the isolation distance is doubled. A sensitive well is a well with less than 50 feet of watertight casing and which is not cased below a confining layer or confining materials of at least 10 feet of thickness.

Most of the wells along the proposed alignment are over 150 feet deep. A few wells are between 59 and 140 feet deep. Some of the shallow wells may meet the definition of sensitive wells.

The City of Wanamingo has two municipal wells. Well #3 (Unique Well No. 489233) is the primary well and is 600 feet deep. Well #2 (Unique Well No. 218585) is an emergency well and is 590 feet deep. Both wells are completed in bedrock (Jordan Sandstone and a few feet of the underlying St. Lawrence Formation in Well #3). The municipal wells are a few blocks west of the proposed forcemain alignment but are not in the vicinity of the proposed pump station. The forcemain alignment passes through the Wellhead Protection Area (WPA) and Drinking Water Supply Management Area (DWSMA) for the City of Wanamingo, which is listed as having low vulnerability, as well as the DWSMA for the City of Zumbrota, which is listed as having low to moderate vulnerability.

If there is a situation where a 50-foot isolation distance is not possible, there is a variance process that could be investigated. A variance is unlikely if the original well construction cannot be verified.

11.1. Separation from Watermains

The forcemain from Wanamingo will encounter some watermain within Wanamingo and Zumbrota city limits. To protect the water supply there are isolation distances between sanitary sewer and forcemains from watermain.

Ten State Standards require that a sanitary sewer be placed at least 10 feet horizontally from any watermain. The standards also require a minimum of 18 inches of vertical separation from the sanitary sewer and watermain.

12. Site Evaluation

12.1. Sites and Alignments Considered

12.1.1. Pump Station

The City of Wanamingo has a sanitary sewer at the WWTF. A new pump station will need to be constructed at the WWTF site.

12.1.2. Forcemain

The forcemain needs to be extended from Wanamingo to Zumbrota. This will involve constructing the forcemain in city streets in Wanamingo and Zumbrota. The forcemain will also cross Highway 60 and TH 52. The forcemain will follow Hwy 60 to Zumbrota. The proposed forcemain route is shown in Figure 13-1 on page 30.

12.2. Present and Future Landuse

12.2.1. Pump Station

The pump station is proposed to be constructed on the WWTF site. No change in land use is proposed.

12.2.2. Forcemain

The forcemain will primarily follow existing public right of way. This will require a permit from the local authority.

12.3. Odors

12.3.1. Pump Station

The pump station will be located on the WWTF site. No change in odors issues is expected.

12.3.2. Forcemain

The forcemain is a pressure system. No odors are expected to be generated from the forcemain.

12.4. Accessibility and Topography

12.4.1. Pump Station

The pump station will be constructed at the existing WWTF site so there will be no access issues. The site is relatively flat in the proposed pump station area.

12.4.2. Forcemain

The forcemain will be constructed along existing road right of ways. This will allow access to the forcemain and air release manholes. The topography is significant between Wanamingo and Zumbrota. At Wanamingo the ground elevation is approximately 1105. At the high point between the communities the elevation is at 1185 and then falls to an elevation of 1015 at the WWTF site in Zumbrota.

12.5. Flood Considerations

12.5.1. Pump Station

The pump station will be near the North Fork Zumbro River, but outside of the 100-year flood plain. The pump station will be in a zone of minimal flood hazard.

12.5.2. Forcemain

The forcemain will start at the pump station in Wanamingo. The forcemain will not be in the 100-year flood plain of the North Fork Zumbro River. A short section of the forcemain will cross the 100-year flood plain of Bitter Creek in Zumbrota.

12.6. Geologic Considerations

12.6.1. Pump Station

The pump station will be constructed next to the existing WWTF. No bedrock was encountered with construction of the WWTF. The depth to bedrock (Platteville Formation) at this location is approximately 35-40 feet.

12.6.2. Forcemain

Bedrock depth is variable between Wanamingo and Zumbrota, ranging from approximately 20 feet to 250 feet, but is generally found at depths of 30-50 feet along the proposed forcemain route. Bedrock units include the Platteville Formation, Decorah Shale, St. Peter Sandstone, and Shakopee Formation (Prairie du Chien Group). Although the region is prone to active karst conditions, no sinkholes or other surface karst features have been identified along the proposed alignment, which is characterized as having low to moderate sinkhole probability.

12.7. Protection of Groundwater

The groundwater considerations are addressed in Chapter 11.

12.8. Soil Types

12.8.1. Pump Station

Soils in the vicinity of the pump station consist of very deep, well drained silt loam to very deep, excessively drained sandy loam over sandy and gravelly outwash deposited on stream terraces. Slopes generally range from 0 to 3 percent.

12.8.2. Forcemain

Soils along the proposed forcemain alignment range from very deep, poorly drained clay and silt loam to very deep, excessively drained sandy loam. These soils were developed on drainageways, till plains, flood plains, stream terraces, valley sides, interfluves, and hillslopes. Parent material includes loess, alluvium, outwash, and till. Slopes generally range from 0 to 12 percent but may be as high as 45 percent on valley sides. Depth to groundwater is fairly shallow (0-20 feet below land surface) over most of the proposed alignment, with some deeper areas (40-50 feet below land surface) interspersed.

12.9. Highway Crossings

12.9.1. Pump Station

The pump station will be constructed on City-owned property.

12.9.2. Forcemain

The proposed forcemain route, shown in Figure 13-1 on page 30, will require numerous crossings of highways. Normally these crossings will include a permit from the road authority. The forcemain will need to be in a steel or HDPE casing under the roadway.

Along most of the forcemain route, the forcemain will be in a road right of way. A permit will be required for construction in this right of way. The forcemain will need to be outside the inslope of the road.

12.10. Land Availability

12.10.1. Pump Station

The pump station is proposed to be located on property owned by the City of Wanamingo. It is expected the City will provide property for the pump station.

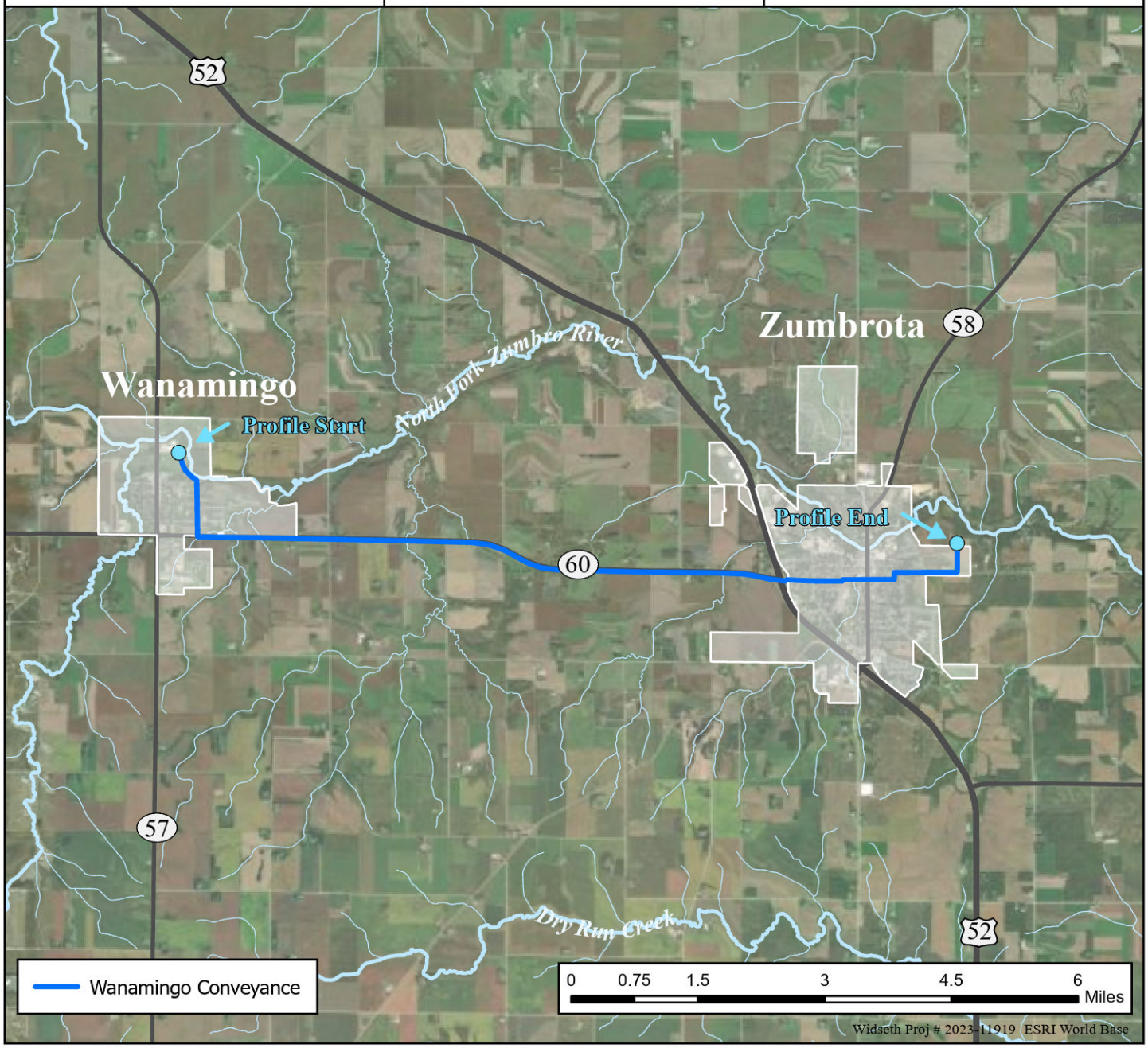
12.10.2. Forcemain

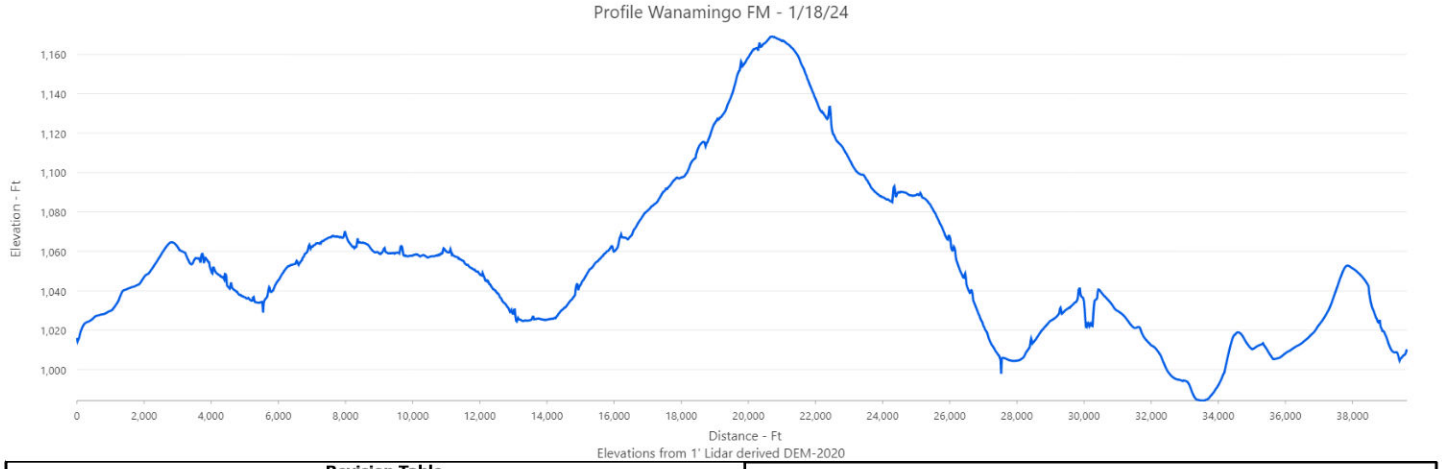
The forcemain is proposed to be placed in road right of way. This will require a permit from the local authority. If right of way is not available, an easement will be necessary.

13. Preliminary Plan and Profile

Preliminary plan and profiles of the proposed conveyance project are presented in Figure 13-1 on the next page.

Wanamingo Conveyance	Forcemain Plan & Profile	Figure 13.1





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14. Electrical, Alarms and Supervisory Control and Data Acquisition

14.1. Energy Monitoring

State of Minnesota SB 2030 Energy Standard requires the following energy conservation measures be considered: Monitoring of energy usage for the wastewater treatment facility with integration of real-time measurements into SCADA for Individual pump stations in the collection system.

Energy meter measuring total power consumption at the lift station to be provided. Energy meter to be monitored by lift station control system and by SCADA system at the wastewater treatment facility to display real-time measurements.

14.2. Electrical Installations

Great Lakes – Upper Mississippi River Board (GLUMRB) Recommended Standards for Wastewater Facilities 2014 Edition (Ten States Standards) requires electrical equipment in raw wastewater or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gasses or vapors may be present, to comply with the National Electrical Code requirements for Class I, Division 1, Group D locations. Equipment located in the wet well shall be suitable for use under corrosive conditions. Each flexible cable shall be provided with a watertight seal and separate strain relief. A fused disconnect switch located above ground shall be provided for the main power feed for all pumping stations. When such equipment is exposed to weather, it shall meet the requirements of weatherproof equipment NEMA 3R or 4, at a minimum. Lighting and surge protection systems should be considered. Lift station control panels located outdoors shall be provided with a 110 volt power receptacle inside the control panel to facilitate maintenance. Ground Fault Circuit Interruption (GFCI) protections shall be provided for all outdoor outlets.

Electrical equipment and installations will meet or exceed the National Electrical Code. Equipment installed in the wet well shall be stainless steel or other material suitable for corrosive locations. The main electrical service disconnect for the lift station shall be a fused disconnect switch. Enclosures installed outdoors will be rated for installation outdoors and will be painted steel NEMA 3R or stainless steel NEMA 4X. All other electrical devices installed outdoors will be rated for outdoor installation and will have a minimum NEMA 3R/4 rating. Surge protection will be provided at the incoming service/distribution location. Pump controls will also be provided with surge protection. The pump control panel will be provided with a 110 volt receptacle.

14.3. Emergency Backup Generator

14.3.1. Objective

Per Ten States Standards; The objective of emergency operations is to prevent discharge of raw wastewater to any waters and to protect public health by preventing back-up of wastewater and subsequent discharge to basements, streets, and other public or private property. Emergency pumping capability is required unless on-system overflow prevention is provided by adequate storage capacity.

Stationary combustion engine equipment to generate electrical energy shall be provided. When Normal Utility power source is unavailable the emergency generator shall provide backup power to all lift station electrical equipment until the Normal Utility power source is available.

14.3.2. Size (Electrical Capacity)

Ten States Standards requires the Generator be sized to start and continuously operate under all connected loads. Shall be adequately sized to provide power for pump motor starting current, lighting, ventilation, and other auxiliary equipment necessary for safety and proper operation of the lift station. The operation of only one pump during periods of auxiliary power supply shall be justified. Such justification may be made on the basis of the design peak hourly flows relative to single-pump capacity, the anticipated length of power outages, and the storage capacity. Special sequencing controls shall be provided to start pump motors unless the generator has capacity to start all pumps simultaneously with auxiliary equipment operating.

Expected pump starting load and other equipment loads necessary for lift station operation will be evaluated to properly size the generator. Automatic controls will be utilized to sequence pump motors on to prevent simultaneous starting of pumps.

14.3.3. Startup and Load Transfer

Ten States Standards requires provisions be made for automatic and manual start-up and load transfer unless only manual start-up and operation is justified. Provisions should also be considered to allow the engine to start and stabilize at operating speed before assuming the load.

An automatic transfer switch (ATS) shall be provided with an electronic controller and operator interface to manage power transfer operations. The ATS shall have means to automatically start/stop the Generator and automatically transfer power between Emergency Generator and Utility power sources. The ATS shall have manual operator overrides available to start the generator and to transfer power from Utility to Emergency Generator source and vice versa. The ATS shall have adjustable time delays for automatically starting the Generator, waiting for the engine to be stabilized before transferring power, transferring power between sources, and cooling down engine before stopping.

14.3.4. Protection of Equipment

Ten States Standards requires the engine be protected from operating conditions that would result in damage to equipment. Protective equipment shall monitor conditions and be capable of shutting down the engine and activating an alarm. At a minimum protective equipment shall monitor low oil pressure and overheating.

The Generator shall come equipped with a weatherproof enclosure. Hinged access doors shall provide access to components inside the enclosure. All access doors shall be lockable with keyed alike locks. The generator shall have an electronic controller which shall monitor oil pressure and overheating conditions and shall automatically disable the generator and signal alarm.

14.3.5. Fuel Type

Ten States Standards recommends selection of fuel type that is reliable and provides ease of starting, especially during cold weather conditions.

Diesel fuel shall be utilized. Approved cold weather blends may be used to minimize operational issues during cold temperatures. Engine coolant heater, battery heater, and enclosure heater will be considered to improve starting under cold ambient temperatures.

14.3.6. Fuel Storage

Above grade, Sub-base mounted, double-wall fuel tank with secondary containment shall be utilized. Tank capacity shall be sized for a minimum of 24 hours continuous generator operation at 100 percent rated load.

14.3.7. Engine Ventilation

Ten States Standards requires the engine be located above grade and be provided with adequate ventilation of fuel vapors and exhaust gases.

Engine will be installed above grade. Separate air inlet(s) and air outlet(s) shall be provided at the generator enclosure to provide proper engine ventilation. Engine mounted replaceable, dry element filter shall be provided to filter incoming engine air. Engine exhaust shall exit the generator enclosure through exhaust piping and shall be kept away from any incoming air streams to the generator.

14.3.8. Routine Start-up

Ten States Standards requires all emergency equipment be provided with instructions indicating the need for regular starting and running of such units at full loads.

Maintenance and operations manual indicating need for regular starting and running and instructions for operating shall be provided by the equipment manufacturer. The automatic transfer switch (ATS) shall be equipped with an engine exerciser that provides programmable scheduled exercising of the generator, selectable with or without transfer to load.

14.3.9. Air Quality

Ten States Standards recommends regulations of state, provincial and federal (EPA) agencies regarding air quality be considered.

The generator shall meet all state, provincial and federal (EPA) requirements. The manufacturer shall provide a Certificate of Conformity with the EPA Clean Air Act for equipment provided. The manufacturer shall also provide all unit information required to complete emissions evaluation for the State of Minnesota Pollution Control Agency (MPCA).

14.3.10. Noise Emissions

Ten States Standards recommends noise control be considered.

State of Minnesota Administrative Rules Chapter 7030, Noise Pollution Control regulations shall be followed.

Sound attenuating enclosure, exhaust silencer, and other means to be provided as required to meet noise regulations at the installed location. Manufacturer to provide documentation supporting rated noise level of equipment.

14.4. Alarms and SCADA

14.4.1. Alarm Systems

Ten States Standards requires an alarm system with backup power source be provided. The alarm shall be activated in cases of power failure, dry well sump and wet well high water levels, pump failure, unauthorized entry, or any other cause of pump station malfunction. Pumping station alarm systems shall transmit and identify alarm conditions to a municipal facility that is staffed 24 hours a day. If such a facility is not available and a 24-hour holding capacity is not provided, the alarm shall be transmitted to municipal offices during normal working hours and to the home of the responsible person(s) in charge of the lift station during off-duty hours.

Electronic controllers and other systems responsible for monitoring and communicating lift station alarms shall be backed up by an uninterruptable power supply capable of sustaining systems for a period of time during loss of power. Alarms shall be activated in case of power failure, generator failure, wet well high-water level, pump failure, and any other pump station malfunction. Alarm strobe light at the lift station shall be energized during an alarm condition. The lift station shall have an operator interface that will display individual alarm status. Alarms shall be transmitted wirelessly to the wastewater treatment facility where the SCADA and central alarm system will be located. The central alarm system shall notify designated associates of alarm conditions 24 hours per day. The alarm system shall have the capability to notify associates via voice phone call, short messaging service (SMS), email, and through a mobile application.

14.4.2. General Controls

Ten States Standards recommends water level control sensing devices be located to prevent undue affects from turbulent flows entering the well or by the turbulent suctions of the pumps. Provisions shall also be made to automatically alternate the pump in use.

Considerations will be given to position wet well level sensors away from incoming flow stream(s) and away from turbulent suctions of pumps. Automatic controls will be provided to monitor and control the lift station systems which includes alternating the pump in use. The lift station control system shall have an operator interface that will display equipment status and allow operator adjustment of settings. The SCADA system at the wastewater treatment facility will have capability to remotely monitor and adjust settings of the lift station via wireless communications.

14.4.3. Safety Ventilation Controls

Ten States Standards recommends switches for operation of ventilation equipment be clearly marked and conveniently located. All intermittently operated ventilation equipment shall be interconnected with respective pit lighting system. Consideration should be given for automatic controls where intermittent operation is used. The manual lighting/ventilation switch shall override the automatic controls.

NFPA 820 Standard for Fire Protection in Wastewater Treatment and Collection Facilities requires all continuous ventilation systems that are used to reduce the classification of a space be fitted with flow detection devices connected to alarm signaling systems to indicate inadequate ventilation and ventilation system failure. Combustible gas detectors shall be located in accordance with associated NFPA 820 Table. Combustible gas detectors and alarm signaling equipment shall be provided with

an auxiliary power supply to ensure continuous operation during the failure of the normal power supply.

Any ventilation switches will be clearly marked and installed in a convenient location. Any intermittently operated ventilation systems will be interconnected to the respective lighting system. Automatic controls will be considered where intermittent ventilation operation is used. Ventilation and gas detection systems will be provided as required and alarms will be monitored locally at the lift station and by the central alarm system at the wastewater facility. Any combustible gas sensors and alarm signaling equipment will have battery backup power.

15. Flow Monitoring and Sampling

Ten States Standards requires suitable devices for measuring wastewater flow be provided at all pumping stations. Indicating, totalizing, and recording flow measurement shall be provided at pumping stations with a 350 gallon per minute or greater design peak hourly flow or pumping stations with variable frequency drives (VFD's).

A flow measuring device shall be installed measuring total effluent flow leaving the lift station. Electromagnetic or similar type of flow meter approved for the application shall be used. The flow meter shall have a transmitter with a multiline digital display capable of displaying flow rate and running flow total and shall have outputs for remote monitoring of flows. The lift station control system to monitor flow measuring device shall display flow rate and daily flow total. The SCADA system at the wastewater treatment facility shall display and store daily flow totals reported from the lift station. Historical daily flow totals shall be retained electronically for review at the wastewater treatment facility. The flow meter shall be secured and accessible by authorized personnel only.

16. Odor Control

16.1. Objective

Odor control systems are installed at wastewater facilities, lift stations, and manholes to control hydrogen sulfide gases that cause odors and corrode the infrastructure. If the facilities are located in or near the City, eliminating odors becomes especially important to satisfy residents.

16.2. Design Criteria

Design of odor control systems are based on wet well or manhole size, flow rates, retention times, and hydrogen sulfide levels. Hydrogen sulfide levels are not known but are anticipated to be low. Hydrogen sulfide levels may be tested during the design phase of the project to justify the need and design of the odor control system. Materials of construction will be polyethylene or fiberglass reinforced plastic, as these are not subject to corrosion due to hydrogen sulfide gases.

16.3. Alternatives

Based on the expected turnover times in the entire conveyance system, it is anticipated that odor control is not needed. If it is deemed necessary, there are many odor control options available such as carbon scrubbers, ozone, and chemical addition. Selecting an alternative that will be low maintenance and efficient at removing odors, was a top priority.

Of the available options, carbon scrubbers are low maintenance and have long life expectancy. There are varying size units and customizable designs available to suit the needs of the project. As noted above, the need for odor control at the proposed lift station will be evaluated during design.

17. Impacts to Existing Facilities

17.1. Abandonment of Existing Facilities

17.1.1. Description of Existing WWTF

Wanamingo's existing WWTF is an activated sludge WWTF built in 1973 with major improvements constructed in 1988. The WWTF's NPDES Permit No. is MN0022209.

The current facility consists of a flow equalization basin, aerated grit chamber, bar screen and pH adjustment equipment, two compact covered activated sludge units with settling basins, chlorination/dechlorination unit, and aerobic sludge digestion.

Per the NPDES permit, the existing facility has an average wet weather (AWW) design flow of 0.458 MGD with a five-day carbonaceous biochemical oxygen demand of 275 milligrams per liter (mg/L).

Treated effluent is discharged continuously to the Zumbro River, North Fork.

The existing WWTF is located on the northeast side of the city.

17.1.2. Switchover from Existing to Proposed Facilities

The site layout of the existing Wanamingo WWTF is shown in Figure 17-1 on the following page. The figure shows existing facilities to be demolished (in red), existing facilities to remain in service (in black) and proposed facilities (in green).

The proposed lift station and forcemain will be constructed while the WWTF is in service. Switchover will be accomplished by temporary flow diversion to the new pump station while the gravity interceptor connection is being made. Once the permanent connection has been made, the temporary flow diversion will be removed, and the new lift station will be in service.

17.1.3. Demolition

Following successful startup of the new North Zumbro wastewater treatment plant and the new Wanamingo lift station, the existing Wanamingo wastewater treatment facility will be removed from service and demolished.

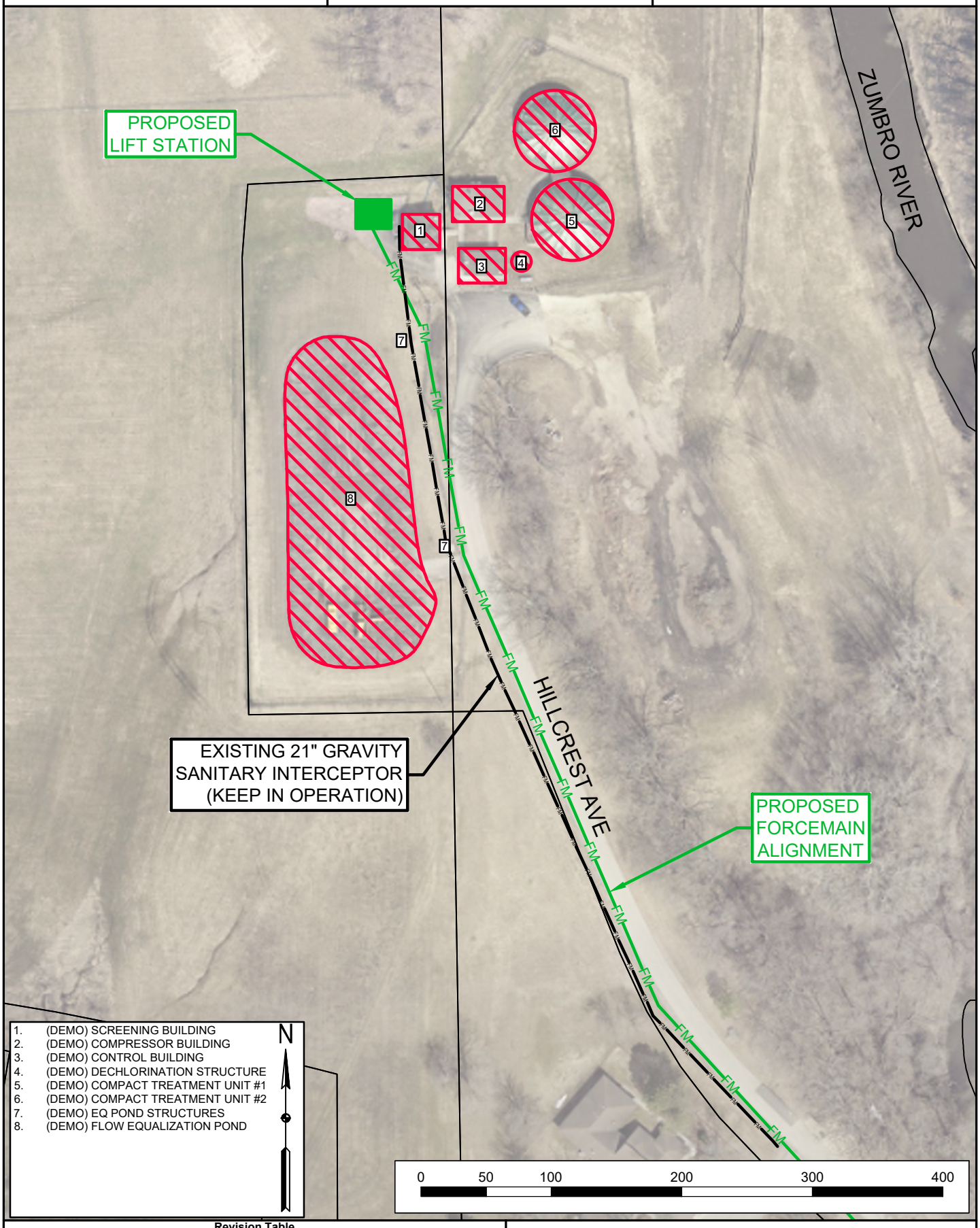
Biosolids hauling and discharge of wastewater effluent from the Wanamingo WWTF will cease after the WWTF is abandoned.

All of the existing buildings, structures, and basin will be demolished. Walls of buried concrete structures will be demolished to within approximately 4 feet of the ground surface and the bottoms of all buried structures will be broken to allow rainwater to drain through the structure.

Existing yard piping on site and underneath the basin will be excavated and removed. Buried piping within approximately 4 feet of the ground surface will be removed from the site and deeper buried piping will be abandoned in place by capped or filling with grout to prevent the migration of water.

The site will be graded to restore its natural contours and restore storm drainage patterns. The site will be seeded to establish vegetation.

WANAMINGO WWTF DEMO	SITE LAYOUT	Figure 17-1



1. (DEMO) SCREENING BUILDING
2. (DEMO) COMPRESSOR BUILDING
3. (DEMO) CONTROL BUILDING
4. (DEMO) DECHLORINATION STRUCTURE
5. (DEMO) COMPACT TREATMENT UNIT #1
6. (DEMO) COMPACT TREATMENT UNIT #2
7. (DEMO) EQ POND STRUCTURES
8. (DEMO) FLOW EQUALIZATION POND

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All treatment equipment and exposed piping will be removed from the site and salvaged or disposed of at a proper disposal facility. Materials which can be used as suitable fill material, such as rubbelized concrete, brick or masonry block, may be disposed of onsite as fill.

The existing 21”-diameter gravity interceptor sewer will remain in place and in service.

The existing driveways and fencing will remain in place. Some additional fencing may be proposed to secure the proposed lift station separate from the rest of the property. The City may choose to use the property to store municipal vehicles and equipment.

17.2. Relocation of Existing Utilities

If the proposed conveyance project will conflict with any existing utilities, a utility relocation will be initiated during the design phase.

18. Land Acquisition

The proposed forcemain alignment from Wanamingo to the NZSSD regional facility generally follows the State Highway 60, and through the cities of Wanamingo and Zumbrota. It is anticipated that the proposed forcemain will be installed in the MnDOT and City rights-of-way, therefore, utility easements for the forcemain are not anticipated from private landowners.

The North Zumbro Sanitary Sewer District was allocated $10 million by the State of Minnesota for pre-design, land acquisition and legal work for Phase I of the future regional wastewater treatment facility. The NZSSD has entered into a purchase agreement for approximately 43.5 acres of property located east of the existing Zumbrota WWTF. The subject property consists of Goodhue County Parcel No 47.030.2000 and part of Goodhue County Parcel No's 72.680.0021 and 72.680.0010. Details on the NZSSD WWTF land acquisition are included in the NZSSD WWTF Facility Plan.

19. Environmental Impacts

19.1. Environmental Impacts

19.1.1. Project Location

Location of the proposed project is detailed in Chapter 5 and Chapter 13 of this report.

19.1.2. Description of the Proposed Project and Related New Construction

A brief description of the proposed project is in Chapter 3 of this report. Additional details regarding new construction are included in Chapters 6 through 16.

19.1.3. Project Purpose, Beneficiaries, and Governmental Unit

Explanation of the project purpose, need, and beneficiaries is provided in Chapter 3 of this report. The project will be carried out by the North Zumbro Sanitary Sewer District.

19.1.4. Future Development Stages

The current project is sized for 20 years of forecast growth (Design Year 2045). Additional process units and buildings may be constructed on the new centralized WWTF site to serve additional growth in the future.

19.1.5. Subsequent / Future Stage of Project

The project is not a subsequent stage of past development.

19.1.6. Project Magnitude Data

The project will include an area of 0.2 acres for construction of the new pump station, as well as 7.50 miles (39,617 feet) of new forcemain. A total project area of 55.9 acres, including the existing Wanamingo WWTF property/new pump station site and a 60-foot corridor along the proposed forcemain route, was considered for review of environmental impacts.

19.1.7. Permits and Approvals Required

Construction permits/approvals required for the Wanamingo conveyance project include the following:

Table 12 Construction Permits and Approvals Required

Unit of Government	Type of application	Status
U.S. Army Corps of Engineers (USACE)	Section 404	To be completed
MN Board of Water & Soil Resources (BWSR)	Joint Application	To be completed
MN Department of Natural Resources	Utility crossing license	To be completed
MN Pollution Control Agency (MPCA)	NPDES/SDS Construction Stormwater Permit	To be completed
Goodhue County Soil and Water Conservation District (SWCD)	Wetland Conservation Act (WCA) permit	To be completed

19.1.8. Land Use

Land use considerations are discussed in Chapter 19 of this report.

19.1.9. Cover Types

The estimated acreage of the project area with each of the following cover types before and after development is as follows:

Table 13 Landcover Types

Cover Type	Before	After
Wetland	0.6	0.6
Wooded/forest	0.0	0.0
Brush/grassland	6.2	6.2
Cropland	15.1	15.1
Lawn/landscaping	19.1	19.1
Impervious Surfaces	14.9	14.9
Total	55.9	55.9

19.1.10. Fish, Wildlife and Ecologically Sensitive Resources

The U.S. Fish and Wildlife Information for Planning and Consultation (IPaC) tool and the Minnesota Natural Heritage Information System (NHIS) have been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. A copy of the IPaC species list and consistency letter are included as Appendix ##. A copy of the NHIS letter is included as Appendix ##. Briefly, the following rare features were identified within the project area for this Facility Plan:

Minnesota Biological Survey (MBS) Sites of Biodiversity Significance:

Minneola 30 in T110N R16W Section 30. Ranked as a *Moderate* MBS Site with two mapped native plant communities in it.

State-listed Species:

Glade mallow (*Napaea dioica*), a state-listed threatened plant, has been documented in the floodplains of the North Fork Zumbro River near Wanamingo. A botanical survey will need to be completed by a qualified surveyor to demonstrate avoidance of this rare plant species.

Ellipse (*Venustaconcha ellipsiformis*), a state-listed threatened mussel, has been found in the North Fork Zumbro River near Wanamingo.

Several other rare fish and mussel species have been documented in the North Fork Zumbro River and are vulnerable to deterioration in water quality, especially increased siltation.

Impacts to MBS Sites and rare plant species can be avoided/minimized by confining construction activities to previously disturbed areas such as existing right-of-way, maintaining a buffer between project activities and MBS Sites or documented occurrences of rare plants, and/or using directional boring in these areas. Impacts to aquatic species can be minimized through effective erosion prevention and sediment control practices, which will be incorporated into the stormwater management plan.

Federally-listed Species:

The IPaC results identified a total of 5 threatened, endangered, or candidate species that may be affected by the proposed project:

Northern long-eared bat (*Myotis septentrionalis*) – Endangered

Tricolored bat (*Perimyotis subflavus*) – Proposed Endangered

Whooping crane (*Grus americana*) – Experimental Population, Non-Essential

Monarch butterfly (*Danaus plexippus*) – Candidate

Minnesota dwarf trout lily (*Erythronium propullans*) – Endangered

Determinations of "no effect" were made for the tricolored bat, whooping crane, monarch butterfly, and Minnesota dwarf trout lily. A determination of "may affect, not likely to adversely affect" was made for the northern long-eared bat. Implementation of appropriate conservation measures is advised for these determinations to remain valid.

In addition, several migratory birds protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act may be present and breeding in the project area at certain times of the year. Appropriate avoidance and minimization measures should be implemented to reduce impacts to birds of concern.

The IPaC results identified no critical habitats, National Wildlife Refuge lands, or fish hatcheries within the project area.

19.1.11. Physical Impacts on Water Resources

The net impact should be improved water quality by consolidating four existing discharge points (outfalls from each city's existing WWTF) to one (a new outfall structure from the centralized WWTF). The alternatives and mitigation analysis is documented in the antidegradation analysis.

19.1.12. Water Use

The project will not 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).

19.1.13. Water-related Land Management Districts

Floodplain considerations are discussed in Section 12.5 of this report. The project does not involve any shoreland zoning districts or state/federally designated wild or scenic river land use districts.

19.1.14. Water-Surface Use

The project will not change the number or type of watercraft on any water body.

19.1.15. Erosion and Sedimentation

The new pump station building is anticipated to be two concrete precast structures constructed on the old Wanamingo WWTF site. The new forcemain is anticipated to be open cut and bored trenchlessly for road and river crossings. The decommissioning and demolition of the old WWTF site will require excavation. The existing ground cover at the old WWTF is lawn. During construction the excavated areas will be protected by erosion control measures covered in the SWPPP. After construction, the site will be stabilized with lawn/landscaping.

19.1.16. *Water Quality – Surface Water Runoff*

The square footage of the new pump station will be included in sizing for permanent stormwater controls on the site. The requirements for construction and permanent controls are the same as described above.

After removing the structures the site will be stabilized with lawn/turf. The impervious area post-demolition will be less than existing and will consist of pavement and the new pump station. Stormwater controls will be installed on site to treat the runoff from the post-demolition impervious area. The requirements for demolition and permanent controls are the same as described above.

The new pump station and forcemain are adjacent to the North Fork Zumbro River. The project is anticipated to be a net benefit (reduce runoff) because it will reduce impervious area at the old WWTF site, stabilize prior current agricultural field, and add permanent stormwater management.

19.1.17. *Water Quality – Wastewater*

Municipal wastewater from Goodhue, Pine Island, Wanamingo, and Zumbrota (including two significant industrial users) will be treated at the new WWTF. Composition of the influent wastewater (design loads) are addressed in Volume 1 of the facility plan. Treatment at the old Wanamingo WWTF will cease.

Waste treatment will include primary treatment (screening and grit removal), secondary and tertiary treatment (oxidation ditch with EBNR) and disinfection. Solids treatment will include aerobic digestion. Effluent wastewater discharge limitations are covered in Volume 1 of the facility plan. Receiving water is the North Fork Zumbro River. The net impact should be improved water quality by consolidating four existing discharge points to one. The impact on quality of receiving water is documented in the antidegradation analysis.

19.1.18. *Geologic Hazards and Soil Conditions*

There are no known geological hazards near the proposed project area. Depth to groundwater within the project area ranges from 0-10 feet and the average depth to bedrock is approximately 35 feet.

A soils map from the NRCS Web Soil Survey is attached (Appendix ##). The soils in the proposed project area are mostly silt loams and sandy loams. The soils are in hydrologic soil group A (moderately course to coarse texture, with a high rate of water transmission), hydrologic soil group B (moderately fine to moderately coarse texture and a moderate rate of water transmission), and hydrologic soil group C (clays with slow infiltration rate and high runoff potential). The contractor will be required to follow all MPCA requirements for fueling and any hazardous materials and liquid handling.

19.1.19. *Solid Wastes, Hazardous Wastes, Storage Tanks*

Standard building materials will be used to construct the new pump station and forcemains. Excess construction materials will need a recyling/disposal site. Generation of hazardous material is not anticipated. The nearest recycling center, in Goodhue, is closing. It is anticipated that solid waste will be sent to the Olmsted County facility located at 305 Energy Pkwy NE in Rochester.

Decommissioning and demolishing the old WWTF will require disposal of building components and synthetic lagoon liners. Abatement of asbestos and similar hazards will

be done prior to demolition and the remaining waste will be disposed of at Olmsted County facility.

19.1.20. Traffic

The proposed project will not impact existing traffic patterns after completion of construction. During the construction phase of the project there will be temporary traffic impacts. The layout of the streets near the project area will allow for detours to be created around the project area.

19.1.21. Vehicle Related Air emissions

For the small volume of traffic, the impact is negligible.

19.1.22. Stationary Source Air Emissions

Emergency generator, combustion engine products (CO2, CO, NO). Generator will only be used for emergency electrical backup.

19.1.23. Odors, Noise, and Dust

Construction and demolition activities are expected to generate noise and have the potential for dust. The overall period of construction is anticipated to last 1-2 years. The period of demolition is anticipated to last 6 months after the construction and startup period has been completed. The contractor will be required to use best management practices and construction activities will be limited to daylight hours to mitigate noise and dust impacts.

Odors will be addressed with odor control units. The wastewater treatment plant will be set back from residences and populated areas to avoid odor impacts.

19.1.24. Nearby Resources (SHPO)

A SHPO database review identified one archaeological site and 73 historic properties within the Public Land Survey System (PLSS) sections spanned by the project area:

1 archaeological site within T110N R16W Section 36

31 historic properties within T110N R15W Section 31

28 historic properties within T110N R15W Section 36

1 historic property within T110N R16W Section 29

12 historic properties within T110N R16W Section 30

1 historic property within T110N R16W Section 32

The archaeological site (21GDac) does not meet the National Registry of Historic Places (NRHP) significance criteria.

The historic properties are a mix of bridges, commercial businesses, churches, farmsteads, and residential properties. 71 of these structures have no significant connection to any historical event, person, or trend and are not architecturally distinguished in any way. These elements make them not eligible for listing in the NRHP.

Two historic properties are not currently listed, but eligible for listing in the NRHP: the Zumbrota Covered Bridge (Bridge No. 25580) and First Congregational Church of Zumbrota. Both sites are located at least a quarter mile from the project area. Adverse

effects to historic properties are not anticipated; however, additional consultation with SHPO is necessary as part of the Environmental Assessment Worksheet (EAW) being prepared for the project.

19.1.25. Section 106 Review

The project is required to complete further Section 106 review.

19.1.26. Visual Impacts

The project will not create adverse visual impacts (e.g., glare from intense lights, lights visible in wilderness areas, or large visible plumes from cooling towers or exhaust stacks) during construction or operation.

19.1.27. Compatibility with Plans and Land Use Regulations

The project is not 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.

19.1.28. Impact on Infrastructure and Public Services

The current WWTF for Wanamingo will be demolished. A new pump station will be constructed in its place and forcemains installed to bring wastewater to the new WWTF in Zumbrota. No new roads or additional infrastructure will be required for this project.

19.1.29. Cumulative Impacts

Cumulative potential impacts include:

New pump stations and forcemains: The new pump station and forcemain for the City of Wanamingo are part of the current project (MPCA #280813). Pump stations and forcemain projects for the cities of Pine Island (MPCA #280825), Zumbrota (MPCA #280812), and Goodhue (MPCA #280820) are related and covered under their own Facility Plans.

Old WWTF demolitions: Demolition of Wanamingo's old WWTF is part of the current project. Demolition of the old WWTFs for the cities of Pine Island, Zumbrota, and Goodhue are related and are covered under their own Facility Plans.

19.1.30. Other Potential Environmental Impacts

No other adverse environmental impacts area anticipated within the scope of the project.

19.1.31. Summary of Issues

Discharge of treated wastewater to North Fork Zumbro River will be according to NPDES permit limits set by MPCA. MPCA has provided preliminary effluent limits. Odors from raw wastewater entering the plant is possible and odor control at the plant headworks is anticipated in the project to mitigate this concern.

SHPO database review identified several historic properties and one previously documented archaeological site within the PLSS sections spanned by the project area; additional consultation is needed as part of further Section 106 review. A Phase I archaeological survey will be completed to determine if archaeological resources are present within the project area and, if so, define the approximate vertical and horizontal limits of any existing archaeological sites.

A wetland delineation will be required to comply with state and federal regulations. Any impacts to wetlands may require a wetland permit from the WCA and USACE.

A rare plant survey will be completed to determine any occurrences of glade mallow (*Napaea dioica*) within the project area. Individual plant locations will be documented and appropriate next steps identified to demonstrate avoidance of this species.

20. Cost

This facility plan presents summaries of the preliminary opinion of probable construction cost, operating costs, and net present worth (NPW) analysis for the two alternatives described in this facility plan:

- Alternative 1: Upgrade Existing Wanamingo WWTF
- Alternative 2: Connect to NZSSD WWTF

The analysis presents Preliminary costs are based on 2024 costs plus 4% annual inflation to target mid-construction year 2027. Costs have been volatile, and no guarantee can be made on future inflationary forecasts. Net present worth and debt service calculations also assume 4% for the 20-year planning period.

Labor hours were estimated based on "The Northeast Guide for Estimating Staff at Publicly and Privately Owned Wastewater Treatment Plants", New England Interstate Water Pollution Control Commission, November 2008. This guide provides estimated labor hours for various treatment processes based on plant size and desired plant staffing levels (single shift per day vs. staffed 24 hours per day).

20.1. Alternative 1: Upgrade Existing Wanamingo WWTF

20.1.1. Project Costs – Upgrade Wanamingo WWTF

A preliminary opinion of project costs to upgrade the existing Wanamingo WWTF is presented in Table 14. An upgrade would replace all major treatment components and would be functionally equivalent to constructing a new plant on the existing site. The cost opinion to upgrade Wanamingo's WWTF to a Design Year 2045 AWW capacity of 0.400 MGD is $9 Million plus $5.7 Million for inflation, contingencies, and engineering, yielding a total preliminary opinion of project cost of $14.7 Million.

Table 14 Preliminary Opinion of Project Cost – Upgrade Wanamingo WWTF

Item	Amount
Construction Items	
Construction Cost ($22.5M / MGD * 0.400 MGD)	$9,000,000
Construction Subtotal 2024	$9,000,000
Inflation Adjustment to Construction Year 2027	**$10,124,000**
Related Project Costs	
Contingency 30%	**$3,037,000**
Engineering Design and Construction Observation 15%	**$1,974,000**
Total Preliminary Opinion of Project Cost – Alt 1 Upgrade Existing Wanamingo WWTF	
Total	**$15,135,000**

This cost opinion was based on similar recent upgrade projects bidding in 2023-2024 and a composite of prior projects indexed for inflation. Based on these similar plants a trendline of construction costs per million gallons of AWW capacity ($M per MGD of capacity) was developed. The trendline yielded a cost of $22.5 Million per MGD of capacity for a plant sized at 0.400 MGD and is presented in Figure 20-1.

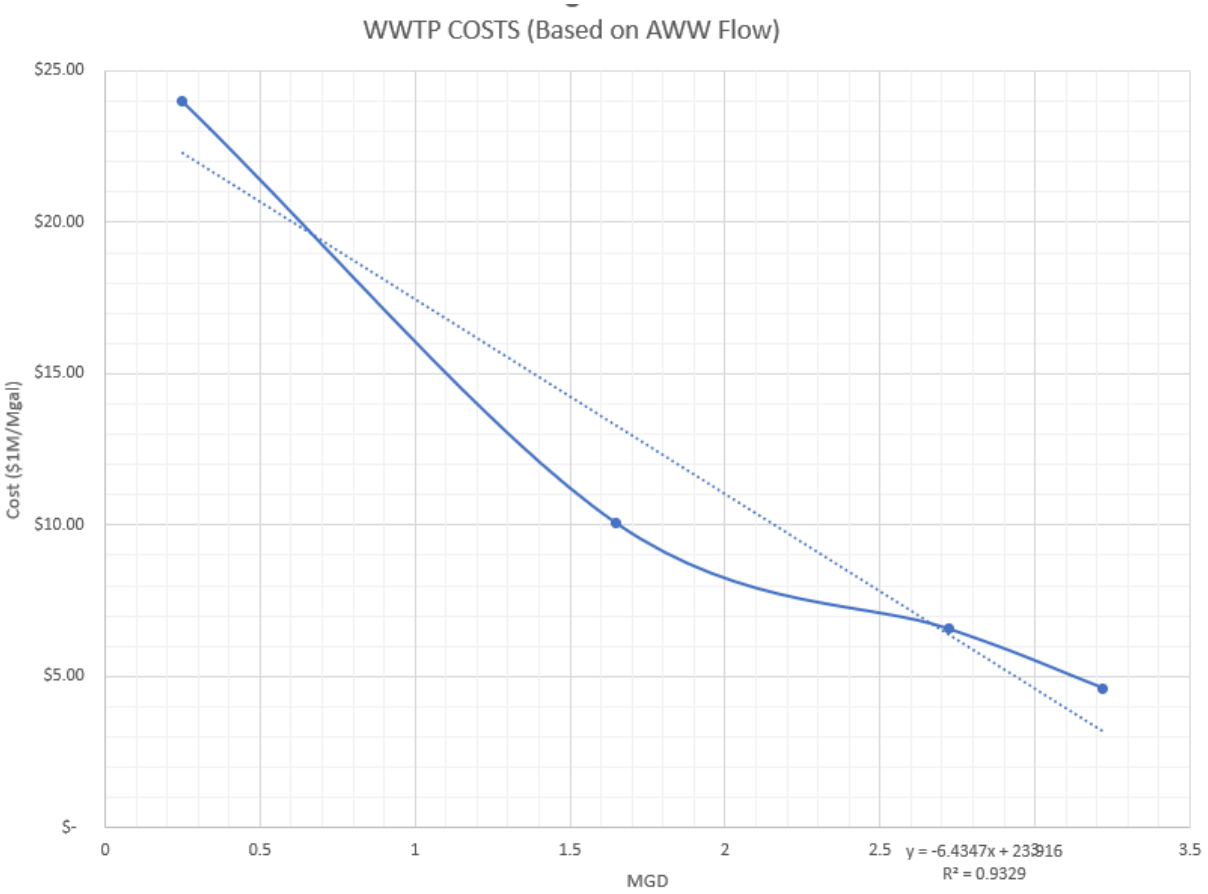


Figure 20-1 Costs for Major WWTF Upgrade Based on AWW Capacity

20.1.2. Operating Costs – Upgrade Wanamingo WWTF

A preliminary opinion of annual Operation and Maintenance (O&M) costs for an upgraded Wanamingo WWTF is presented in Table 15.

Table 15 Preliminary Opinion of Annual O&M– Upgrade Existing WWTF

Item	Amount
Chemicals and Electricity	
Chemicals	**$2,000 / year**
Electricity @ $0.12/kWH	**$60,000 / year**
Labor	
Total Annual Labor Costs	**$160,000 / year**
Total Preliminary Opinion of Annual O&M	
Total	**$222,000 / year**

20.2. Alternative 2: Connect to NZSSD WWTF

20.2.1. Project Costs – Connect to NZSSD WWTF

This alternative would connect the City of Wanamingo to the NZSSD WWTF and demolish the existing Wanamingo WWTF.

Construction of the centralized NZSSD WWTF and conveyance system pump stations and demolition of the existing wastewater treatment facilities comprise the District-wide NZSSD Project costs. Each member city would have a cost share portion of that amount. Wanamingo's share of the NZSSD Project costs are presented in Table 16 below.

Detailed preliminary opinions of Project costs and development of the cost share formulas are presented in Chapter 20 of the NZSSD Facility Plan.

Table 16 Wanamingo's Share of NZSSD Project Costs

Item	Amount
WWTF Project	
NZSSD-Funded Total	$42,510,000
Wanamingo's WWTF Share	9.0%: $3,826,000
NZSSD Conveyance Project	
NZSSD-Funded Total	$14,290,000
Wanamingo's Conveyance Share	13.6%: $1,936,000
Total Project	
Wanamingo's Share of NZSSD-Funded Project Cost	**$5,762,000**

20.2.2. Operating Costs – Wanamingo Connect to NZSSD

The annual costs of running the NZSSD WWTF and the four pump stations comprise the District-wide NZSSD O&M costs. Each member city would have a cost share portion of that amount. Wanamingo's share of the NZSSD O&M costs are presented in Table 17. Please see Chapter 20 of the NZSSD Facility Plan for itemized costs and cost sharing calculations.

Table 17 Wanamingo's Share of NZSSD O&M

Item	Amount
WWTF O&M	
Total WWTF O&M	$961,000 / year
Wanamingo's WWTF Share	9.0%: $86,000 / year
Conveyance O&M	
Total Conveyance O&M	$163,000 / year
Wanamingo's Conveyance Share	13.6%: $22,000 / year
Total O&M	
Wanamingo's Share of NZSSD O&M	**$108,000 / year**

20.3. CWRF Cost and Effectiveness Cost Analysis Requirements

20.3.1. Asset Management System

The new centralized NZSSD WWTF, four pump stations, and four forcemains will make up the sanitary assets of the North Zumbro Sanitary Sewer District. Management of these facilities will become a function of the NZSSD Joint Powers Board. The first twenty years of replacement and O&M costs are documented in the project's facility plans.

The sanitary sewer collection systems will remain under the ownership and operation of the four individual cities. None of the four cities has a dedicated utility asset management system in place for their sanitary sewer collection systems. However, the cities do perform the key functions of asset management including condition assessment, planning and budgeting for repairs, factoring costs into sewer rates, and maintenance.

20.3.2. Energy Conservation Opportunities

The following energy conservation opportunities have been identified for the project:

- SCADA monitoring of energy usage at lift stations.
- Premium efficient motors.
- Pumps running on 460V/480V (3PH) for horsepower efficiency.
- Pumps running on Variable Frequency Drives.
- Sizing of facilities to reduce TDH (head) and reduce friction losses.
- Pumps sized at Best Efficiency Points to run at existing dry, wet, and design conditions efficiently.

Each of the above items are likely to be included in the project. Specifics will be evaluated during final design.

20.3.3. Renewable Energy Opportunities

Lift stations have limited options for renewable energy opportunities. The major power consumption at the lift station is the pumps, and the rest of the facility consists of a simple housing structure that uses minimal energy itself. The lift station will run on line power with emergency backup generation for pumps. Geothermal and wind are unlikely to be useful. Opportunity for solar supplemental power may exist and that can be evaluated during design.

20.3.4. Water Reuse Options

Water reuse options are not applicable for the proposed lift station.

20.3.5. Installation of Water Efficient Devices

Water efficient devices are not applicable for the proposed lift station.

20.3.6. Installation of Water Meters

Water meter installation/replacement is not applicable for the proposed lift station.

20.3.7. Water Audit and/or Conservation Plan

Water audit and/or conservation plans are not applicable for the proposed lift station.

20.3.8. Cost and Effectiveness Conclusion

An integrated cost and effectiveness analysis was performed to consider the cost factors and other non-monetary factors for the alternatives. The summary of this analysis is presented below in Table 18.

Net Present Worth, which takes the operation and maintenance costs over twenty years into account to compare the cost of the alternatives, is abbreviated as 'NPW' below. Debt service is not included in the NPW calculation below.

Table 18 Integrated Cost and Effectiveness Analysis

Item	Alt 1 – Upgrade Wanamingo WWTF	Alt 2 – Connect to NZSSD
Project Costs	$15,135,000	$5,762,000
O&M / year	$222,000 / year	$108,000
O&M NPWs	$4,440,000	$2,160,000
Total Net Present Worth	$19,575,000	$7,922,000
Comparison with lowest cost alternate	+$11,653,000 (+147%)	-
Non-Economic Factors		Consolidation / regionalization
Score	2	1

20.3.9. Sewer Rate Impacts – Wanamingo Connect to NZSSD

This section covers the sewer rate impact for Wanamingo connecting to NZSSD.

The population from the 2020 Census was used for initial planning purposes and the rate were based on the initial impact at the current population. The Residential Equivalent Unit (REU) was calculated based on 2.5 residents per REU.

For the basis of this plan it is assumed the only funding included is the State Bonding Bill dollars. If future funding such as Point Source Implementation Grants are received by individual cities, then a reallocation of Bonding Funds may occur at that time.

Debt service costs are based on the city's cost share portion of the NZSSD-funded Project costs and assume 4% interest rate and 20 year period. Future rate studies are planned to determine a more refined impact to each city and their residents prior to bidding and construction. Sewer rate impacts for City of Wanamingo are in Table 19.

Table 19 Sewer Rate Impacts for City of Wanamingo Connecting to NZSSD

Item	Wanamingo
WWTF Debt Service	
NZSSD WWTF Residential Debt Service	**$424,000**
O&M	
NZSSD WWTF and Conveyance O&M	$108,000
City-Owned Collection System O&M	$100,000
Total O&M	**$208,000**
Total	
Amount / year	**$632,000**
Rate Impacts	
Residential Equivalent Units (REU)	**445**
Monthly per REU	**$118**

21. Potential Funding Opportunities

A new Sanitary District will require a large investment in public infrastructure. District officials and consultants will investigate available sources for funding the capital expense. Funding from a combination of these resources may be included in the final funding package.

- Minnesota Legislative Capital Bonding Bill
- Congressionally Directed Spending (CDS)
- Minnesota Public Facilities Authority (PFA); Clean Water Revolving Fund (CWRF), Green Project Reserve Fund, Point Source Implementation Grants (PSIG)
- Minnesota Water Infrastructure Fund (WIF) Grants
- Minnesota Department of Employment and Economic Development (DEED); Small Cities Development Program (SCDP)
- USDA Rural Development Water & Environmental Programs (WEP)
- City Bonding and User Fees

21.1. Minnesota Legislative Capital Bonding Bill

The Minnesota Legislative provides funding for dozens of infrastructure projects across the state through the sale of bonds. Local projects must be approved by the legislature to be included in the Bonding Bill and receive these grant funds. The process requires strong legislative support and lobbying efforts. The most previous Bonding Bill was approved in 2023, although they are most often in even years.

The 2023 Bonding Bill of $2.58 billion was passed in May 2023. This included $10 million for the North Zumbro Sanitary District from the General Fund Cash account. The funding is allocated as $8.5 million for Pre-design, $500,000 for other design costs, and $1 million for Land Acquisition. House File No. 669 includes language of the funding specifics.

The new site of the North Zumbro Sanitary District wastewater treatment facility in Zumbrota was included on the 2024 Bonding Tour. The request has been made for $44,800,000 in 2024 Bonding Funds for Actual Engineering and Design, Engineering for Construction Management and Construction of the facility. The funding would be allocated to each city in the district based on their use of the facility. Preliminary discussions with local legislators, and they are very supportive of this project. With strong legislative support, inclusion in the 2024 bonding bill is very possible.

21.2. Congressional Directed Spending

In fiscal year 2022, Congress started a practice of Congressional Directed Spending (CDS), or Federal Earmarks. These requests can be made by local entities for consideration by their Congress person in the federal budget process. These are direct

appropriations for specific projects within some existing federal grant programs. Requests are made through the Senate Appropriations Committees that meet the project's purpose. Once the request is made, each Congressional representative can choose a limited number of projects for consideration. Projects that are included on the final list will be requested to follow up with the appropriate funding agency.

If applying for these funds, it is advised that the North Zumbro Sanitary District apply as an entity, and not as individual cities. The request would be made through Senators Klobuchar and Smith, as well as Congressman Finstad's office to the Department of the Interior, Environment, and Related Agencies Committee. Requests are typically accepted by March each year.

21.3. Minnesota Public Facilities (PFA) – Clean Water Revolving Fund (CWRF)

The State of Minnesota receives federal funding from the Environmental Protection Agency (EPA) and the Infrastructure Investment & Jobs Act (IIJA) for water, wastewater, and lead service lines projects. They have approximately $680 million over the five-year period of the IIJA program.

Minnesota matches these funds to create the PFA Clean Water Revolving Fund. This is a state program that offers low interest loans (currently as low as 1%) on a 20- or 30-year term, and loan forgiveness, to meet the affordability threshold of the users. The affordability threshold is 1.4% of the Median Household Income of the users in the district. The maximum amount of loan forgiveness is $5 million.

Cities, counties, townships, and special governmental districts, including Sanitary Districts, are eligible to apply. The cities would apply for this funding independently. Funding determinations would be made on the affordability of that city. They must demonstrate financial capacity to repay the loan and issue a general obligation (GO) bond for loan security.

The process for PFA funding takes several years to complete. It requires the preparation of a wastewater facility plan, placement on the state Project Priority List (PPL), and placement on the state Intended Use Plan (IUP). The consulting engineers work with the Minnesota Pollution Control Agency (MPCA) and PFA throughout this process. Projects on the IUP are scored and ranked, and those with the highest needs are funded fist.

The four cities of the North Zumbro Sanitary District are each included on the 2024 IUP issued by PFA. Each applicant is assigned a rank depending on their health and safety need. Zumbrota was assigned priority points of 49 and is ranked 180 out of 300 projects in the PPL that was released on December 16, 2022. At this point a facility plan is required to be completed and certified prior to June 30th to continue the process.

PFA works with other agencies to obtain grant funds for costs above the district's affordability threshold. Funding from a combination of resources such as the Minnesota Legislature Bonding Bill, WIF grants and PSIG grants, can be part of the final funding package.

21.4. Green Project Reserve Fund (PFA)

The PFA awards points for projects that utilize green or soft-path practices to complement and augment hard or gray infrastructure, adopt practices that reduce the environmental footprint of water and wastewater treatment, collection, and distribution, help utilities adapt to climate change, adopt more sustainable solutions to wet weather flows, provide mechanisms to reinvest savings from reductions in water loss and energy conservation, and promote innovative approaches to water management problems.

The Green Project Reserve Funding can be loan forgiveness of up to 25 percent for eligible components. The maximum available is $1 million per project.

21.5. Point Source Implementation Grants (PFA)

The State of Minnesota developed the Point Source Implementation Grant (PSIG) program to provide a grant for communities facing more restrictive wasteload limits. Specifically, PSIG funding is available to reduce the discharge of phosphorous or meet a total nitrogen concentration or mass limit. PSIG funds can only be requested for the portion of the project required to meet the restrictive limit. The grants offset up to 80% of the cost (with a maximum award of $7 million) of public-owned projects necessary to meet TMDL waste load reductions. This grant program requires a separate application.

This proposed project is likely to receive a more restrictive phosphorous limit or possible nitrogen limit. Consulting engineers will work with the MPCA to determine PSIG eligibility and complete the application for funding. It is not yet known if Zumbrota will be eligible for PSIG funds in the final funding package.

21.6. WIF Grants

One of the grant resources used to meet the affordability threshold is the Water Infrastructure Fund (WIF). The Minnesota Legislative developed the Water Infrastructure Fund (WIF) to provide grant funding for projects of higher cost, which may not be affordable for the users. The maximum grant available from WIF is $5 million. The Minnesota PFA manages the WIF grant funding.

The process for obtaining a WIF grant is much like the PFA Clean Water Revolving Fund. A project must complete a wastewater facility plan, be on the Project Priority List (PPL) and included on the Intended Use Plan (IUP) to be considered for WIF funding.

Depending on the cost of the final project, the income level of the users and availability of WIF, there is possibility that this will be included in the final funding package.

21.7. Deed Small Cities Development Program

The program is administered by the Minnesota Department of Employment and Economic Development (DEED). The Small Cities Development Program uses Federal Housing and Urban Development funds to assist low-income communities with public infrastructure needs. Grants of up to $600,000 are available to eligible communities.

To be eligible for these funds, more than 51 percent of the community must have low to moderate income (LMI). The City of Zumbrota has an LMI of 43.9 percent and does not qualify for this funding according to DEED 2023 records. Incomes in the other communities of this district will also most likely be too high to be eligible for Small Cities Development Program funding and therefore we will not consider this as part of the funding package.

21.8. USDA Rural Development Water & Environmental Programs

This is a federal program that provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and storm water drainage to eligible rural areas. Eligible communities are less than 10,000 in population.

USDA - RD offers low interest loans with a 40-year term and grants. Interest rates are currently 3.75% and change quarterly. Affordability is based on 1.5% of the Median Household Income (MHI) for each utility. Grants are available to meet the affordability threshold if communities have less than the Minnesota Non-Metro MHI average.

Three of the four cities in the district have MHI's less than the Minnesota Non-Metro MHI, and are eligible for USDA-RD grant funding, although it is unlikely that they will utilize this resource while pursuing other options.

21.9. City Bonding and User Fees

A frequent source of funding for public infrastructure projects is bonding. Cities have the statutory authority to issue debt using the Minnesota Statutes 115, 429, 444, or 475. With this authority, a General Obligation (GO) Revenue Note, or GO Improvement Note would be utilized. The City's bond counsel would authorize the use of taxable or tax-exempt bonds.

By using MN Statute 444, the City of Wanamingo could issue a GO Revenue Bond and bond payments would be generated from the wastewater system user fees. With a project of this size, it would be unlikely that user fees would completely cover the bond payments, although city bonding may be a piece of the overall funding package.

22. Implementation Schedule

Table 20 presents the proposed implementation schedule.

Table 20 Implementation Schedule

Anticipated Tasks	Date
Develop initial feasibility study	Ongoing
Submit preliminary effluent limits (PEL) request(s) to MPCA (individual communities)	Completed
Submit Project Priority List (PPL) application(s)	Completed
Receive preliminary effluent limits from MPCA (individual communities)	Completed
Coordinate Pre-Application Meeting with MPCA Staff	Completed
Initiate Facility Siting / Land Acquisition Process	Completed
Submit preliminary effluent limits (PEL) request to MPCA (combined facility)	Completed
Initiate Antidegradation Analysis process with MPCA staff	Completed
Receive preliminary effluent limits from MPCA (combined facility)	Completed
Prepare Facilities Plan(s)	Winter 2023-24
Prepare Facilities Plan(s) supplemental information (Facility Plan submittal checklist)	Winter 2023-24
Begin Preliminary Design	Winter 2023-24
Submit Facilities Plan(s) to MPCA for approval	By March 2024
Hold Public Hearing(s) for Facilities Plan(s)	March / April 2024
Finalize Facility Siting / Land Acquisition Process	Spring 2024
Finalize Antidegradation Analysis (combined facility)	By June 2024
Receive Facility Plan Approval from MPCA	By June 2024
Complete Preliminary (30%) Design	Fall 2024
Begin Final Design	Winter 2024-25
Prepare Environmental Assessment Worksheet (EAW)	Spring/Summer 2025
Submit PSIG Application(s) for grant funding	July 2025
Complete 60% Design Plans for District / MPCA Review	Summer / Fall 2025
Complete 90% Design Plans for District / MPCA Review	Spring 2026
Finalize Design / Receive MPCA project certification	By June 2026
Sanitary District creation	2027
Begin Construction ** timing is dependent on availability of bonding dollars	Fall 2026**
Complete Construction ** timing is dependent on availability of bonding dollars	Fall 2028**

23. Recommendations

The existing Wanamingo WWTF is nearing the end of its useful life and is in need of replacement. Upgrading or expanding the existing processes and tanks to achieve anticipated future NPDES permit limits is not feasible. As a result, any future expansion or upgrades to the existing facility are anticipated to require construction of a new facility.

Two options were evaluated for replacement of the existing facility. Alternative 1 included constructing a new WWTF strictly to handle wastewater from the City of Wanamingo. Alternative 2 includes participating in the cost to construct a new sanitary sewer district consisting of centralized wastewater treatment facility, lift stations, and force mains to serve the cities of Goodhue, Pine Island, Wanamingo and Zumbrota. A cost evaluation performed on both alternatives shows that Alternative 2 will be more cost effective for the city of Wanamingo. This is primarily due to cost savings because of economies of scale in construction and operation and maintenance costs associated with constructing and maintaining one larger facility as opposed to four smaller facilities. Additionally, the communities are benefiting from a reduced project cost because of bonding bill funding awarded to construct a centralized facility.

Therefore, is recommended that the City of Wanamingo proceed with Alternative 2, connecting to the NZSSD WWTF and abandoning its existing WWTF. The key recommendations are as follows:

It is recommended that:

- The four member cities review and approve this Facility Plan.
- The four member cities continue with forming the North Zumbro Sanitary Sewer District, proceed with acquiring the WWTF site, and building the new centralized WWTF and conveyance projects.
- Of the four alternatives presented in this facility plan for the new centralized WWTF, it is recommended that NZSSD proceed with Alternative 1, which is the Oxidation Ditch secondary treatment alternative. Oxidation ditches are within 2% of the lowest-cost alternative, they are flexible for variable flow and loading conditions, and are a non-proprietary technology proven to perform in Minnesota climate conditions. Several installations are in operation in nearby Southeast Minnesota communities.
- It is recommended that each member city apply for funding assistance through the State of Minnesota's Clean Water Revolving Fund, Point Source Implementation Grant, and other sources as appropriate.
- It is recommended that NZSSD review the cost share splits after funding sources have been secured and reallocate fundable sources as appropriate.

24. List of Figures

25. List of Tables

26. List of Abbreviations

ADF	Average Daily Flow in a continuous 12-month period.
ADW	Average Dry Weather is the lowest average flow in a continuous 30-day period.
AVG	Average Day is the average flow or load in a continuous 12-month period. AVG is preferred acronym for this facility plan.
AWW	Average Wet Weather is the highest average flow in a continuous 30-day period.
BEP	Best Efficiency Point is where a motor or blower runs at its best efficiency.
BNR	Biological Nutrient Removal is a biochemical treatment process to remove nitrogen and phosphorus.
BOD_5	Five-day Biochemical Oxygen Demand is the total organic load. $CBOD_5$ + $NBOD_5$ = BOD_5.
BTU	British Thermal Unit measures heat.
$CBOD_5$	Five-day Carbonaceous Biochemical Oxygen Demand is the portion of the organic load reduced by carbon-metabolizing microbes.
CFU	Colony Forming Units measures bacteria counts.
DFA	Dairy Farmers of America is a significant industrial user located in Zumbrota.
EBNR	Enhanced Biological Nutrient Removal is a biochemical treatment process to remove nitrogen and phosphorus to a greater degree than BNR.
GPCPD	Gallons per Capita per Day is a measure of flow produced by each person on a per capita basis.
GPD	Gallons per day.
GPM	Gallons per minute.
I&I	Inflow and Infiltration. Clear water from rainfall and groundwater that enters the sanitary sewer system from defects and illicit connections to the system.
kg/d	kilograms per day measures load received or produced in a 24-hour period.
kg/yr	kilograms per year measures load received or produced in a 12-month period.
kWh/lb.	kilowatt-Hour per Pound measures the energy used to produce a mass of solids (biosolids).
kWh/MGD	kilowatt-Hour per Million Gallons per Day measures the energy used to treat a volume of water.
LO'L	Land O' Lakes is a significant industrial user located in Pine Island.
Max Day	Highest flow or load for a 24-hour period.
Max Month	Highest average flow or load in a continuous 30-day period.
mg/L	milligrams per liter. Measure of concentration.

MGD	Million Gallons per Day.
MPCA	Minnesota Pollution Control Agency.
MWW	Max Wet Weather (Max Day) is the highest flow for a 24-hour period.
NFPA	National Fire Protection Agency.
NPDES	National Pollutant Discharge Elimination System is the permit for wastewater treatment and discharge.
NZSSD	North Zumbro Sanitary Sewer District.
ORP	Oxidation Reduction Potential measures chemical reactivity.
PF	Peaking Factor is the ratio between PHWW : AVG flows.
PHWW	Peak Hourly Wet Weather is the maximum flow received during one (1) hour when the groundwater is high, runoff is occurring from the 5-year storm, and the domestic, commercial and industrial flows are at their peak.
PIWW	Peak Instantaneous Wet Weather Flow is the maximum flow received during one (1) hour when the groundwater is high, runoff is occurring from the 25-year storm, and the domestic, commercial and industrial flows are at their peak.
POP EQ	Population Equivalent. Equivalent number of people needed to produce a flow or load.
PPCPD	Pounds per Capita per Day is a measure of load produced by each person on a per capita basis.
PPD	Pounds Per Day. Measures the load, in pounds, in a 24-hour period. [Concentration mg/L]*[Flow MGD]*8.34 = [Load PPD].
RBC	Rotating Biological Contactor.
SCADA	Supervisory Control and Data Acquisition. Computerized system for lift stations and treatment plant that provides monitoring, data recording, alarming, and control for the mechanical elements of the facility.
SU	Standard Units measures pH.
TKN	Total Kjeldahl Nitrogen is the sum of ammonia and organic nitrogen. TKN = NH3 species + Organic N.
TN	Total Nitrogen (TN) is the sum of all nitrogen loads received at the plant. TN = TKN +NO2+ NO3 + N2 (gas).
TP	Total Phosphorus. Organic and inorganic phosphorus.
TSS	Total Suspended Solids is the solids load received at the plant. It includes all particles retained on a 45-micron filter. It excludes dissolved solids.
UV	Ultraviolet. UV disinfection is used to inactivate pathogens in water.
WWTF	Wastewater Treatment Facility. WWTF is preferred acronym for this facility plan.

WWTP	Wastewater Treatment Plant.
YTD	Year to Date is a cumulative measure of load over a continuous 12-month period.

27. Appendices – Revised October 3, 2024

Appendix A. CWRF Facility Plan Submittal Checklist (rev 8/22/2024)

Appendix B. CWRF Cost and Effectiveness Certification Checklist

Appendix C. CWRF B3 2030 Exemption Form

Appendix D. CWRF Cost and Effectiveness Certification Form

Appendix E. Public Hearing Presentation (new 4/8/24)

Appendix F. Public Hearing Comments (new 4/8/24)

Appendix G. SERP Mailing List Form

Appendix H. Resolution Accepting Facility Plan (new 4/8/24)

Appendix I. Intermunicipal Agreements

Appendix J. Significant Industrial User Agreement

Appendix K. Environmental Assessment Worksheet (new 8/22/2024)

Appendix L. Notifications, Certifications, and Comments (new 4/8/2024)

Appendix M. Preliminary Effluent Limits Review Letter

Appendix N. Responses to MPCA Facility Plan Review Comments (new 8/22/2024)

Appendix O. Section 106 Form (new 8/22/2024)

Appendix P. wq-wwtp5-20a Flow and Loading Worksheet (rev 10/3/2024)

Appendix Q. Revised Selected Cost Tables (new 8/22/2024)

Appendix R. Existing WWTF Condition Evaluation (new 8/22/2024)

Appendix S. Collection System I/I Reduction Narrative (new 8/22/2024)

Appendix T. MPCA Letter of Preliminary Approval (new 10/3/2024)

Appendix Revisions:

April 8, 2024: Public Hearing Information Enclosed.

August 22, 2024: Environmental Assessment Worksheet (draft) and Section 106 Form, and Responses to MPCA Facility Plan Review Comments 280813 8-5-2024 Enclosed. Revisions responsive to the MPCA comments comprise new Appendices N through S added August 22, 2024. The report body is not being revised.

October 3, 2024: wq-wwtp-5-20a Flow and Loading worksheet revised in response to MPCA comments and submitted to MPCA 9/27/24. MPCA Letter of Preliminary Approval issued 10/3/24 and attached as new Appendix T.

Appendix A. CWRF Facility Plan Submittal Checklist

Revisions:
April 8, 2024: Public Hearing Information Enclosed
August 22 2024: EAW Draft Worksheet Enclosed

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: Wanamingo Conveyance
Proposed dates for construction: 2026-2028
City's authorized representative: Michael Boulton
Title: City Administrator, City of Wanamingo Telephone: 507-824-2477
Mailing address: 401 Main Street
City: Wanamingo State: MN Zip code: 55983
Technical agent or consulting engineer: Brandon Theobald
Name of firm/organization: WHKS & Co. Telephone: 507-288-3923

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: April 8, 2024

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
- ☒ 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.
- ☒ A list of ordinances or intermunicipal agreements required for the implementation and administration of the project.
- N/A ☐ 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.
- DRAFT ☒ A completed *Environmental Information Worksheet* **provided by the MPCA.**
- N/A ☐ 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.
- N/A ☐ Copies of all notifications, certifications, and comments received.

Appendix B. CWRF Cost and Effectiveness Certification Checklist

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

CWRF cost and effectiveness checklist

Clean Water Revolving Fund (CWRF) Program

Doc Type: Wastewater Point Source

Instructions: This checklist must be used with the Minnesota Pollution Control Agency (MPCA) *Minnesota Clean Water Revolving Fund (CWRF) Cost and Effectiveness guidance* document. 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.* These documents are available on our website here: https://www.pca.state.mn.us/business-with-us/apply-for-financial-assistance

Project information

Project name: Wanamingo Conveyance Date submitted (mm/dd/yyyy): 3/1/2024

Project Description: Wanamingo Conveyance to North Zumbro Joint WWTF

City: Wanamingo, Minnesota MPCA Project Number: 280813

MPCA Review Engineer: Corey Hower

City's authorized representative: Michael Boulton

Email address: cityadministrator@cityofwanamingo.com

Consulting engineer: Brandon Theobald, P.E.

Email address: btheobald@whks.com

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? Indicate where the asset management system is documented in the Facilities Plan: *20.3.1 Asset Management System*	☒	☐
IV.A.	Does the Facilities Plan address energy conservation opportunities? Indicate where the energy conservation discussion is documented in the Facilities Plan: *20.3.2 Energy Conservation Opportunities*	☒	☐
IV.B.	Does the Facilities Plan address renewable energy opportunities? Indicate where the renewable energy discussion is documented in the Facilities Plan: *20.3.3 Renewable Energy Opportunities*	☒	☐
IV.C.i.	Does the Facilities Plan analyze water reuse options? Indicate where the water reuse options analysis is documented in the Facilities Plan: *20.3.4 Water Reuse Options*	☒	☐
IV.C.ii.	Does the Facilities Plan analyze installation of water efficient devices? Indicate where the use of water efficient devices analysis is documented in the Facilities Plan: *20.3.5 Installation of Water Efficient Devices*	☒	☐
IV.C.iii.	Does the Facilities Plan analyze installation of new water meters or replacement of existing water meters? Indicate where the installation of new or replacement water meters analysis is documented in the Facilities Plan: *20.3.6 Installation of Water Meters*	☒	☐

Section		Yes	No
IV.C.iv.	Does the Facilities Plan consider or include completed water audits and/or a conservation plan? Indicate where the discussion of water audits and/or a conservation plan is documented in the Facilities Plan: *20.3.7 Water Audit and/or Conservation Plan*	☒	☐
IV.D.	Does the Facilities Plan include a completed Buildings, Benchmarks, and Beyond (B3) Sustainable Building (SB) 2030 Wastewater Treatment Plant (WWTP) exemption form? Indicate where the B3 SB 2030 WWTP exemption form is included in the Facilities Plan: *Appendix*	☒	☐

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

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 project sustainability and climate resilience? Indicate where the discussion on project sustainability and climate resilience is documented in the Facilities Plan:	☐	☐
V.A.ii.	Does the Facilities Plan analyze how the project addresses water quality objectives? Indicate where the discussion on how the project addresses water quality objectives is documented in the Facilities Plan:	☐	☐
V.A.iii.	During the project planning process, did the owner consider project alternatives such as consolidation or regionalization with another or several other service areas? Indicate where the discussion on how the project addresses possible consolidation or regionalization is documented in the Facilities Plan:	☐	☐
V.B.i.	Are the project location and physical aspects discussed in the Facilities Plan? Indicate where the discussion on the project location and physical aspects is located in the Facilities Plan:	☐	☐
V.B.ii.	Is project reliability discussed in the Facilities Plan? Indicate where the discussion on project reliability is located in the Facilities Plan:	☐	☐
V.B.iii.	Is the project feasibility and operability discussed in the Facilities Plan? Indicate where the discussion on the project feasibility and operability is located in the Facilities Plan:	☐	☐
V.C.i.	Are possible water conservation practices, water reuse and/or water recapture opportunities discussed in the Facilities Plan? Indicate where the discussion on the project water conservation practices, water reuse, and/or water recapture opportunities is located in the Facilities Plan:	☐	☐
V.C.ii.	Are possible energy conservation practices discussed in the Facilities Plan? Indicate where possible energy conservation practices are discussed in the Facilities Plan:	☐	☐

Section		Yes	No
V.C.iii.	Are possible opportunities to recover and recycle or reuse other resources discussed in the Facilities Plan? Indicate where possible opportunities to recover and recycle or reuse other resources options are discussed in the Facilities Plan:	☐	☐
V.C.iv.	Are possible opportunities to use green infrastructure components within the project discussed in the Facilities Plan? Indicate where possible opportunities to use green infrastructure components within the project are discussed in the Facilities Plan:	☐	☐
V.C.v.	Are possible other environmental impacts of the project discussed in the Facilities Plan? Indicate where possible other environmental impacts of the project are discussed in the Facilities Plan:	☐	☐
V.D.i.	Are possible considerations which may be related to certain industries using or served by public infrastructure discussed in the Facilities Plan? Indicate where possible considerations related to certain industries using or served by public infrastructure are 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? Indicate where possible considerations which may be part of a local trend or demographics affecting the need or demand for a project are 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? Indicate where possible environmental justice issues which may be considered for the project are 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? Indicate where possible acceptability or affordability issues which may be considered for the project are discussed in the Facilities Plan:	☐	☐

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

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? Indicate where the integrated cost and effectiveness analysis of the cost factors and the other/nonmonetary factors for a project are discussed/located in the Facilities Plan: 20.3.8 Cost and Effectivenss Conclusion	☒	☐

Appendix C. CWRF B3 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)

Doc Type: Wastewater Point Source

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 electronically to the Minnesota Pollution Control Agency (MPCA) review engineer.**

If the answer to **all of the statements is "No", sign and send the completed form electronically to the MPCA review engineer.** Once the Facilities Plan receives preliminary approval [Minn. R. 7077.0272], submit it to B3 SB 2030 Wastewater Treatment Plant (WWTP) Review at sb2030@b3mn.org. More information is available at https://www.b3mn.org/2030energystandard/.

Project information

Project name: Wanamingo Conveyance

Project Description: Wanamingo Conveyance to North Zumbro Joint WWTF

MPCA review engineer: Corey Hower MPCA project number: 280813

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 a "Yes" box is checked for any of criteria 1- 9 above, the project is exempt. If none of the "Yes" boxes are checked, the project is not exempt. Please provide a brief description of the project and complete the Certification Statement below.

New conveyance from Wanamingo consists of new lift station and forcemain.

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. A preliminary approved Facilities Plan will be sent to the B3 SB 2030 WWTP Review at sb2030@b3mn.org, and the Review water and energy conservation recommendations will be considered.

Project Representative or Professional Engineer

Print name: Brandon Theobald

Organization: WHKS & Co.

Email address: btheobald@whks.com

Signature:

Date (mm/dd/yyyy): 2/22/2024

Appendix D. CWRF Cost and Effectiveness Certification Form

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.

Doc Type: Wastewater Point Source

Instructions: The project representative must check boxes 1), 2), and either i) or ii) 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[i&ii], 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.

☒ i) This project is exempt from the 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*). The form is available on our website here: https://www.pca.state.mn.us/business-with-us/apply-for-financial-assistance

☐ ii) This project is not exempt from B3 SB 2030 WWTP Review. Submit the Facilities Plan to B3 SB 2030 WWTP Review at sb2030@b3mn.org and consider the Review water and energy conservation recommendations.

Project information

Municipality name: Wanamingo

MPCA Project number: 280813

MPCA Review Engineer: Corey Hower

Project name: Wanamingo Conveyance

Project description: New conveyance from Wanamingo to NZSSD WWTF

Certification

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

Project Representative

Print name: Michael Boulton

Signature:

Date (mm/dd/yyyy): 2/22/2024

Email address: cityadministrator@cityofwanamingo.com

Professional Engineer

Print name: Brandon Theobald

Signature:

Date (mm/dd/yyyy): 2/22/2024

Email address: btheobald@whks.com

Footnote: If the "ii" box is checked under item 2, the Professional Engineer is certifying that the Facilities Plan has been submitted to the B3 SB 2030 WWTP Review at sb2030@b3mn.org, and the Review water and energy conservation recommendations will be considered. More information is available at https://www.b3mn.org/2030energystandard/.

Appendix E. Public Hearing Presentation

Revisions:
April 8, 2024: Public Hearing Information Enclosed

whks engineers + planners + land surveyors

WIDSETH

ISG Architecture Engineering Environmental Planning ISGInc.com

Wanamingo Conveyance Facilities Plan

North Zumbro Sanitary Sewer District (NZSSD)

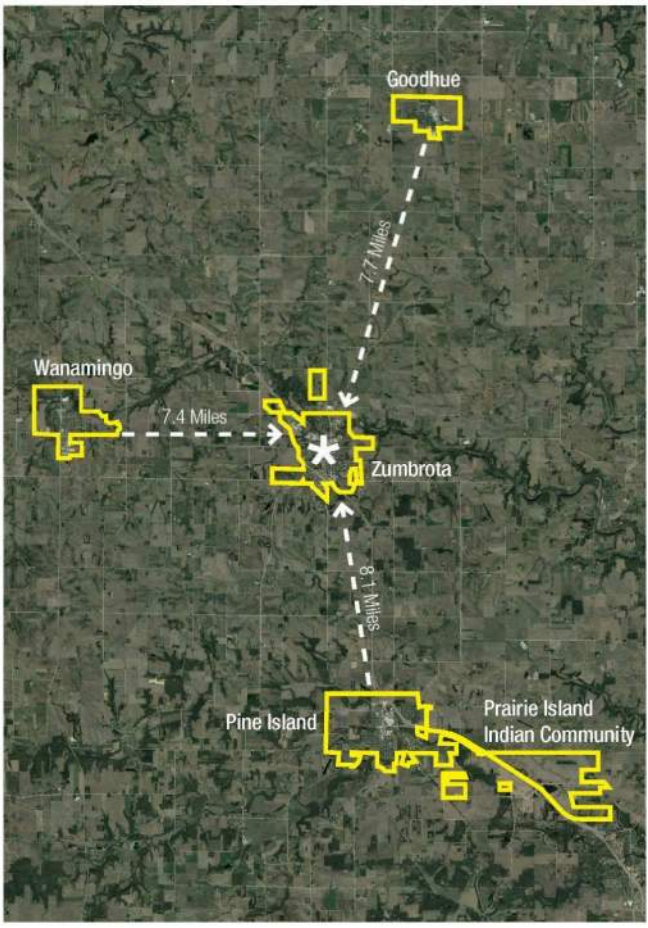
Public Hearing – City of Wanamingo

April 8, 2024

Presenters: Brandon Theobald and Bill Angerman

whks engineers + planners + and surveyors | WIDSETH | ISG

WANAMINGO MINNESOTA



Agenda

- Background
- Treatment Alternatives
- Selected Alternative
- Project Site
- Estimated Project Costs
- Projected Sewer Charges
- Anticipated Schedule

WANAMINGO MINNESOTA

Background

- Current Wastewater Treatment Facility
  - Initially Constructed in the late 1973
    - Upgraded in 1981
  - At the end of its useful life
  - Equipment needs to be replaced
  - Limited capacity for growth
  - Flooding at current facility
  - Not able to treat for future effluent limits

WANAMINGO
MINNESOTA

Treatment Alternatives

- City Council reviewed possible wastewater treatment solutions
  - Build New WWTF
  - Construct a new Regional Wastewater Treatment Facility
    - Includes the communities of
      - Goodhue
      - Pine Island
      - Wanamingo
      - Zumbrota
      - Prairie Island Indian Community
  - Alternative Selected
    - Construct a new Regional Wastewater Treatment Facility
      - Near Zumbrota's Existing Facility

WANAMINGO
MINNESOTA

Selected Alternative – New Regional Facility

- Formation of North Zumbro Sanitary Sewer District (NZSSD)
  - Cities of Goodhue, Pine Island, Wanamingo and Zumbrota Entered into Joint Powers Agreement
- Construction
  - Construct Lift Station in Wanamingo
  - Install Forcemain to Transport Wastewater to Zumbrota
  - Decommission Existing Facility
- Maintenance
  - NZSSD to Maintain Forcemain and Operate New Facility
  - City to Maintain Existing Collection System

WANAMINGO
MINNESOTA

Project Site

WANAMINGO
MINNESOTA

Estimated Project Costs

- Total Estimated Project Costs – NZSSD Regional Facility
  - Facility - Cost Split (50% Flow, 25% TSS, 25% BOD)
  - Conveyance - Cost Split (100% Peak Flow)
  - Project Costs – $111,300,000
    - Wanamingo - $11,291,000 (10.1% of Total)
    - Wanamingo with Bonding Bill - $5,762,000
- State Bonding Bill
  - $10,000,000 - 2023 Bonding Bill Appropriation
    - Land Acquisition and Predesign
  - $44,800,000 – 2024 Bonding Request
- Total Estimated Project Costs – Build New Facility
  - Project Costs – $15,135,000

WANAMINGO
MINNESOTA

Projected Sewer Service Charges

- Sewer Rates for Average User
  - Current - $63.00 / Month
    - 2024 Base Rate of $28 / Month and User Rate of $7.00 / 1,000 Gallons
  - Projected
    - Planned Regionalization and Receiving Funding Through Bonding Bill
      - $118 / Month
    - If City of Wanamingo Build New Facility
      - $290 - $315/ Month
  - NZSSD is Pursuing Additional Funding Opportunities

WANAMINGO
MINNESOTA

Anticipated Schedule

- **2020 Summer:** Communities began collaborating on Regional Sewer District efforts
- **2021 March/April:** Communities passed resolutions of support for District and authorized Feasibility Study
- **2021 Fall:** Prairie Island Indian Community announced support for the project.
- **2023 May:** ***Bonding Bill was passed by Legislature, Governor approval on June 1 - $10M Appropriation***
- **2023 Summer:** Communities entered into a Joint Powers Agreement and initiated land acquisition process
- **2024 March:** Submit facility plans to MPCA for approval

- **2024 June:** Receive facility plan approval from MPCA
- **2024-25 Winter:** Final design
- **2025 July:** Submit PSIG applications for grant funding
- **2026 June:** Finalize design/receive MPCA project certification
- **2026 Fall:** Begin construction
- **2028 Fall:** Complete construction

WANAMINGO
MINNESOTA

Questions?

Brandon Theobald
Phone 507-288-3923
Email btheobald@whks.com

Bill Angerman
Phone 507-288-3923
Email bangerman@whks.com

NZSSD Executive Committee

City of Pine Island - Elizabeth Howard
City of Wanamingo – Michael Boulton
City of Zumbrota – Brian Grudem
City of Goodhue – Ellen Anderson Buck

WANAMINGO
MINNESOTA

Appendix F. Public Hearing Comments

Revisions:
April 8, 2024: Public Hearing Information Enclosed

CITY OF WANAMINGO
City Council Regular Meeting
Monday, April 8, 2024 7:00 P.M.
Wanamingo City Council Chambers – 401 Main Street
Wanamingo, MN

CALL TO ORDER: Mayor Holmes.

PRESENT: Council: Ryan Holmes, Stuart Ohr, Eric Dierks, and Rebecca Haugen
City Administrator: Michael Boulton
Deputy Clerk: Karen Masters
ABSENT: Council: Jeremiah Flotterud

ALSO PRESENT: Brandon Theobald – WHKS, Bill Angerman – WHKS, Brad Kennedy, Richard Turri, Jason Boynton – Smith Schafer, Stephen Kingsbury, Beth Haas – Zumbrota News-Record, Andrew Deziel – Kenyon Leader, David Kujawa – Three Rivers Community Action, Edward Matul – Goodhue County Deputy Sheriff.

ADOPT AGENDA: Ohr motioned to adopt the agenda, seconded by Haugen. Passed 4-0-0.

CONSENT AGENDA: Dierks motioned, seconded by Ohr. Passed 4-0-0.

PRESENTERS:

A) Brad Kennedy reported on:
1) Jetted all clay sanitary sewer lines
2) Plowed snows and salted streets
3) Replaced leaking break line in 950 Caterpillar Pay Loaders
4) Had Schumacher Excavating dig up and replace section of sanitary sewer line between 2nd Street E, 3rd Street E, West Avenue, and High Avenue that partially collapsed
5) Placed out park benches and garbage containers on Main Street sidewalks
6) Worked with Core & Main staff to rebuild hydrant on West Avenue
7) Started work on alleys utilizing the skid loader and plainer attachment
8) Worked with Reliable Heating & Cooling on a furnace that was not working at the Medical Center. A bird's nest was removed far into the exhaust line. The exhaust line will have a new mesh cover installed.
9) Received AED from Goodhue County Sheriff's Office grant. Ordered and received a wall mount box from Ultimate Safety Concepts Inc that will be installed in the community center.

B) Jason Boynton of Smith Schafer & Associates reported on:
1) Conducted a presentation of the 2023 Wanamingo City Audit
2) No large (State or Federal) single audit required for 2023
3) There is limited segregation of duties in the small office – yearly recommendation for small staff communities. This is not possible with a small office staff.
4) The audit completion letter showed no disagreements with management
5) Paid down $636,000 of debt in 2023
6) The general fund showed a $22,646 shortfall in 2023 and will have roughly a $580,000 balance. This will decrease the reserve balance from 79% to 61%. There was planned reserve spending on Prairie Ridge Estate Park Shelter of $15,000 and additional street maintenance work $17,900. There was also unplanned capital spending with Community Center/City Hall doors of $11,500 and skid loader snow blade of $7,800. There were also one-time expenses toward fire relief association retirements of $30,000. There was additional revenue from investments totaling $44,000, donations of $30,000, and building permits. Water fund showed a decrease in cash from $1,082,274 274 to $701,322 at the end of 2023 at part of 2022 Utility Improvements project. Sewer fund showed an increase of cash of $75,541 while having $644,359 in cash at the end of 2023.
7) Recommend keeping an eye on water and sewer billing rates so that they are keeping up with operational costs and future capital needs.

Dierks stated that he was happy that debt was being paid down and that a number of bonds were being retired in the near future. Holmes stated that the City financial are in good shape and appreciates the continued vigilance by the staff.

D) Richard Turri Licensed WWTP Operator, reported on:

1) Has been licensed WWTP operator for the City of Wanamingo since 2011.
2) Wanamingo WWTP is a class B facility. Need operator with at least a class B operator license, Richard Turri has a class A operator license. Ongoing training of 32 hours/three years and 6 hours training for biosolids applicator license.
3) Waste water treatment facility has had issues the past year with high pH levels and QAC's from Reckitt. The pH issues seem to be getting under control. QAC issues are happening everywhere around the State. QAC usage is not regulated by the State and will continue to cause wastewater treatment facilities issues in high concentrations. The south digester, handling the domestic waste running extremely well. The north digester, handling the industrial waste from Reckitt still is not running optimally.
4) Has been attending the NZSSD technical committee meetings. Has provided and will continue to provide input to ensure that a new plant is designed with future operators in mind.

E) David Kujawa of Three Rivers Community Action reported on:

1) Three Rivers Community Action is starting a Chore and Homemaker Services for Older Adults in the Wanamingo Community.
2) Three Rivers are currently seeking volunteers to assist older adults who are in need of help with yard work, laundry, cooking meals, and other tasks. Three River Community Action's goal is to better connect older adults with volunteers and help them remain independent in their homes. Volunteers can reach out to Volunteer Coordinator David, at 507-321-0404 or by email at dkujawa@threeriverscap.org for more information and sign up. Volunteers can sign up at threeriverscap.galaxydigital.com for opportunities in Wanamingo.
3) Older adults looking for services can reach out to Three Rivers Community Action at 507-316-0610 or by email at oas@threeriverscap.org. An Older Adult Advocate will connect and set up a time for home a visit to assess needs. Three Rivers Community Action also provides energy assistance, SNAP application assistance, housing assistance, Meals on Wheels and many other vital community programs.

NEW BUSINESS:

RESOLUTION:

Public Hearing – Mayor Holmes opened up North Zumbro Sanitary Sewer District (NZSSD) Wanamingo Portion of the Facilities Plan at 7:24PM. Brandon Theobald and Bill Angerman from WHKS presented a PowerPoint on the NZSSD Wanamingo Portion of the Facilities Plan. The proposed regional wastewater treatment facility and collection system will service the communities of Goodhue, Pine Island, Wanamingo and Zumbrota along with the Prairie Island Indian Community. This Facilities Plan public hearing is for the Wanamingo portion only. Goodhue, Pine Island, and Zumbrota have already completed their Facilities Plan public hearings. Wanamingo wastewater treatment facility was constructed in 1973 with an upgrade in 1981. The wastewater facility is at the end of its useful life. The plant is constructed in the floodplain and has been flooded out three times in the last fifteen years. The digester walls are leaking and the concrete/steal is deteriorating. The MPCA is reducing the effluent limits that the current plant can't treat. The MPCA is in the process of placing phosphorus limits on to combat the Gulf of Mexico dead zone caused by discharge from the Mississippi River. The treatment alternatives are a new sewer plant onsite or a regional treatment facility and collections system. The North Zumbro Sanitary Sewer District (NZSSD) was formed through a joint power's agreement. The proposed new facility would be constructed in Zumbrota with lift stations and force main. The four current sanitary sewer plants, including Wanamingo, would be decommissioned. A formal sanitary sewer district would be formed by the State as its own government entity. The Wanamingo collection system would start near the current Wanamingo wastewater treatment facility with a lift station and pumps, run up Hillcrest Avenue/Hill Avenue to the south, head east on MN TH 60, and then run through Zumbrota to the recently purchased land where a new wastewater treatment facility will be constructed. The total project costs are estimated at $111,300,000 million. The City of Wanamingo share is 10.1% of the costs, or $11,291,000. The treatment facility and collection system costs are based upon 50% flow, 25% Total Suspended Solids (TSS),

and 25% Biological Oxygen Demand (BOD). The detention costs are based upon 100% of the peak flow (I & I). The four communities received $10 million in capital funding from the State in 2023 for land acquisition and predesign. The four cities have a $44.8 million State capital request in 2024. The Wanamingo actual cost to construct a new Wanamingo wastewater treatment facility at the current location would be $15,135,000. The Wanamingo actual cost for the regional treatment facility and collection system is $5,762,000 with the $44.8 State capital request. The four communities banding together create economies of scale. The Wanamingo actual cost for the regional treatment facility and collection system without additional State capital funds would be $11,291,000. There are additional funding options that the four communities will pursue, but are not definite, included Point Source Implementation Grants (PSIG). PSIG is capped at $7 million. It has not been defined if the PSIG eligibility would be capped at $7 million for the project or each community. Another funding option would be to pursue Federal Congressional Directed Spending (earmark). The Federal Congressional Directed Spending is capped at $5 million in 2025. The current Wanamingo average monthly home sewer portion of the utility bill is $63/month. With receiving the full State capital request the rates would need to increase to $118/month. Without receiving any of the State capital request the rates would need to increase to $290/month. If the City constructed its own sewer plant the rates would need to increase to $315/month. Kingbury asked if his current utility bill was around $100 how much his utility bill would increase. Theobald stated roughly $40. Holmes asked what other Minnesota cities do to construct new wastewater treatment facilities. Theobald stated that projects are piecemealed, State funding is requested, and user rates increase significantly. Kingsbury asked if the project could wait. Theobald stated that the sewer plant is falling apart and that additional State standards for sulfates, nitrates, PFAS, and phosphorus will not be able to be met with the current facilities. Angerman stated that the positives would be there are strength in numbers to make operation & maintenance costs cheaper, have redundancies in treatment. The treatment per gallon will become cheaper over time. It will be simpler to meet new standards at one location in the future, rather and four. Kingsbury asked if reducing I & I will lower the costs. Theobald stated yes and no. Wanamingo factored in low growth assuming that I & I will be reduced. Additional growth would be offset by I & I reduction. Theobald stated that reducing flows and loadings can reduce costs to Wanamingo in the future. Kingsbury asked what the proposed new facility life expectancy would be. Angerman stated that the mechanics are designed for twenty years and the plant is designed for fifty. The amount of land purchased has a footprint to double the size of the facility in the future. Theobald stated that the pipes are designed for one hundred years, the lift stated for fifty years, and the pumps for twenty years. Turri asked is the lift station would have a spare ump. Theobald stated that the lift station would have two to three pumps depending upon the final design, with the expectation to have an extra pump built in. No Additional Public Comments Offered. Mayor Holmes closed the public hearing at 7:46PM.

24-028 = Approving the NZSSD Wanamingo Portion of the Facilities Plan: Ohr moved to approve, Seconded by Haugen. Passed 4-0-0.

24-029 = Accepting the 2023 Wanamingo Audit: Ohr moved to approve, Seconded by Haugen. Passed 4-0-0.

24-030 = Approving a Revised City of Wanamingo Fund Balance Policy: Dierks moved to approve, Seconded by Haugen. Boulton stated that the general fund spending will be $1,040,000 in 2024. The current $500,000 reserve balance will now be in the middle of the 35%-65%. Boulton suggested moving the goal post of general fund reserve balance to $650,000 to reflect the increase from $650,000 in the general fund spending since the policy was last modified in 2018. Haugen asked the plan and timing to increase the general fund balance. Boulton stated that the plan would be to increase over five years with a review of the policy to occur again in 2029. Boulton also stated that the recommendation is to budget a 3% reserve. Holmes stated that the yearly budget should be setting aside reserves to keep with reserve fund balance as yearly general fund spending increases. Passed 4-0-0.

24-031 = Approving PSA with WHKS for a Sump Pump Inspection Program: Ohr moved to approve, Seconded by Dierks. Theobald stated that Inflow & Infiltration (I & I) is groundwater that does not need to be treated with wastewater. When wastewater treatment plants, like Wanamingo, were constructed the solution to pollution was dilution. However, with the cost of new treatment facilities and operation it adds unnecessary costs to construct larger facilities and treat unnecessary I & I. The City sees spikes in waste water flow up to eight times regular flows during wet weather events. I & I costs are difficult to quantify in their added costs to a facility. However, with the facilities plan presented the I & I in the proposed new NZSSD treatment facility will cost the average home roughly $30 extra per month. A sump pump program is the most cost-effective option to reduce I & I. Other options include drain tile inspections, replacement/lining of services lines,

replacement/lining of sewer mains, and testing for cross connections with stormwater lines. Sump pump inspection programs are not attractive politically. The program would go into all homes for inventory later to ensure sump pumps do not hook into sanitary sewer, that all lines are plumbed outside, and all sump pump baskets have pumps and discharge lines (or are sealed off). There would be a requirement for homeowners to make corrections if they are out of compliance. The sewer utility rate payers will save money in the long-run by implementing a sump pump inspection program. The end goal would be to give homeowners time to a timeline for inspection, timeline to fix if there are violations, or pay a surcharge. The program will educate the public through a website, mailings, and public hearings. The program will coincide with the MN Department of Health lead/copper grant to identify lead service line for future replacement. The two programs will also GPS in water service shutoff curb stops. The proposed program cost is $72,440. Ohr stated that he does not wish to pay for others I & I when the new regional NZSSD is in operation. Haugen agreed that the I & I will cost residents significantly in the future if not addressed. Holmes asked what the timeline would be to complete the program. Theobald than a half hour for each inspection. Theobald stated that the work would start later this summer and run into fall. Holmes asked where the water will be deposited if sump pumps are changed from dumping into the sanitary system to outside. Theobald stated that the ideal place would be to pump the water to tile line behind the back of the curb. If there is no tile line behind the back of the curb the water will be deposited into the street or into the homeowner's yard. Kennedy asked when should sewer service lines be televised and drain tiles be removed from going into the sanitary sewer system. Theobald stated that drain tile inspections program could be completed down the road, but the effort and cost is higher than sump pump inspection program. Theobald stated that smoke tests would be completed next spring in which roof drains and cross connection could be identified for future repairs saving additional I & I. Passed 4-0-0.

Administrator Boulton provided a memo and cost estimates for emailed billing and online utility billing portal options. The topic of emailed utility billing has come up with Council and staff over the past two years. Other are communities such as Zumbrota, Pine Island, and Goodhue have recently offered online billing. Currently, all Wanamingo utility bills are mailed, included those on auto pay. The United States Post Office charges $0.53 for post cards and $0.64 for regular envelopes processed through the Quadient postage machine. There were 544 total utility bills generated in March 2024. There were 226 auto pays and 318 regular billings (paying with check, cash, or credit card). There are roughly 25 envelopes sent out each month with multiple post cards while there are roughly 475 individual post cards. This equals out to roughly $280 in postage each month. The post cards, ink, and envelopes probably cost an additional $0.50 each. This would equal and additional $270 in other direct costs to mailing each month. The monthly direct cost total for mailing would be $550 per month or $6,600 per year. There are also indirect costs of staff time generating the utility bills and placing the postage on each envelope and post card.

There is significant staff time in preparation of monthly utility bills. The City saved significant staff time in changing over from hand held meter reader to the cellular data package reading. The City staff continue to have added workload and need to look for ways to simplify tasks in order to get work completed in a timely manner. Emailed utility billing along with a citizen portal to access historic usage, billing, and handle payments would save staff time in the long-run. There would be initial increased staff time to manage the email collection and maintenance for citizens. The alternative is for the City Council to hire additional City staff to manage the ever-increasing workload. Hiring additional City staff is a burden to both the property taxes and utility bills.

The US Post Office has become unreliable in the long duration for normal deliveries of bills, damage to letters, and some cards not showing up for months. The US Post Office has gotten so bad that staff is considering other forms of payments to vendors to avoid late fees. There are getting to be more citizens that inform the City that they did not receive their bills. For these reasons the City Council and staff should look toward other more reliable alternatives to the US Post Office such as emailed utility bills.

The computer system and utility billing software has undergone updates the past two years. The City has upgraded utility billing software through Civic Systems (Casselle) in spring 2021, completed a two-and-a-half-year city-wide water meter replacement program and changes from hand held meter reader to cellular data packet online reading in August 2023, and completed backup server replacements in May 2023. All of these updates have come with drawbacks, hiccups, and additional challenges before the systems run smoothly. City

staff have wanted to ensure that the system is running smoothly before taking on the next update. Staff contacted Civic Systems, regarding emailed billing options this past winter. Civic Systems has two options for emailed billing. The first option is for emailed utility billing with an initial one-time fee of $1,800 and a $300 annual support fee. The second option is for both emailed utility billing and citizen portal with an initial one-time fee of $1,900 and a $400 annual support fee. The second option would be the better buy getting both emailed billing and a citizen portal to be able to see current bills, usage history, billing history, and be able to pay with credit card.

The pros would include long-term direct cost savings in postage, post cards, ink, and envelopes. Emailed utility bills would be more reliable than the US Post Office. This would save the city staff time in preparation of monthly utility bills and answering historic usage and billing questions with citizen use of an online portal. The cons would include difficulty in getting 544 utility billing recipients to sign up for emailed billing. There would probably still need to be a printed billing option moving forward for those that do not utilize the internet or email. This would mean that the utility billing system would not be uniform. There is question regarding the redundancy of receipts for both the customer and the city. Some residents like a receipt of the top stub of the current postcard bill. Going forward they may wish for a receipt from the City if they come into make a payment. The city utilizes the bottom portion stub of the postcard for a receipt or generate a receipt from the carbon copy book. This helps with any questions in case a payment is entered incorrectly when processing payments. The carbon copy receipt books are over $50 each (150 receipts per book). The city utilizes roughly five of these books per year. The city would either require twenty more receipt books or some other redundant payment tracking to cover the payments for the year without paper stub. Other alternatives would be tracking payments through Casselle (utility billing software) cash receipt module or track check images through the bank.

Boulton asked if the Council wished to move forward with an emailed utility billing option? The Council members agreed to bring forward a resolution for consideration of approval at the May City Council meeting. Boulton asked the City Council's intention to offer an incentive to citizens to sign up for emailed billing. The Cities of Zumbrota, Pine Island, and Goodhue are looking at offering a one-time ($5) credit to customers utility bill to sign up for emailed billing. The Council did not offer specific feedback on credits for signing up. Boulton asked if the City Council wished to eventually charge for those who do not sign up for emailed billing. The City of Zumbrota, Pine Island, and Goodhue have all discussed charging $1-$5 per month for those who still receive a hard copy bill in the US Mail. The City Council did not offer specific feedback on requiring emailed signup or monthly charges for mailed bills. Kingsbury stated that the City utility bill is the only regular monthly bill that he gets in the US Mail. Holmes stated that he wished to see the emailed utility bills with the customer portal option. Ohr agreed with including the portal option.

OLD BUSINESS:

Enforcement Process – Mead Johnson - Reckitt – 120 day written letter toward meeting goal of waste pH – Boulton stated that the City had received a letter from Mead Johnson – Reckitt. Mead Johnson – Reckitt pH of wastewater discharge was consistently within range during the month of March. The frac tank was installed and incorporated into their process on March 6th. Mead Johnson – Reckitt goal is to install a new lift station with pH treatment. The project has been funded and is proceeding through the final engineering design phase. Boulton stated that the Wanamingo staff are still monitoring the wastewater discharge from Reckitt-Mead Johnson. Kennedy stated that there were no high pH levels in March. Kennedy stated that with the installation of the new frac tank the flows went from 24 hours per day to less than 6 hours per day. The pH levels of the wastewater discharge are being adjusted before being sent to the wastewater treatment plant. Prior to December results have regularly shown extremely low and at times high pH levels along with the presence of high levels of QAC (Quaternary Ammonium Compounds) have been sent to Reckitt-Mead Johnson. The pH levels should be within 5.0 and 9.5. City Staff have been working with Reckitt-Mead Johnson toward the achieved solution of pH levels within the limits. The City appreciates the open dialogue and work, to date, from Reckitt- Mead Johnson. The City continues to keep the Minnesota Pollution Control Agency informed during this process. Boulton stated the Enforcement Process would be left on the monthly agenda until November 2024, or when the

action items are completed. Boulton stated the Mead Johnson -Reckitt would be required to provide written monthly updates to the City Council.

Holmes noted that the Goodhue County Sheriff had provided a 2023 annual report to Council members. The report had been presented to the Wanamingo Police Work Group committee. The committee has been meeting with the Sheriff's office on Wanamingo policing on the first even month Friday at 9:00AM. The next Wanamingo Police Work Group committee meeting will be on June 7th.

*Next City Council meeting on 5/13/2024 at 7:00pm.

Adjourn: At 8:26PM a motion to adjourn was made by Dierks and seconded by Ohr. Passed 4-0-0.

Signed: _____
Ryan Holmes, Mayor

Attest: _____
Michael Boulton, City Administrator

Appendix G. SERP Mailing List Form

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: City of Wanamingo **Project number:** 280813

Contact name: Dan McInnis (Widseth) **Phone number:** 320-335-5006
(person completing the form)

Public notice address information

1.	**The Honorable State Senator:**	**6.**	**City Administrator/Clerk:**
	The Honorable Senator John Jasinski Minnesota State Senate Minnesota Senate Building, Room 2227 95 University Avenue West St. Paul, MN 55155		City of Wanamingo Michael Boulton, City Administrator 401 Main Street Wanamingo, MN 55983
2.	**The Honorable State Representative:**	**7.**	**Engineering Consultant:**
	The Honorable Rep. Brian Daniels Minnesota House of Representatives 231 State Office Building St. Paul, MN 55155		Mr. Brandon Theobald, Engineering Consultant WHKS 2905 Broadway Ave S Rochester, MN 55904
3.	**The Honorable County Board Chair:**	**8.**	**County Planning and Zoning Office:**
	The Honorable Todd Greseth, Chair Goodhue County Board of Commissioners 46804 Hwy 57 Boulevard Wanamingo, MN 55983		Goodhue County Planning & Zoning 509 West 5th Street Red Wing, MN 55066
4.	**The Honorable Mayor:**	**9.**	**Watershed District (if established):**
	The Honorable Ryan Holmes, Mayor City of Wanamingo 401 Main Street Wanamingo, MN 55983		N/A
5.	**Township Board Clerk:***	**10.**	**Regional Development Commission:**
	Minneola Township Sarah Pettit 15361 440th Street Zumbrota, MN 55992		City of Wanamingo Michael Boulton, EDA Director 401 Main Street Wanamingo, MN 55983

***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)
	Mr. Monty Schaefer, Public Works City of Wanamingo 401 Main Street Wanamingo, MN 55983
	Mr. Brad Kennedy, Public Works City of Wanamingo 401 Main Street Wanamingo, MN 55983
	Mr. Craig Britton, PE, Engineering Consultant Widseth 3777 40th Avenue NW, Suite 200 Rochester, MN 55901
	Pine Island Township David A. Arndt, Clerk 21196 510th Street Pine Island, MN 55963
	Zumbrota Township Laurie Hoernemann, Clerk 21180 County 4 Blvd Zumbrota, MN 55992
	Goodhue Township Brenda Hinsch 19919 370th Street Goodhue, MN 55027
	Elizabeth Howard, City Administrator City of Pine Island 250 South Main Street Pine Island, MN 55963
	City of Zumbrota Brian Grudem, City Administrator 175 West Avenue Zumbrota, MN 55992
	City of Goodhue Mayor Ellen Anderson Buck 405 N. Broadway Goodhue, MN 55027
	Mr. Glenn Gustafson, Engineering Consultant WHKS 2905 Broadway Ave S Rochester, MN 55904

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):

MPCA Regional Office, Rochester 7381 Airport View Drive SW Rochester, MN 55902	

Appendix H. Resolution Accepting Facility Plan

Revisions:
April 8, 2024: Public Hearing Information Enclosed

CITY OF WANAMINGO
GOODHUE COUNTY
STATE OF MINNESOTA

RESOLUTION 24-028

A RESOLUTION ADOPTING FACILITIES PLAN FOR WASTEWATER SYSTEM IMPROVEMENTS

WHEREAS: The Cities of Goodhue, Pine Island, Wanamingo and Zumbrota are parties to the North Zumbro Sanitary Sewer District (NZSSD) Joint Powers Agreement, and

WHEREAS: The NZSSD has determined that a regional wastewater treatment facility and collection system is the most cost-effective option to meet the long-term wastewater treatment needs of the four communities; and

WHEREAS: the NZSSD intends to construct wastewater system improvements, and

WHEREAS: The engineering team of WHKS & Co, Widseth Inc and ISG Inc, on behalf of the Cities of Goodhue, Pine Island, Wanamingo and Zumbrota, has prepared a facilities plan for the purpose of submitting the plan to the Minnesota Pollution Control Agency for review and approval.

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

1. That the facilities plan presented by the engineering team of WHKS & Co, Widseth, Inc and ISG Inc is hereby formally approved.

2. The City Council hereby authorizes the engineering team of WHKS & Co, Widseth, Inc and ISG Inc to submit the Facilities Plan to the Minnesota Pollution Control Agency for review and approval.

Adopted this 8th day of April 2024.

SIGNED:

Ryan Holmes, Mayor

ATTEST:

Michael Boulton, City Administrator

Motion: Second:

	Aye	Nay
Eric Dierks	X	
Jeremiah Flotterud		Abstain
Rebecca Haugen	X	
Ryan Holmes	X	
Stuart Ohr	X	

Appendix I. Intermunicipal Agreements

This Appendix includes a list of the intermunicipal agreements and other approvals / agreements necessary for the project, and a copy of the executed North Zumbro Sanitary Sewer District Joint Powers Agreement dated July 2023.

JOINT POWERS AGREEMENT

NORTH ZUMBRO SANITARY SEWER REGIONAL FACILITY

The parties to this joint powers agreement ("Agreement") are the following governmental units of the State of Minnesota: City of Goodhue, City of Pine Island, City of Wanamingo and City of Zumbrota ("Party" or "Parties" as the context requires). This Agreement is made and entered into pursuant to Minnesota Statutes, Section 471.59.

RECITALS

1. Pursuant to applicable law including, but not limited to, Minnesota Statutes, Section 444.075, the Parties have authority to build, construct, reconstruct, repair, enlarge, improve, or in any other manner obtain sanitary sewer systems, including sewage treatment works, disposal systems, and other facilities for disposing of sewage, industrial waste, or other wastes, and maintain and operate such facilities inside or outside their corporate limits, and acquire by gift, purchase, lease, condemnation, or otherwise any and all land and easements required for this purpose.

2. The Parties have been authorized by law Laws of Minnesota 2023, Chapter 72, Article 2, Section 10, Subd. 10 to enter this Agreement to administer and expend a $10,000,000 grant to acquire property for and predesign a new state-of-the-art regional wastewater treatment facility located in Goodhue County ("Facility") to serve the Parties and land owned by the Prairie Island Indian Community ("PIIC") in Pine Island ("PIIC Land").

3. It is anticipated that additional grant funds or appropriations will be requested from the Legislature or other governmental bodies for the Facility. It is additionally anticipated that the North Zumbro Sanitary Sewer District (the "District") will be subsequently- formed pursuant to Minnesota Statutes, Chapter 442A.

4. Prior to receipt of additional funds and formation of the District, the Parties are authorized to and intend to conduct studies, make purchases, contracts and expenditures, and begin to make capital improvements in furtherance of construction of the Facility including the making of connections from the Facility to the Parties' communities and PIIC Land.

ARTICLE 1. PURPOSE

The purpose of this Agreement is to create a joint powers organization by which the Parties may jointly and cooperatively begin study, investigation, and planning, engineering, land acquisition, and development of plans for construction of the Facility. It is intended that the Facility will ultimately be owned and operated by the District and that the District will provide sanitary sewer services to the Parties and the PIIC ("Sanitary Sewer Services") and the institutions, businesses, and residences in these communities.

ARTICLE 2. MEMBERSHIP

Section 1. As of the date of this Agreement, the members are the City of Goodhue, City of Pine Island, City of Wanamingo, and City of Zumbrota. The PIIC and any other governmental unit seeking to receive Sanitary Sewer Services is eligible to become a member.

Section 2. A governmental unit desiring to become a member may do so upon approval by the Executive Committee and execution by the Parties, and the new member, of an amendment to this Agreement adding such new member. The Executive Committee may impose reasonable conditions on the admission of new members and shall determine any initial financial contribution of a new member at the time that membership is approved.

ARTICLE 3. EXECUTIVE COMMITTEE

Section 1. The governing body for this joint powers body is the Executive Committee. The governing body of each Party shall appoint one director to the Executive Committee who shall be a member of that Party's governing body or the head administrative officer/employee. Each Party may appoint an alternate director subject to the same qualification requirements.

Section 2. The PIIC may appoint an ex officio, non-voting director to the Executive Committee. Additionally, the consultant engineers of the Parties shall be ex officio, non-voting directors.

Section 3. Each director has one vote. Alternate directors may attend meetings of the Executive Committee and vote in the absence of a Party's director. Directors may not vote by proxy.

Section 4. The affirmative vote of the majority of Directors present at a meeting convened with a quorum shall constitute action by the Executive Committee.

Section 5. Directors shall serve for an indefinite term until a successor is appointed and qualified. A director may be removed at any time by the governing body of the appointing Party upon notice to the Executive Committee.

ARTICLE 4. MEETINGS

Section 1. For purposes of transacting any business at a meeting, the presence of a majority of the voting directors shall constitute a quorum. Notwithstanding, the directors present at any meeting may adjourn the meeting to another date despite the absence of a quorum.

Section 2. All meetings of the Executive Committee shall be conducted in compliance with the Minnesota Open Meetings Law, Minnesota Statutes, Chapter 13D.

ARTICLE 5. FUNCTIONING OF EXECUTIVE COMMITTEE

Section 1. The Executive Committee shall elect a chair and secretary/treasurer who shall serve for indefinite terms at the pleasure of the Committee.

Section 2. The chair shall call meetings, preside at meetings, and be responsible for and authorized to take such other actions as is customary for the chief executive of a governmental unit. The chair is responsible for such matters as may be delegated by the Executive Committee. The chair must sign any request to the financial agent for disbursement of funds. The secretary/treasurer shall act as the chair in the chair's absence.

Section 3. The secretary/treasurer shall be responsible for the records of proceedings of the Executive Committee, and for the Committee's funds and financial records. The secretary/treasurer must co-sign any request for disbursement of funds.

Section 4. Contracts shall be executed on behalf of the joint powers organization by both the chair and the secretary/treasurer, and only pursuant to authority from the Executive Committee.

ARTICLE 6. POWERS AND DUTIES

Section 1. The Executive Committee may take such actions as it deems necessary and convenient to accomplish the purposes of this Agreement.

Section 2. The Executive Committee shall plan, develop, and provide for financing, construction and operation and management of the Facility to the extent permitted by law and as provided in the Recitals above. The Executive Committee shall consider the results of any studies or analysis received by the Committee and provide recommendations to the Parties or, as appropriate, take independent actions based on such results.

Section 3. The Executive Committee may:

a. Enter into contracts to carry out its powers and duties and hire employees, agents, or consultants, provided that unanimous consent from all Parties is obtained before any financial obligations are incurred in excess of the funds available to the Committee;

b. Contract with a Party to serve as fiscal agent to hold, administer and disburse funds including specifically grant funds referenced in the Recitals above and any similar grants, appropriations or other fundings sources subsequently obtained;

c. Accept gifts, apply for and use grants or loans of money or other property from other governmental units or private organizations, and enter into agreements in connection therewith, and hold or expend such money or property in accordance with the terms of the gift, grant, loan or agreement relating thereto;

d. Purchase public liability insurance and such other insurance as it may deem necessary;

e. Conduct research on sanitary sewer issues and plan for construction of the Facility;

f. Lobby, seek legislation, request regulatory reform or action or otherwise seek to further the interests of the Parties;

g. Take such actions as may be necessary to form the District,

h. Construct and operate the Facility to provide Sanitary Sewer Services until such time as the District is formed;

i. Upon unanimous consent of the Parties, acquire, own, hold, use, improve, operate, maintain, lease, exchange, transfer, sell, or otherwise dispose of real property or property rights necessary to carry out the purposes herein;

k. Assist with financing of the Facility, and;

l. Prosecute, defend, or participate in any legal actions.

Section 4. In addition to the foregoing, each Party may issue bonds or obligations on behalf of some or all of the Parties, under any law by which any Party may independently issue bonds or obligations, including but not limited to Minnesota Statutes, Chapter 475 or any other law that allows a Party or the Parties to finance the Facility, and use the proceeds of the bonds or obligations to carry out the purposes of the law under which the bonds or obligations are issued, including but not limited to loaning the proceeds thereof to the Executive Committee to finance a portion of the cost of the acquisition and construction of the Facility; provided that such bonds or obligations shall be issued only with the express consent of the governing body of any Party that issues such obligation and all other Parties.

ARTICLE 7. FINANCIAL AND INSURANCE MATTERS

Section 1. The Executive Committee shall designate a Party to be the fiscal agent for the Executive Committee. The fiscal agent shall receive and disburse funds at the direction of the Committee. The fiscal agent must establish a separate account in which Executive Committee funds are segregated from the Party's funds, and shall provide reports of account activities upon request of the Executive Committee or any Party.

Section 2. In the event Parties make contributions to the further purposes of this Agreement, the Parties' contribution amounts and percentage of overall contributions shall be recorded and kept as shown in the table attached hereto as Exhibit A. Parties subsequently admitted to this Agreement shall make an initial contribution as may be fixed by the Executive Committee.

Section 3. Exhibit A shall be periodically updated to accurately reflect the contributions made by Parties.

ARTICLE 8. WITHDRAWAL

Section 1. A Party may withdraw from this Agreement by giving at least one hundred and twenty (120) days' notice to the chair. The withdrawal is effective on the date after the notice period as is specified in the notice of withdrawal. Notwithstanding the foregoing, if a Party chooses to withdraw from the District, the Party must pay its portion of any bonds or other financial obligations the Party is responsible for before withdrawing from the District.

Section 2. No refund of any portion of a Party's contribution shall be paid to a withdrawing Party. A withdrawing Party shall be obligated to reimburse the Executive Committee for any costs or fees incurred as a result of the withdrawal.

Section 3. Notwithstanding anything to the contrary herein, withdrawal shall not relieve, impair, or affect in any way the obligations of the with withdrawing Party under any contract to which such Party is a party that (a) was entered into prior to the effective date of the withdrawal, and (b) (i) was entered based on the exercise by the Executive Committee of its powers and purposes under this Agreement, or (ii) was entered in connection with financing of the Facility.

ARTICLE 9. TERMINATION

Section 1. This Agreement may be terminated by the affirmative vote of the Executive Committee or by the unanimous approval of the Parties.

Section 2. In the event of termination, the Executive Committee must determine the measures necessary to effect the termination and provide for taking such measures promptly, subject to the provisions of this Agreement and applicable law.

Section 3. In the event of termination, following the payment of all outstanding obligations, remaining assets will be distributed among the then-existing Parties in proportion to their cumulative contributions, if any. If the outstanding obligations exceed the assets, the net deficit will be charged to and paid by the then-existing Parties equally.

Section 4. Notwithstanding anything to the contrary herein, termination shall not relieve, impair, or affect in any way the obligations of any Party under any contract to which the Party is a party.

ARTICLE 10. INDEMNIFICATION.

Except as may be otherwise provided in this Agreement, the Executive Committee shall defend and indemnify the Parties, and their officers, elected officials, employees, and volunteers, from and against all claims, damages, losses, and expenses, including attorney fees, arising out of the acts or omissions of the Executive Committee in carrying out the terms of this Agreement

or acts or omissions otherwise occurring in the course of carrying out the same. This Agreement does not constitute a waiver on the limitations of liability set forth in Minnesota Statutes, Section 466.04. Nothing herein shall be construed to provide insurance coverage or indemnification to an officer, employee, or volunteer of any party for any act or omission for which the officer, employee, or volunteer is guilty of malfeasance in office, willful neglect of duty, or bad faith.

To the fullest extent permitted by law, actions by the Parties to this Agreement are intended to be and shall be construed as a "cooperative activity" and it is the intent of the Parties that they, acting via the Executive Committee, shall be deemed a "single governmental unit" for the purposes of liability, as set forth in Minnesota Statutes, Section 471.59, subd. 1a(a), provided further that for purposes of that statute, each Party expressly declines responsibility for the acts or omissions of another Party. The Parties are not liable for the acts or omissions of another Party except to the extent they have agreed in writing to be responsible for such acts or omissions of such other Parties.

ARTICLE 11. EFFECTIVE DATE; DURATION

Section 1. This Agreement continues in effect indefinitely unless terminated in accordance with its terms.

Section 2. This Agreement may be amended by written agreement and approval of the governing bodies of all Parties.

Section 3. This Agreement shall be dated as of the date of execution by the last Party. Each Party shall provide the name of its initially-appointed director along with the executed copy of this Agreement.

Dated: July ___, 2023 [to be entered upon execution by all Members]

IN WITNESS WHEREOF, the Members have caused this Agreement to be executed in its name as of the date first above written.

Date: July 26, 2023.

CITY OF GOODHUE

By: _____
Ellen Anderson Buck
Its: Mayor

By: _____
Jill Buxengard
Its: Clerk-Treasurer

Signature page to Joint Powers Agreement

IN WITNESS WHEREOF, the Members have caused this Agreement to be executed in its name as of the date first above written.

Date: July 16, 2023.

CITY OF PINE ISLAND

By: _____
David Friese
Its: Mayor

By: _____
Elizabeth Howard
Its: City Administrator

Signature page to Joint Powers Agreement

IN WITNESS WHEREOF, the Members have caused this Agreement to be executed in its name as of the date first above written.

Date: July 10th, 2023.

CITY OF WANAMINGO

By: _____
Ryan Holmes
Its: Mayor

By: _____
Michael Boulton
Its: City Administrator

Signature page to Joint Powers Agreement

IN WITNESS WHEREOF, the Members have caused this Agreement to be executed in its name as of the date first above written.

Date: July 13TH, 2023.

CITY OF ZUMBROTA

By: _____
Todd Hammel
Its: Mayor

By: _____
Brian Grudem
Its: City Administrator

Signature page to Joint Powers Agreement

EXHIBIT A

Member	Member Share (%)	Initial Contribution
City of Goodhue	**25 %**	
City of Pine Island	**25 %**	
City of Wanamingo	**25 %**	
City of Zumbrota	**25 %**	
Total	**100%**	

Appendix J. Significant Industrial User Agreement

Appendix J reserved for Significant Industrial User agreements with City of Wanamingo. There are currently no SIU agreements.

Appendix K. Environmental Assessment Worksheet

Revisions:
August 22, 2024: EAW Draft Worksheet Enclosed

WiDSETH

Rochester
3777 40th Avenue NW
Suite 200
Rochester MN 55901

507.292.8743
Rochester@Widseth.com
Widseth.com

ENVIRONMENTAL ASSESSMENT WORKSHEET

FOR

North Zumbro Sanitary Sewer District
GOODHUE COUNTY, MINNESOTA

Prepared for:

Ms. Samantha Bump
Project Manager
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

May 2024

Widseth Project No. 2023-11919

Example only, this page to be updated once we get everything we need.

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December 2022 version

Environmental Assessment Worksheet

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board's website at**:** https://www.eqb.state.mn.us**/** The EAW form provides information about a project that may have the potential for significant environmental effects. Guidance documents provide additional detail and links to resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. **Project title:** *North Zumbro Sanitary Sewer District (NZSSD)*

2. **Proposer:** *NZSSD Joint Powers Board*

   Contact person: *Elizabeth Howard*
   Title: *City Administrator, City of Pine Island*
   Address: *250 South Main St, PO Box 1000*
   City, State, ZIP: *Pine Island, MN 55963*
   Phone: *507-356-4591*
   Fax: *507-356-8230*
   Email: *Elizabeth.Howard@ci.pineisland.mn.us*

3. **RGU:** *Minnesota Pollution Control Agency*

   Contact person: *Samantha Bump*
   Title: *Environmental Review Project Manager*
   Address: *520 Lafayette Road*
   City, State, ZIP: *St. Paul, MN, 55155*
   Phone: *651-757-2146*
   Fax: *N/A*
   Email: *samantha.bump@state.mn.us*

4. **Reason for EAW Preparation:** (check one)

   Required:
   ☐ EIS Scoping
   ☒ Mandatory EAW

   Discretionary:
   ☐ Citizen petition
   ☐ RGU discretion
   ☐ Proposer initiated

   If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):
   Minnesota Rule 4410.4300 Subpart 18 (D). Wastewater Systems.

5. **Project Location:**

   - County: *Goodhue*
   - City/Township: *Goodhue, Pine Island, Wanamingo, and Zumbrota.*
   - PLS Location (¼, ¼, Section, Township, Range): *Multiple, see Figure 1.*
   - Watershed (81 major watershed scale): *41. Zumbro River*
   - GPS Coordinates: *44.299337, -92.660766 (discharge point for proposed WWTF)*
   - Tax Parcel Number: *Multiple, see below. Project Area includes Road ROW for much of the extent.*

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project;
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.
- List of data sources, models, and other resources (from the Item-by-Item Guidance: *Climate Adaptation and Resilience* or other) used for information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the project during the life of the project (as detailed below in item 7. Climate Adaptation and Resilience).

Figures

Figure 1- Approximate Route Map
Figure 2- County Map
Figure 3- USGS Topographic Map
Figure 4-

Appendices

Appendix A –
Appendix B –
Appendix C – Pre and Post Construction Conditions
Appendix D – Existing and Proposed Drainage Areas
Appendix E – USDA Soil Map
Appendix F – Wetland Delineation Report
Appendix G – Source Water Assessment
Appendix H – Impaired Waters Map
Appendix I – NHIS Review Letter
Appendix J – IPaC Species List and Review Letters
Appendix K – SHPO Database Review
Appendix L – Phase 1 Archaeological Study
Appendix M – GHG Emissions Calculations
Appendix N – Well Reports
Appendix
Appendix X – Feasibility Study

6. Project Description:

a. Provide the brief project summary to be published in the EQB Monitor, (approximately 50 words).

A new regional sanitary district is being created to serve the communities of Goodhue, Pine Island, Wanamingo, and Zumbrota. A new wastewater treatment facility (WWTF) will be built near the City of Zumbrota. Pump stations and conveyance lines will be installed to connect all four communities to the new WWTF.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipmentor industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

Wastewater from the cities of Goodhue, Pine Island, Wanamingo, and Zumbrota is currently treated at four separate WWTF sites located within each of the individual communities. Each of the cities are facing similar issues with deterioration of their facilities, which are nearing the end of their life cycles, and have elected to form a joint sanitary district – the NZSSD – to provide wastewater treatment for all four communities via a new centralized WWTF. Upon successful completion of the new WWTF and permanent connections to the surrounding communities, the old WWTFs in each of the member cities will be removed from service and demolished.

The proposed WWTF site is located on the outskirts of the City of Zumbrota, partially within the existing city limits and partially in Zumbrota Township. Pumping stations in Goodhue, Pine Island, and Wanamingo will be used to convey wastewater through forcemains to the new WWTF. Forcemains will be located within the public right-of-way (ROW) where possible and installed by open trench methods except at road or stream crossings, where trenchless directional drilling will be utilized. Figure 1 shows each of the member cities and the proposed locations of the centralized WWTF, pumping stations, and conveyance lines.

The WWTF will be an activated sludge facility with enhanced biological nutrient removal (EBNR) and aerobic digestion processes. The treatment train will include primary, secondary, and tertiary process units (screening and grit removal, clarifiers, oxidation ditches, and effluent filter) and UV disinfection. Biosolids will be disposed by land application to nearby agricultural fields. Discharge from the WWTF to the North Fork Zumbro River would replace the four existing WWTF discharge points to Mazeppa Creek (Goodhue), Middle Fork Zumbro River (Pine Island), Shingle Creek–North Fork Zumbro River (Wanamingo), and North Fork Zumbro River (Zumbrota).

Project construction should start in 2025 and be complete in 2026. A 1-year startup period will be in 2026-27. Demolition of the existing wastewater treatment facilities will follow in 2028.

****

The new WWTF will include an overflow retention basin (250' diameter circular tank), screening and grit removal (30'x50' building), oxidation ditches (300'x125' structure), two final clarifiers (80' diameter each),UV disinfection (30'x50' building), aerobic digestion tanks (60'x120' structure), and biosolids storage (two 3-MG 160'-diameter circular tanks). The new WWTF will include an influent pump station (40'x60' building), main process building housing RAS, WAS, and sludge storage pumps, chem feed, blowers, and main electrical (50'x120'), administration building (60'x80'), maintenance garage (50'x100'), storage building (50'x100'), and generator pad (20'x50'). The Design Year for this Facility is 2045.

The new WWTF facility footprint will allow for future expansion on site beyond Design Year 2045, which could add the following additional units: a second overflow retention basin (250' diameter circular tank), additional oxidation ditches (300'x125' structure), two additional final clarifiers (80' diameter each),additional aerobic digestion (60'x120' structure), expansion of the

main process building (adds 50'x120'), and additional biosolids storage (two additional 3-MG 160'-diameter circular tanks). These units would allow for doubling the WWTF capacity.

The new WWTF has two potential alternative sites under consideration. Both alternative sites are located within 1-1/4 miles of each other along the North Fork Zumbro River, in Zumbrota Township east of the City of Zumbrota. WWTP Site 1 is the primary site under consideration. The site is 48 gross acres.

The Zumbrota conveyance project will construct a new pump station (40'x60' building) at Zumbrota's existing WWTF, and construct a new forcemain from the pump station to the new centralized WWTF. The new WWTF Site 1 is located approximately one-half (1/2) mile directly east and across the North Fork Zumbro River from the existing Zumbrota WWTF site. The corridor for the forcemain alignment is ½ mile times 20' wide (1 acre).

The existing Zumbrota WWTF is located directly off of Highway 58, in the northeastern part of the City of Zumbrota. The WWTF is approximately ten (10) acres and includes trickling filters, activated sludge, aerobic sludge digestion, and sludge holding ponds. The existing WWTF process units, buildings, and ponds will be decommissioned and demolished. Driveway paving will remain. The new Zumbrota pump station will be built on this site.

c. Project magnitude:

Description	Number
Total Project Acreage	1148 acres (based on 400 ft width of project area along corridor - verify)
Linear project length	24 miles (estimate)
Number and type of residential units	0
Residential building area (in square feet)	0
Commercial building area (in square feet)	0
Industrial building area (in square feet)	26,200 sq ft
Institutional building area (in square feet)	0
Other uses – specify (in square feet)	Support facilities 127,974 sq ft
Structure height(s)	x

d. 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.

Each community that the project will impact has aging facilities and is facing more restrictive permit discharge limits. Considerable investments will need to be made to address the issues at each facility. The existing facility issues include:

- *Outdated facilities in each community.*
- *High operation and maintenance costs.*
- *No economy of scale with individual facilities.*
- *Lack of space to expand existing facilities.*
- *Multiple points of discharge into the Zumbro River.*
- *Limited growth potential in the communities.*

- *Facilities are located within a floodplain.*

Beneficiaries of the project include the communities of Goodhue, Pine Island, Wanamingo, and Zumbrota.

See also Feasibility Study, Appendix X.

e. Are future stages of this development including development on any other property planned or likely to happen? ☒ Yes ☐ No

If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

Additional development on land adjacent to the site may occur following construction of the WWTF: a preliminary conceptual layout for a residential subdivision on has been prepared with the WWTF incorporated. during the planning period for the project

Population increases due to future expansion of member cities will increase the flow rate into the WWTF. To allow for the NZSSD to continue to operate and maintain its service to these communities, additions will have to be made to the WWTF and conveyance lines. However, such additions may not happen for many years down the road; they are not part of the current plan set and will be prepared by a different proposer.

f. 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.

7. Climate Adaptation and Resilience:

a. Describe the climate trends in the general location of the project (see guidance: *Climate Adaptation and Resilience*) and how climate change is anticipated to affect that location during the life of the project.

The North Zumbro Sanitary District lies within the Zumbro River Watershed, in Goodhue County. The Minnesota Climate Trends[1] tool was used to evaluate climate trends for the 30-year period (1994-2023) in comparison with the historical climate trends (1895-2023). The average annual temperature in Goodhue County from 1994-2023 was 45.06 F which is an increase of 1.17 degrees warmer than the historical average temperature. The average temperature standard deviation for 1994-2023 was 1.92, while the historical average temperature standard deviation was 1.81 degrees, showing an increase in standard deviation of 0.76 degrees. The average annual precipitation from 1994-2023 was 33.83 inches, while the historical average annual precipitation was 30.51 inches, which is an increase of 3.82 inches of precipitation.

If future conditions follow the 30-year trend, it is likely that annual average temperature and annual precipitation will continue to increase over the life of the project. The increase in precipitation should be accounted for in overflow plans.

[1] https://arcgis.dnr.state.mn.us/ewr/climatetrends/

b. For each Resource Category in the table below: Describe how the project's proposed activitiesand how the project's design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.

Resource Category	**Climate Considerations**	**Project Information** Climate change risks and vulnerabilities identified include:	**Adaptations**
Project Design	No project design aspects are anticipated to negatively impact the climate.	Increased precipitation, increased temperatures	Buildings and facilities need to be adequately designed for efficient cooling to handle increase in temperature and to be protected from flood risk. The project will follow all applicable federal, state, and local standards and regulations, as listed in item 9 and throughout this report.
Resource Category	**Climate Considerations**	**Project Information** Climate change risks and vulnerabilities identified include:	**Adaptations**
Land Use	No structures are being built for public health and safety, or housing occupants who may be insufficiently mobile. Hazardous materials will be stored at the Pumphouses in Goodhue, Pine Island and Wannamingo. These pump houses are being constructed outside of the floodplain of the North Zumbro River. Hazardous chemicals will also be stored at	Increase risk of flooding due to increase in annual total precipitation.	Land use in the Project Area is currently a combination of road right-of-way, agricultural, and industrial. The project is not anticipated to negatively impact climate trends in the area.

	the WWTF in Zumbrota. The current WWTF in Zumbrota is located partially within the floodplain for the North Zumbro River. The New WWTF is being constructed outside of the floodplain and is not at risk for flooding per revised FEMA maps issued Feb 10, 2020.		
Water Resources	Addressed in item 12	Addressed in item 12	Addressed in item 12
Contamination/ Hazardous Materials / Wastes	Addressed in item 13	Increase risk of flooding due to increase in annual total precipitation.	Addressed in item 13

Resource Category	**Climate Considerations**	**Project Information** Climate change risks and vulnerabilities identified include:	**Adaptations**
Fish, wildlife, plant communities, andsensitive ecological resources (rare features)	Addressed in item 14.	Addressed in item 14.	Addressed in item 14.

8. **Cover types:** Estimate the acreage of the site with each of the following cover types before and after development:

Cover Types	**Before (acres)**	**After (acres)**
Wetlands and shallow lakes (<2 meters deep)	x	y
Deep lakes (>2 meters deep)	x	Y
Wooded/forest	x	Y
Rivers/streams	X	y
Brush/Grassland	X	Y
Cropland	X	Y
Livestock rangeland/pastureland	X	Y
Lawn/landscaping	X	Y
Green infrastructure TOTAL (from table below*)	X	Y
Impervious surface	X	Y
Stormwater Pond (wet sedimentation basin)	x	y
Other (describe)	x	y
TOTAL	x	y

Green Infrastructure*	Before (acreage)	After (acreage)
Constructed infiltration systems (infiltration basins/infiltration trenches/ rainwater gardens/bioretention areas without underdrains/swales with impermeable check dams)	X	Y
Constructed tree trenches and tree boxes	X	Y
Constructed wetlands	X	Y
Constructed green roofs	X	Y
Constructed permeable pavements	X	Y
Other (describe)	X	Y
TOTAL*	x	Y

Trees	**Percent**	**Number**
Percent tree canopy removed or number of mature trees removed during development	X	Y
Number of new trees planted	x	y

9. **Permits and approvals required:** List all known local, state and federal permits, approvals, certifications 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. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

Unit of Government	Type of Application	Status
US Army Corps of Engineers (USACE)	Section 404 Permit	To be applied for
Minnesota Pollution Control Agency (MPCA)	National Pollutant Discharge Elimination System and State Disposal System (NPDES/SDS) Construction Stormwater Permit	To be applied for
Minnesota Department of Natural Resources (DNR)	Water Appropriation Permit	To be applied for (if needed)
Minnesota Board of Water and Soil Resources (BWSR)	Wetland Conservation Act Notice of Decision (NOD)	To be applied for
Minnesota Department of Transportation (MN DOT)	Utility Accommodation for Trunk Highway ROW Permit	To be applied for
City of Zumbrota	Conditional Use Permit	To be applied for
MPCA	Sewer Extension Permit	To be applied for
MPCA	Individual Wastewater Permit	To be applied for

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos.10-20, or the RGU can address all cumulative potential effects in response to EAW Item No.22. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 21.

10. Land use:

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks and open space, cemeteries, trails, prime or unique farmlands.

The project is located within Goodhue County on a combination of land owned by the MNDOT, private entities and local governments. The project area for the pump stations in Goodhue, Pine Island and Wanamingo is currently the existing WWTF sites. The sites are compatible to be used for Wastewater pumping. The forcemains that will convey water from the cities to Zumbrota are a ½-mile corridor approximately 20 feet wide with land cover consisting of highly disturbed ROW for Hill Ave, MN-58, MN-60, and 195th Ave. The ROW is located adjacent to prime farmland, the conveyance pipes are anticipated to be bored trenchlessly to make sure the existing land uses would not change.

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The Project Area is located in Zumbrota, MN falls under the 2016 Zumbrota Minnesota Comprehensive plan and the Goodhue County comprehensive plan (Goodhue County Plan). The construction activity from the project would lead to conversion of land use from agriculture land to utility land. The preservation of agriculture is one of Goodhue counties largest priorities. In order to accomplish this goal, the county has set up agricultural protection zones.

One of the goals within the Zumbrota Comprehensive plan is to expand the housing options for residents in the future. At the current time the population is expected to grow at a rate of 1.7% and reach over 4000 by 2030. The comprehensive plan is to create housing in order to compensate for this growth in population.

The environmental constraints land use evaluation model (published June 2009) discusses the effects…

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The current Pine Island WWTF is located within the floodplain overlay district as well as the shoreland overlay district. Due to its proximity to the Middle Fork Zumbro River. The new pump station will also be located within the shoreland overlay district but will be less of a danger to the environment as wasterwater will be kept within piping and not in ponds.

The current Zumbrota WWTF has a significant portion of the old plant that is within the floodplain per FEMA maps issued February 10, 2020. The plant demolition will result in removal

of the structures and ponds within the Floodplain. The new WWTF site in Zumbrota is outside of the FEMA maps from February 10, 2020 and does not involve any of the above features.

iv. If any critical facilities (i.e. facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity.

No structures are being built for public health and safety, or housing occupants who may be insufficiently mobile. Hazardous materials will be stored at the Pumphouses in Goodhue, Pine Island and Wannamingo. These pump houses are being constructed outside of the floodplain of the North Zumbro River. Hazardous chemicals will also be stored at the WWTF in Zumbrota. The current WWTF in Zumbrota is located partially within the floodplain for the North Zumbro River. The New WWTF is being constructed outside of the floodplain and is not at risk for flooding per revised FEMA maps issued Feb 10, 2020.

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

The only area that will have a negative impact on the land use is the new WWTF in Zumbrota. The WWTF is being built within an agricultural field. The county has created agricultural protection zones. This Project is located within A-3 zoning district which does not protect agricultural areas. The new WWTF is located within the City of Zumbrota. The WWTF will allow for the expansion of the city and allow for the anticipated increase in population.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.

11. Geology, soils and topography/land forms:

a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

Bedrock within the project area is composed of Ordovician sedimentary rock, with a mixture of carbonate (limestone, dolostone), coarse clastic (quartzose sandstone), and fine clastic (very fine sandstone, siltstone, or shale) components. Stratigraphic units include the Decorah Shale, Platteville Formation, Glenwood Formation, St. Peter Sandstone, and Shakopee Formation. Depth to bedrock is ≤ 50 ft over much of the project area.

Karst features are known to be located within the area, the closest of which is a sinkhole (MSSID MN25:D00322) approximately 370 feet west of the Goodhue conveyance line route. No other known karst features are within 2,000 feet of the project area. However, the MN DNR identifies portions of the project area as prone to surface karst feature development; this includes areas with shallow carbonate bedrock (Platteville Formation, Shakopee Formation) as well as locations where sinkhole formation occurs within the St. Peter Sandstone. Soil borings and geotechnical analysis will be completed as part of due diligence.

b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highlypermeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed inresponse to Item 12.b.ii.

Tables Summarizing soils for the conveyance pipelines and WWTF's are provided in Appendix X. The potential for erosion within the project area is Low in areas of gradual grade and high in areas of steep grades. Soils range in hydraulic classifications of A through D. Based on the Natural Resource Conservation Service (NRCS) information these classes are described as follows:

- *Group A - Soils having high infiltration rates even when thoroughly wetted, consisting chiefly of deep, well to excessively drained sand and/or gravel. These soils have a high rate of water transmission and would result in a low runoff potential.*
- *Group B - Soils having moderate infiltration rates when thoroughly wetted, consisting chiefly of moderately deep or deep, moderately well or well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.*
- *Group C - Soils having slow infiltration rates when thoroughly wetted, consisting chiefly of (1) soils with a layer that impedes the downward movement of water, or (2) soils with moderately fine or fine textures and slow infiltration rate. These soils have a slow rate of water transmission.*
- *Group D - Soils having very slow infiltration rates when thoroughly wetted, consisting chiefly of (1) clayey soils with high swelling capacity or potential, (2) soils with a high permanent water table, (3) soils with claypan or clay layer at or near the surface, and (4) shallow soils over nearly impervious materials. These soils have a very slow rate of water transmission.*

Based on preliminary design, the total area of soil disturbance is approximately XXX acres.This can't be calculated until design for project is complete. The project will require a National Pollutant Discharge Elimination System (NPDES) Construction Permit as administered by the MPCA. A Stormwater Pollution Prevention Plan (SWPPP) will be developed consistent with NPDES requirements. The SWPPP will identify best management practices (BMPs) that will be used during construction activities to limit the potential for erosion and sedimentation losses.

- NOTE: For silica sand projects, the EAW must include a hydrogeologic investigation assessing the potential groundwater and surface water effects and geologic conditions that could create an increased risk of potentially significant effects on groundwater and surface water. Descriptions of water resources and potential effects from the project in EAW Item 12 must be consistent with thegeology, soils and topography/land forms and potential effects described in EAW Item 11.

12. Water resources:

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, shoreland classification and floodway/floodplain, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive species and the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The surface water where the effluent pipe discharge is located may be warmer than the surrounding area, which could create hazardous ice conditions on the river. Signs must be posted, and precautions taken to account for thin ice.

Other surface waters including field delineated wetlands and waterways are in the Wetland Delineation Report in Appendix F.

A wetland delineation is underway for the project. This section will be updated once the report is received.

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

According to well logs (Appendix X) near the main WWTF in Zumbrota (Unique Well Nos. 250178, 218575, and 218577) the depth to the nearest bedrock aquifer (Prairie Du Chien) is between 17 and 45 feet. The Minnesota Hydrogeology Atlas estimates the depth to the surficial groundwater table in the Project Area as 0-10 feet.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

Sources of wastewater are primarily municipal, but also include two Significant Industrial Users.

Per the feasibility study (Appendix X), Several treatment technology alternatives were evaluated at a high level for the North Zumbro Sanitary District proposed treatment system. These technologies would be expected to achieve adequate treatment to meet the proposed effluent limits discussed in the previous section. Two main types of wastewater processes are currently prevalent for biological treatment– activated

sludge suspended growth treatment and fixed film treatment. Activated sludge systems would likely need Enhanced Biological Nutrient Removal (EBNR) technology for nutrient removal (nitrogen and phosphorus), while a fixed film treatment process would likely require additional processes for denitrification and phosphorus removal. Based on the anticipated effluent limits for the proposed facility and the need for nutrient removal, it is most likely that an activated sludge process using EBNR would be more economical to construct than using fixed film technology. For the purposes of this report, it is assumed that an oxidation ditch treatment system utilizing EBNR would be constructed. A more comprehensive evaluation and selection of treatment type would be performed during the Facility Plan phase of this project to confirm this assumption.

The proposed treatment system for the North Zumbro Sanitary District facility would most likely be a suspended growth EBNR process using activated sludge. The EBNR process would utilize the anaerobic / anoxic / oxic (A20) process configuration. This process would include oxidation ditches to provide BOD and ammonia nitrogen removal as well as anaerobic and anoxic selectors within the ditches to facilitate biological phosphorus removal and denitrification.

The oxidation ditch process would utilize mechanical aerators to provide mixing energy and oxygen transfer to the wastewater. The aeration zone would be set up in a racetrack type configuration (two parallel tracks for redundancy) with anaerobic and anoxic areas adjacent to the aerated 'racetrack', connected by automated gates that would allow flow to and from the anaerobic/anoxic areas to facilitate denitrification and biological phosphorus removal.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for sucha system. If septic systems are part of the project, describe the availability of septage disposal options within the region to handle the ongoing amounts generated as a result of the project. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion.

   No SSTS or septic system is proposed.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges,taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects.

   TREATMENT PROCESS UNITS

   The proposed treatment process would typically include the following unit processes, equipment, and structures:

   - *Pretreatment Building with mechanical screen, auxiliary manual screen, and grit removal equipment.*
   - *Influent flow measurement and sampling.*

- *Oxidation ditch concrete tankage and associated equipment – aerators and mixers.*
- *Oxidation ditch controls and instrumentation.*
- *Oxidation ditch electrical / controls building.*
- *Final clarifier concrete tankage and equipment.*
- *Return Activated Sludge (RAS) and Waste Activated Sludge (WAS) pumps.*
- *Scum pumps.*
- *Chemical feed system(s) for phosphorus removal and carbon source addition.*
- *Process building for pumping systems and chemical feed systems.*
- *Ultraviolet (UV) disinfection concrete tankage and equipment.*
- *UV equipment storage / controls building.*

Wastewater discharge is anticipated to flow into the North Zumbro River once it has been treated. The discharge point will be in the area as shown on Figure X.

No effects to surface or groundwater are anticipated to occur as all MPCA rules and regulations regarding wastewater discharge will be followed.

ii. Stormwater - Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post construction including how the project will affect runoff volume, discharge rate and change in pollutants.Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments orare classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.

iii. Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe anywell abandonment. If connecting to an existing municipal water supply, identify the wells tobe used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should theappropriation volume increase beyond infrastructure capacity or water supply for the project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.

iv. Surface Waters

a) Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigationfor unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

A wetland delineation is underway for the project. This section will be updated once the report is received.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicialditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering thewater features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

Cannot be completed until delineation has been completed.

13. Contamination/Hazardous Materials/Wastes:

a. Pre-project site conditions - Describe existing contamination or potential environmental hazardson or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

The Project site for pump houses and the communal WWTF in Zumbrota will be located within the current boundaries of the WWTF's located in Goodhue, Pine Island, Wanamingo, and Zumbrota. The Conveyance lines are planned to be located completely within the already disturbed right of way for County Highway 58, County Highway 60 and 195th Ave. Currently, four separately operating WWTF's all place treated waste water into the North Fork Zumbro River, Middle Fork Zumbro River, or a tributary stream to them.

The existing Goodhue WWTF is located directly off of HWY 58 in the southeast part of Goodhue. The existing WWTF is approximately 0.41 acres and includes a lift station, one manual bar screen, grit removal, a fine manual bar screen, a primary clarifier, a rock base trickling filter, a two-stage rotating biological contractor, two final clarifiers and a UV system.

The existing Pine Island WWTF is located directly off of Highway 52, in the eastern part of the City of Pine Island. The WWTF is approximately 2.3 acres and includes influent screen, aerated grit chamber, four primary clarifiers, activated sludge system, secondary clarifiers, chlorine contact tank, and anaerobic digester for biosolids treatment.

The existing Wanamingo WWTF is located on Hillcrest Avenue, in the northeastern part of the Wanamingo. The WWTF is approximately 2 acres and includes trickling filters, activated sludge, aerobic sludge digestion, and sludge holding ponds.

The existing Zumbrota WWTF is located directly north of the North Fork Zumbro River, and directly east of Main Street in Zumbrota, MN. The existing WWTF is approximately 10 acres and includes two bar screens, grit removal, two primary clarifiers, trickling filter, intermediate clarifier, two sets of

rotating biological surfaces, two secondary claifiers four aerated polishing ponds, and chlorination and dechlorination.

The MPCA What's in My Neighborhood site was used to identify sites in the immediate area of the Project that may present environmental conditions. Six sites with hazardous waste, three feedlots and one site with underground tanks were identified within 0.5 miles of the current goodhue WWTF. The closest of these is 0.08 miles north of the existing WWTF. The conveyance lines follow highway 58 from Goodhue down to Zumbrota. Along Highway 58, there is 14 feedlots and four hazardous waste sites within 0.10 miles of the right of way.

Three petroleum remediation sites, three hazardous waste sites, one site with underground tanks were identifed within 0.5 miles from the current Pine Island WWTF. The closest site to the WWTF is 0.26 miles southwest. All properties that have known environmental conditions are at least 0.25 miles away, and are not in the direction the conveyance line is intended to be placed. No sites were identified within half a mile of the conveyance lines intended path from Pine Island to Zumbrota.

Five pertoleum remediation site, five hazardous waste site, and two site with underground tanks are located within 0.5 miles of the Wanamingo WWTF. The closest site to the WWTF is 0.25 miles northwest. All properties within 0.25 miles do not have known environmental conditions. The conveyance line will follow the previously disturbed Highway 60 right of way through Zumbrota. Within the conveyance line path eleven sites are found to have hazardous waste, five site have underground tanks, and four sites have petroleum remediation sites.

Two hazardous waste sites, and one feedlot are located within 0.5 miles of the area of the proposed Zumbrota WWTF. The nearest area is 0.37 miles northwest of the Proposed WWTF. All properties within 0.25 miles of the proposed WWTF do not have any known environmental conditions. The proposed conveyance line in Zumbrota will travel from the existing WWTF under the North Zumbro River and into the proposed WWTF a mile to the east. The conveyance line is not expected to cross any properties with environmental conditions.

b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solidwaste including source reduction and recycling.

During the operation of the WWTF, digested biosolids will be created through the cleaning process of cleaning wastewater. Digested biosolids are a mixture of human waste combined with chemicals during the process of cleaning the wastewater. Biosolids will be stored on site for a minimum of 120 to 180 days of sludge production. After the minimum storage time, biosolids will be removed from the site using trucks. The expected traffic volume during peak hauling time will be 17 truck loads a day.

Biosolids will be applied to agricultural land near the WWTF in accordance with Minnesota regulations (Minn. R. 7041). In order to reduce the smell from the biosolids, land applied biosolids will be digested prior to application so odors are not expected.

c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverseeffects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

During construction of the WWTF and pumphouses the only hazardous chemicals/materials which will be present on site will be petroleum products such as fuel or other engine fluids for maintaining construction equipment. Any hazardous materials used during construction will be stored in leak-proof containers and locked away when not in use. If a spill of chemical/ hazardous material should occur during construction activities, the Minnesota Duty Officer will be notified as necessary. The demolition and demolishing of the old WWTF's in the four cities will generate waste. Currently the four WWTF's are believed to contain asbestos, asbestos will need to be abated from each WWTF prior to deconstruction. After the asbestos is removed from the WWTFs it will be disposed of at the Olmsted County Facility. The facility is located at 305 Energy Parkway NE in Rochester MN. After completion of the Project, hazardous waste is not anticipated to be generated.

After construction the operation of the plant will use chemicals/hazardous materials to aid in the wastewater treatment process. This chemical/hazardous waste usage is unavoidable and is not able to be mitigated. The use of hazardous chemicals will be applied within the limits of state law. When hazardous chemicals are not in use they will be stored in leak-proof containers and will be locked away.

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, anddisposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

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14. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

The project area lies within the ecoregion of the Paleozoic Plateau Section[2], which was originally underlain by sedimentary rocks but has been highly eroded by waterways. The western portion of the region where the project area is located was characterized primarily by prairies on the flat portions, with mesic forests on present on sloped areas and wet-mesic forests on valley bottoms. There are several nearby Wildlife Management Areas (WMAs) located outside the project area which include the Woodbury, Buck Family Memorial, and Tiedemann areas.

[2] Paleozoic Plateau Section | Minnesota DNR (state.mn.us)

The project area consists mainly of road right-of-way and existing developed area. The construction of this project is not anticipated to negatively impact aquatic species, wildlife communities, habitats, or sensitive ecological resources.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-_____) and/or correspondence number (MCE_) from which the data were obtained and attach the Natural Heritage Review letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

A review of publicly available data from the Minnesota Conservation Explorer revealed that the project area is not adjacent or does not contain any Calcareous Fens, Old Growth Stands, Lakes of Biological Significance, USFWS Regulatory areas, Prairie Conservation areas, or Audubon MN Important Bird Areas. However, the project area does contain or cross through MBS Sites of Biodiversity Significance as well as DNR Native Plant Community areas.

A review of the Natural Heritage Inventory System (NHIS) was requested on November 6, 2023. The NHIS review letter was received on February 4, 2024 (MCE 2023-00837) and is included in Appendix I.

A rare plant survey is underway for the project. This section will be updated once the report is received.

A review of the United States Fish and Wildlife (USFWS) information, Planning and Conservation (IPaC) database yielded the following species (Appendix J):

Mammals
- Northern Long-eared Bat (*Myotis septentrionalis*) – Endangered
- Tricolored Bat (*Perimyotis subflavus*) – Proposed Endangered

Birds
- Whooping Crane (*Grus americana*) – Experimental population

Insects
- Monarch Butterfly (*Danaus plexippus*) – Candidate

Flowering Plants
- Minnesota Dwarf Trout Lily (*Erythronium propullans*) - Endangered
- Prairie Bush-clover (*Lespedeza leptostachya*) - Threatened

Migratory Birds
- American Golden-plover (*Pluvialis dominica*) – Bird of Conservation Concern
- Bald Eagle (*Haliaeetus leucocephalus*) – warrants special attention under the Eagle Act
- Bobolink (*Dolichonyx oryzivorus*) – Bird of Conservation Concern
- Chimney Swift (*Chaetura pelagica*) – Bird of Conservation Concern
- Golden Eagle (*Aquila chrysaetos*) – warrants special attention under the Eagle Act
- Henslow's Sparrow (*Ammodramus henslowii*) – Bird of Conservation Concern

- King Rail (*Rallus elegans*) – Bird of Conservation Concern
- Lesser Yellowlegs (*Tringa flavipes*) – Bird of Conservation Concern
- Pectoral Sandpiper (*Calidris melanotos*) – Bird of Conservation Concern
- Red-headed Woodpecker (*Melanerpes erythrocephalus*) – Bird of Conservation Concern
- Rusty Blackbird (*Euphagus carolinus*) – Bird of Conservation Concern
- Short-billed Dowitcher (*Limnodromus griseus*) – Bird of Conservation Concern

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects on known threatened and endangered species.

The project is not anticipated to negatively impact any of the threatened/endangered species, sensitive features, or ecosystems identified in the sections above on a permanent basis. Temporary impacts during construction are not expected to adversely affect wildlife in the vicinity of the project area. Warming climate trends and increased precipitation may alter habitat over time and effect species distribution.

Temporary impacts during construction may include soils disturbance which can open the potential for invasive species to occur. Actions should be taken to mitigate the risk of invasive species such as cleaning and washing of equipment prior to entering the project area, and responsible sourcing of seed and other material which may contain seed such as straw.

d. Identify measures that will be taken to avoid, minimize, or mitigate the adverse effects to fish, wildlife, plant communities, ecosystems, and sensitive ecological resources.

Forcemains are planned to be horizontally directionally bored in any type of sensitive ecological community, which will avoid surface disturbance.

15. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

The Office of the State Archaeologist (OSA) Portal was searched for cultural and archaeological resources in or around the Project Area. Sites were identified around the City of Zumbrota and the City of Pine Island.

A Phase 1 archaeological study is underway for the project. This section will be updated once the report is received.

16. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The project area encompasses primarily agricultural, rural residential, and roadway right-of-way. No scenic views or vistas have been identified along the project route. The wastewater treatment facility location in the Zumbrota area will take into account any visual impacts and comply with local regulations regarding screening. Artificial lights shall be used to illuminate select areas of the wastewater treatment facility to ensure the safety of employees and visitors as well as the security of the facility. Artificial lights may also be present at lift station locations along the route. Proposed lighting shall use building mounted and pole mounted fixtures projecting downward to minimize light pollution. Fixture types shall be selected to minimize light spillover beyond necessary areas of illumination.

17. Air:

a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

An air assessment is underway for the project. This section will be updated once the report is received.

b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimizeor mitigate vehicle-related emissions.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 17a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize ormitigate the effects of dust and odors.

The proposed Project could create temporary fugitive dust during construction activities. These activities include WWTF destruction and construction of the new WWTF in Zumbrota and pump houses. Forcemains are planned to be bored trenchlessly and will not produce any dust. The construction time line is anticipated to last up to two years. The demolition is anticipated to take place after construction has been completed and is anticipated to last one year after completion. During operation, sewage odors are anticipated at the headworks so odor pretreatment will be included in the project to abate this concern. Sludge digestion will be aerobic and land-applied biosolids will be digested prior to application so odors are not expected from biosolids. No dust is expected to be produced. Prevailing winds are WNW, and the new WWTF would be in a more favorable location to be downwind of potential residences than the old WWTF is. The new WWTF will be built first before potential residential development nearby. The current use of the

new WWTF site is agriculture. The net effect of odors, noise, and dust is expected to be equivalent or less by building the new WWTF site than the current agricultural land use and operating the old WWTF.

18. Greenhouse Gas (GHG) Emissions/Carbon Footprint

a. GHG Quantification: For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to cometo that conclusion and any GHG emission sources not included in the total calculation.

The following tables are examples; other layouts are acceptable for providing GHG quantification results. This section to be completed once air assessment report is received.

Construction Emissions

Scope	Type of Emission	Emission Sub-type	Project-related CO2e Emissions (tons/year)	Calculation method(s)
Scope 1	Combustion	Mobile Equipment		
Scope 1	Land Use	Conversion		
Scope 1	Land Use	Carbon Sink		
TOTAL				

Operational Emissions

Scope	Type of Emission	Emission Sub-type	Existing facility CO2e Emissions (tons/year)	Project-related CO2e Emissions (tons/year)	Total CO2e Emissions (tons/year)	Calculation method(s)
Scope 1	Combustion	Mobile Equipment				
Scope 1	Combustion	Stationary Equipment				
Scope 1	Combustion	Area				
Scope 1	Non-Combustion	Stationary Equipment				

Scope	Type of Emission	Emission Sub-type	Existing facility CO2e Emissions (tons/year)	Project-related CO2e Emissions (tons/year)	Total CO2e Emissions (tons/year)	Calculation method(s)
Scope 1	Land Use	Carbon Sink				

Scope 2	Off-site Electricity	Grid-based				
Scope 2	Off-site Steam Production	Not applicable				
Scope 3	Off-site Waste Management	Area				
TOTAL						

b. GHG Assessment

i. Describe any mitigation considered to reduce the project's GHG emissions.

ii. Describe and quantify reductions from selected mitigation, if proposed to reduce theproject's GHG emissions. Explain why the selected mitigation was preferred.

iii. Quantify the proposed projects predicted net lifetime GHG emissions (total tons/#of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

19. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Construction activities are expected to generate minor amounts of noise. Limiting periods of construction through local ordinance (e.g., 7:00 AM to 7:00 PM) as well as maintaining engines in good running condition will help to mitigate noise generated by construction equipment. Noise during operation will be managed by a quiet hour policy and other local rulings pertaining to noise (e.g., no fireworks, hunting, or discharge of firearms). Nearby sensitive receptors include residential and commercial properties within and around the Project Area.

20. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

The new WWTF will be constructed with 10 parking spots. The estimated traffic for the WWTF is 10 vehicles a day, peak traffic is estimated to increase by three vehicles at the peak times of 7 am and 3 pm. Peak traffic times to the WWTF are expected to be during sludge hauling which will take place twice a year. During Sludge hauling time, 3-5 semi-truck loads per day for a week are expected to take place.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance,

It is not anticipated for this Project to generate an additional 250 vehicles, or 2,500 trips per day on nearby roadways. During constructions, XX to XX vehicle trips per day would be required for the crews to travel to and from the site. Additionally, XX trips would be required to move material away or onto the site but would not result in more than 10 additional vehicles in a workday. The number of trips is not expected to adversely affect local traffic.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

No transportation effects are anticipated as a result of this Project.

21. Cumulative potential effects: (Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

22. Other potential environmental effects: If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature_____ Date _____

Title _____

Figures

Figure 1
Approximate Route Map

Legend
- Goodhue Forcemain
- Pine Island Forcemain approx
- Wanamingo Forcemain Approx

Belle Creek
Wastedo
Goodhue
Hader
Bellechester
Wanamingo
Zumbrota
Bombay
Kenyon
Mazeppa
Zumbro Falls
Roscoe
Hammond
Pine Island
South Troy
Oronoco
Potsdam
Berne
West Concord
Concord
Google Earth
Image © 2024 Airbus
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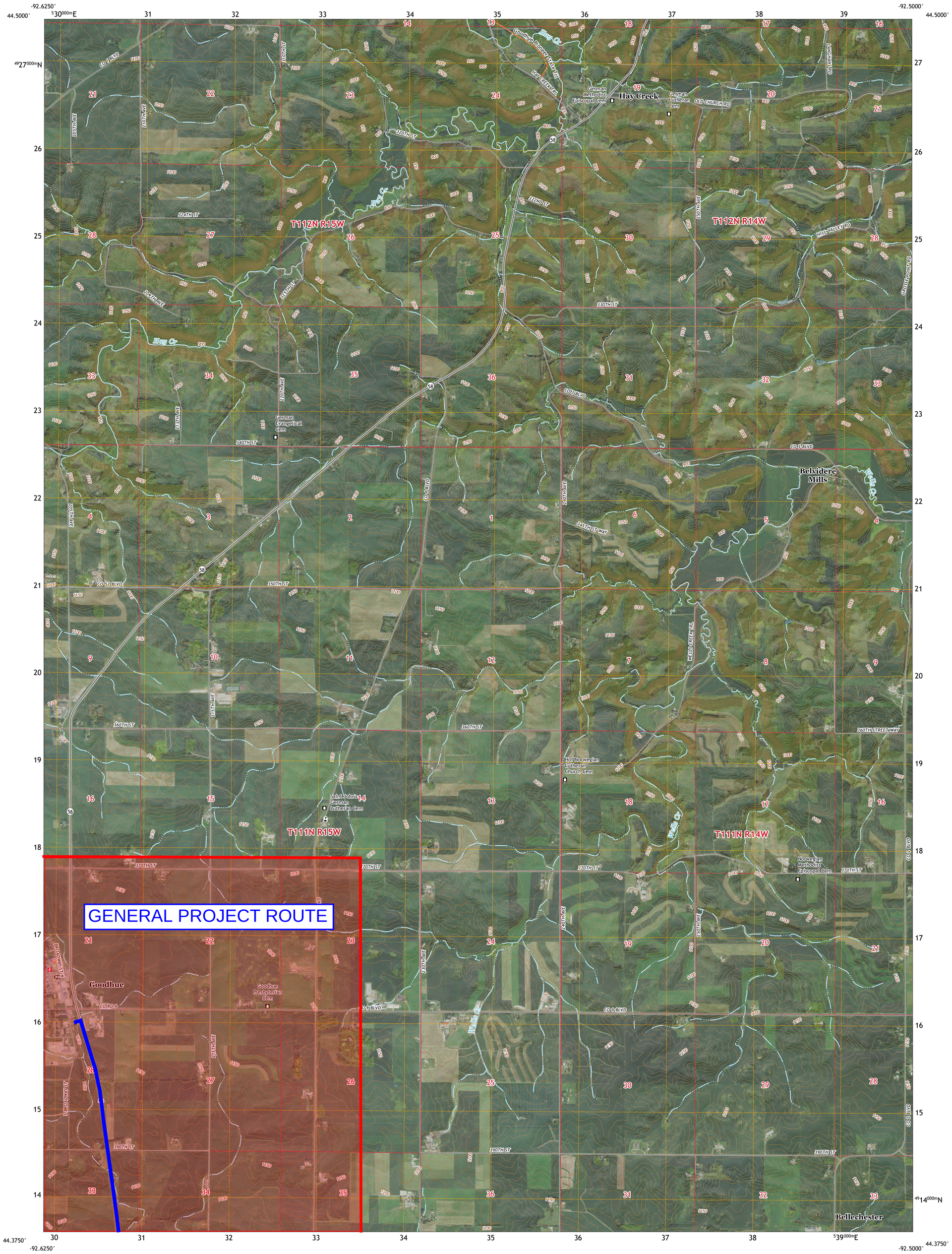
N

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

GOODHUE EAST QUADRANGLE
MINNESOTA - GOODHUE COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 15T

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery	NAIP,	August 2017 - November 2017
Roads	U.S. Census Bureau,	2016
Names	GNIS,	1980 - 2021
Hydrography	National Hydrography Dataset,	2000 - 2018
Contours	National Elevation Dataset,	2016
Boundaries	Multiple sources; see metadata file	2019 - 2021
Public Land Survey System	BLM,	2020
Wetlands	FWS National Wetlands Inventory	2010

MN
GN
0°19´ 6 MILS
0°18´ 5 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
WK
Grid Zone Designation 15T

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Welch
2 Red Wing
3 Bay City
4 Goodhue West
5 Lake City NW
6 Zumbrota
7 Mazeppa
8 Zumbro Falls

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

GOODHUE EAST, MN
2022

NSN 7643016372493
NGA REF NO. USGSX24K17704

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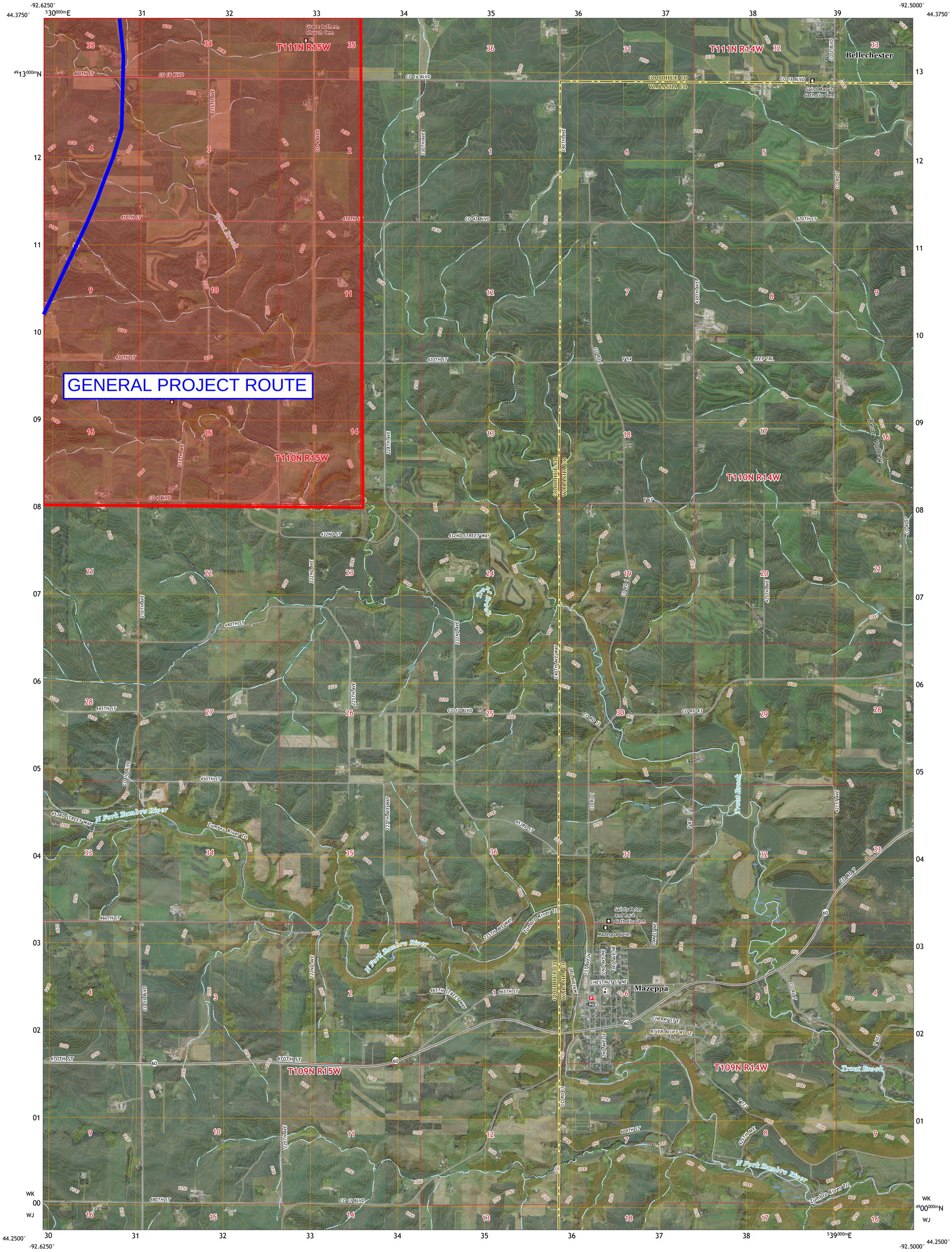
U.S. GEOLOGICAL SURVEY

The National Map US Topo

MAZEPPA QUADRANGLE
MINNESOTA
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 15T

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Imagery.....NAIP, August 2017 - November 2017
Roads.....U.S. Census Bureau, 2016
Names.....GNIS, 1998 - 2021
Hydrography.....National Hydrography Dataset, 2000 - 2018
Contours.....National Elevation Dataset, 2016
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Public Land Survey System.....BLM, 2020
Wetlands.....FWS National Wetlands Inventory 2010 - 2011

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
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Grid Zone Designation 15T

SCALE 1:24 000

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FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

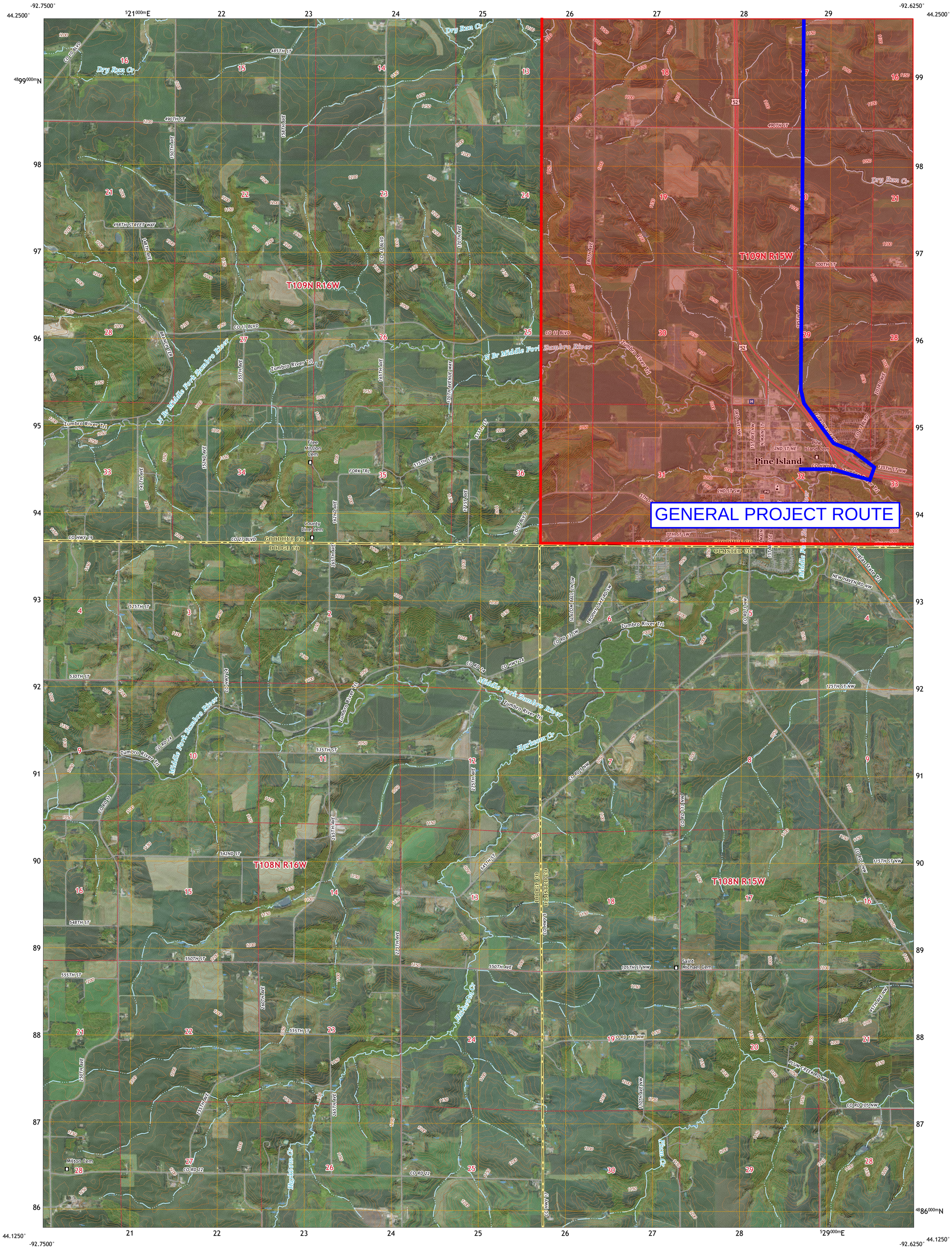
MINNESOTA
QUADRANGLE LOCATION

ADJOINING QUADRANGLES
1 Goodhue West
2 Goodhue East
3 Lake City NW
4 Zumbrota
5 Zumbro Falls
6 Pine Island
7 Oronoco
8 Zumbro Lake

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

MAZEPPA, MN
2022

NSN 7643016372880
NGA REF NO. USGSX24K28182



U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

PINE ISLAND QUADRANGLE
MINNESOTA
7.5-MINUTE SERIES

Produced by the United States Geological Survey

North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 15T

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Imagery...NAIP, August 2017 - November 2017
Roads... U.S. Census Bureau, 2016
Names...GNIS, 2008 - 2021
Hydrography..............................National Hydrography Dataset, 2000 - 2018
Contours...National Elevation Dataset, 2016
Boundaries..............Multiple sources; see metadata file 2019 - 2021
Public Land Survey System...BLM, 2020
Wetlands................FWS National Wetlands Inventory 2010 - 2011

UTM GRID AND 2019 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
WJ
Grid Zone Designation
15T

SCALE 1:24 000

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FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard.

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 Wanamingo
2 Zumbrota
3 Mazeppa
4 Concord
5 Oronoco
6 Dodge Center
7 Byron
8 Douglas

ADJOINING QUADRANGLES

ROAD CLASSIFICATION

Expressway	▬	Local Connector	▬
Secondary Hwy	▬	Local Road	▬
Ramp	▬	4WD	- - -

Interstate Route US Route State Route

PINE ISLAND, MN
2022

NSN. 7643016373102
NGA REF NO. USGSX24K35263

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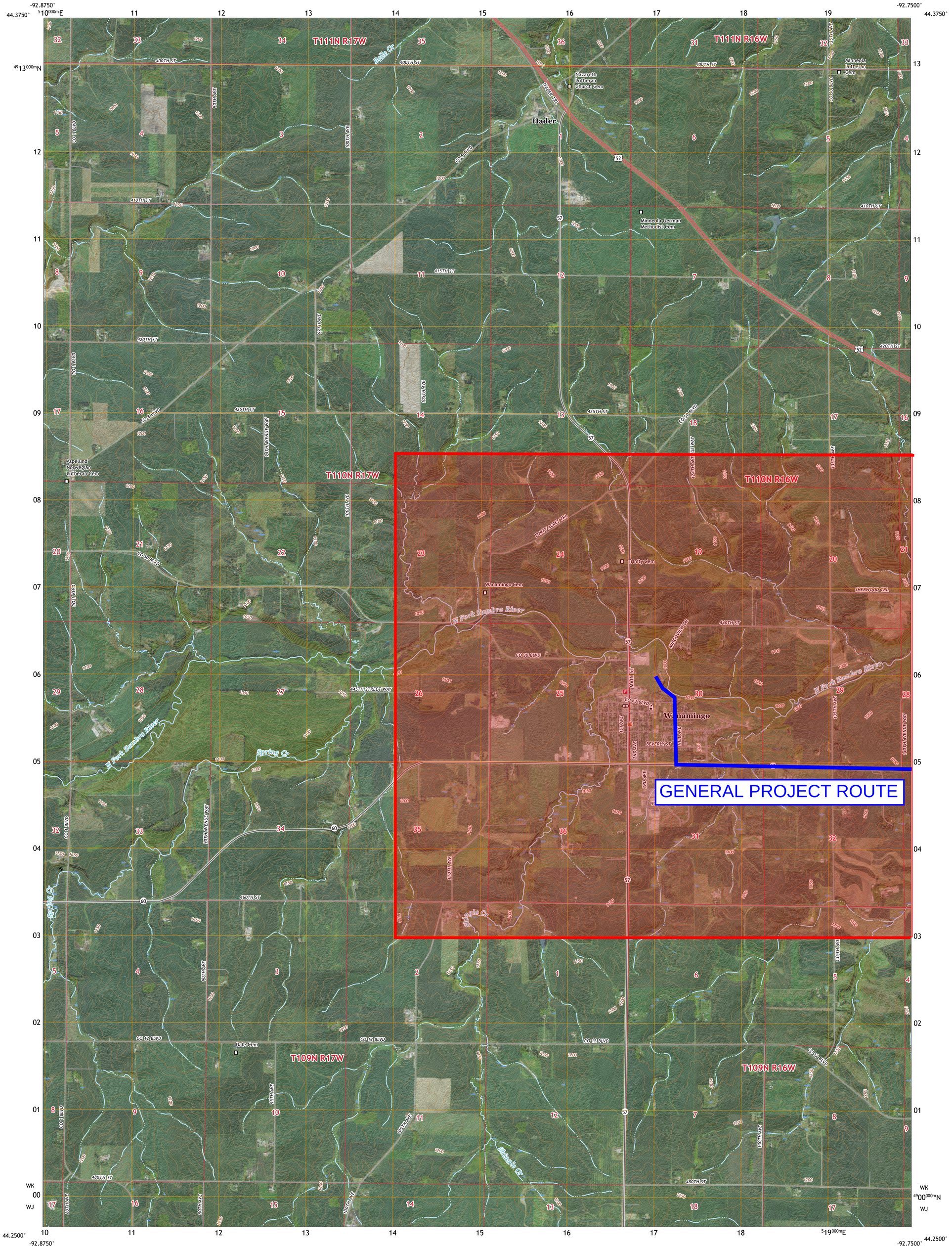
U.S. GEOLOGICAL SURVEY

The National Map US Topo

WANAMINGO QUADRANGLE
MINNESOTA - GOODHUE COUNTY
7.5-MINUTE SERIES



GENERAL PROJECT ROUTE

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World Geodetic System of 1984 (WGS84). Projection and
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Names.....GNIS, 1980 - 2021
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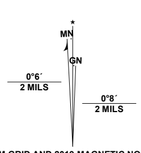
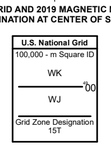
Contours.....National Elevation Dataset, 2016
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Public Land Survey System.....BLM, 2020
Wetlands.....FWS National Wetlands Inventory 2010



UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



SCALE 1:24 000

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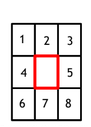
CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

QUADRANGLE LOCATION



ADJOINING QUADRANGLES

1 Sogn
2 White Rock
3 Goodhue West
4 Kenyon
5 Zumbrota
6 West Concord
7 Concord
8 Pine Island

ROAD CLASSIFICATION

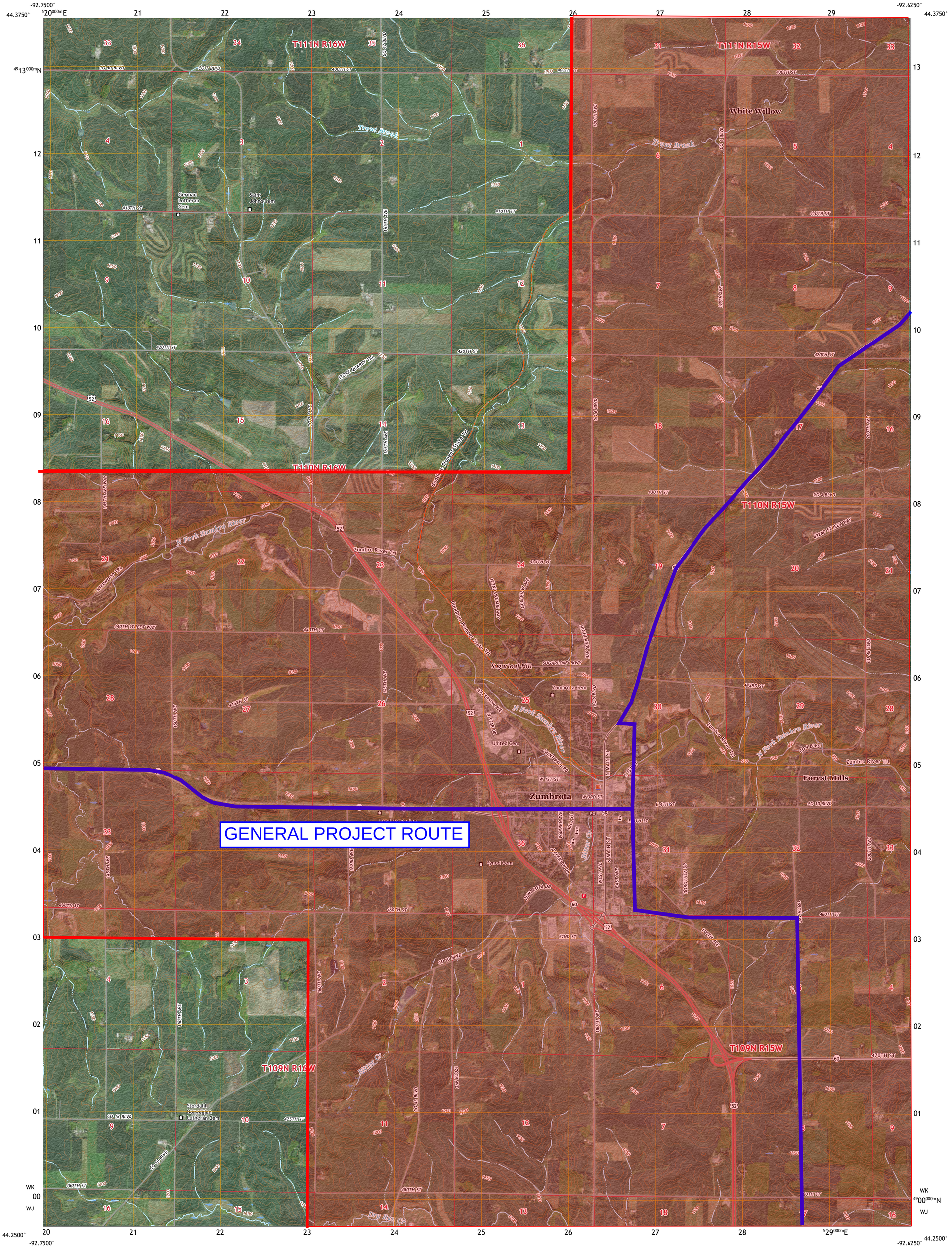
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

WANAMINGO, MN
2022

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

ZUMBROTA QUADRANGLE
MINNESOTA - GOODHUE COUNTY
7.5-MINUTE SERIES



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Contours.....National Elevation Dataset, 2016
Boundaries.....Multiple sources; see metadata file 2019 - 2021
Public Land Survey System.....BLM, 2020
Wetlands.....FWS National Wetlands Inventory 2010

MN
GN
0°12′ 4 MILS
0°13′ 4 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
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Grid Zone Designation 15T

SCALE 1:24 000

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1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 White Rock
2 Goodhue West
3 Goodhue East
4 Wanamingo
5 Mazeppa
6 Concord
7 Pine Island
8 Oronoco

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

ZUMBROTA, MN
2022

NSN, 7643016373605
NGA REF NO. USGSX24K00269

Appendix ?

USFWS IPaC Review

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793

In Reply Refer To: February 09, 2024
Project code: 2024-0039163
Project Name: North Zumbro Sanitary District

Federal Nexus: no
Federal Action Agency (if applicable): Pine Island city (Goodhue County, MN; Olmsted County, MN)

Subject: Technical assistance for 'North Zumbro Sanitary District'

Dear Eleanor Brandt:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on February 09, 2024, for 'North Zumbro Sanitary District' (here forward, Project). This project has been assigned Project Code 2024-0039163 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Minnesota Dwarf Trout Lily *Erythronium propullans* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate
- Prairie Bush-clover *Lespedeza leptostachya* Threatened
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species and/or critical habitat listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Coordination with the Service is complete. This letter serves as technical assistance. All conservation measures should be implemented as proposed. Thank you for considering federally listed species during your project planning.

We are uncertain where the northern long-eared bat occurs on the landscape outside of known locations. Because of the steep declines in the species and vast amount of available and suitable forest habitat, the presence of suitable forest habitat alone is a far less reliable predictor of their presence. Based on the best available information, most suitable habitat is now expected to be unoccupied. During the interim period, while we are working on potential methods to address this uncertainty, we conclude take is not reasonably certain to occur in areas of suitable habitat where presence has not been documented.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the Minnesota-Wisconsin Ecological Services Field Office and reference Project Code 2024-0039163 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

North Zumbro Sanitary District

2. Description

The following description was provided for the project 'North Zumbro Sanitary District':

> Create a new regional sanitary district to serve the communities of Goodhue, Pine Island, Wanamingo, Zumbrota and the Prairie Island Indian Community. A new wastewater treatment facility (WWTF) will be built near the City of Zumbrota. Lift stations and piping will be installed to connect all communities. The new WWTF will treat wastewater from the cities of Goodhue, Pine Island, Wanamingo, Zumbrota and the Prairie Island Indian Community. The wastewater is municipal wastewater and includes two Significant Industrial Users.
>
> The new WWTF will include an overflow retention basin (250’ diameter circular tank), screening and grit removal (30’x50’ building), oxidation ditches (300’x125’ structure), two final clarifiers (80’ diameter each),UV disinfection (30’x50’ building), aerobic digestion tanks (60’x120’ structure), and biosolids storage (two 3-MG 160’-diameter circular tanks). The new WWTF will include an influent pump station (40’x60’ building), main process building housing RAS, WAS, and sludge storage pumps, chem feed, blowers, and main electrical (50’x120’), administration building (60’x80’), maintenance garage (50’x100’), storage building (50’x100’), and generator pad (20’x50’). The Design Year for this Facility is 2045.
>
> The new WWTF facility footprint will allow for future expansion on site beyond Design Year 2045, which could add the following additional units: a second overflow retention basin (250’ diameter circular tank), additional oxidation ditches (300’x125’ structure), two additional final clarifiers (80’ diameter each),additional aerobic digestion (60’x120’ structure), expansion of the main process building (adds 50’x120’), and additional biosolids storage (two additional 3-MG 160’-diameter circular tanks). These units would allow for doubling the WWTF capacity.
>
> The new WWTF will discharge to the North Fork Zumbro River. Biosolids will be land-applied onto agricultural fields nearby the proposed facility.
>
> The new WWTF has two potential alternative sites under consideration. Both alternative sites are located within 1-1/4 miles of each other along the North Fork Zumbro River, in Zumbrota Township east of the City of Zumbrota. WWTP Site 1 is the primary site under consideration. The site is 48 gross acres.

To bring wastewater to the new WWTF, new pumping stations and forcemains will be constructed and the old WWTFs will be demolished in all four cities.

The Zumbrota conveyance project will construct a new pump station (40'x60' building) at Zumbrota's existing WWTF, and construct a new forcemain from the pump station to the new centralized WWTF. The new WWTF Site 1 is located approximately one-half (1/2) mile directly east and across the North Fork Zumbro River from the existing Zumbrota WWTF site. The corridor for the forcemain alignment is ½ mile times 20' wide (1 acre).

The existing Zumbrota WWTF is located directly off of Highway 58, in the northeastern part of the City of Zumbrota. The WWTF is approximately ten (10) acres and includes trickling filters, activated sludge, aerobic sludge digestion, and sludge holding ponds. The existing WWTF process units, buildings, and ponds will be decommissioned and demolished. Driveway paving will remain. The new Zumbrota pump station will be built on this site.

Project construction should start in 2025 and be complete in 2026. A 1-year startup period will be in 2026-27. Demolition of the existing wastewater treatment facilities will follow in 2028.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.3012599,-92.65655013360748,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. The action area does not overlap with an area for which U.S. Fish and Wildlife Service currently has data to support the presumption that the northern long-eared bat is present. Are you aware of other data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed NLEB acoustic detections. Data on captures, roost tree use, and acoustic detections should post-date the year when white-nose syndrome was detected in the relevant state. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Eleanor Brandt
Address: 126 E Superior St
City: Duluth
State: MN
Zip: 55801
Email eleanor.brandt@widseth.com
Phone: 2184517087

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Pine Island city (Goodhue County, MN; Olmsted County, MN)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793

In Reply Refer To: February 22, 2024
Project code: 2024-0039163
Project Name: North Zumbro Sanitary District

Subject: Consistency letter for 'North Zumbro Sanitary District' for specified threatened and endangered species that may occur in your proposed project location consistent with the Minnesota-Wisconsin Endangered Species Determination Key (Minnesota-Wisconsin DKey).

Dear Eleanor Brandt:

The U.S. Fish and Wildlife Service (Service) received on **February 22, 2024** your effect determination(s) for the 'North Zumbro Sanitary District' (Action) using the Minnesota-Wisconsin DKey within the Information for Planning and Consultation (IPaC) system. You have submitted this key to satisfy requirements under Section 7(a)(2). The Service developed this system in accordance of with the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 et seq.).

Based on your answers and the assistance of the Service's Minnesota-Wisconsin DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
Minnesota Dwarf Trout Lily (*Erythronium propullans*)	Endangered	No effect
Monarch Butterfly (*Danaus plexippus*)	Candidate	No effect
Prairie Bush-clover (*Lespedeza leptostachya*)	Threatened	No effect
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	No effect
Whooping Crane (*Grus americana*)	Experimental Population, Non-Essential	No effect

Determination Information

Thank you for informing the Service of your "No Effect" determination(s). No further coordination is necessary for the species you determined will not be affected by the Action.

Additional Information

Sufficient project details: Please provide sufficient project details on your project homepage in IPaC (Define Project, Project Description) to support your conclusions. Failure to disclose important aspects of your project that would influence the outcome of your effects determinations may negate your determinations and invalidate this letter. If you have site-specific information that leads you to believe a different determination is more appropriate for your project than what the Dkey concludes, you can and should proceed based on the best available information.

Future project changes: The Service recommends that you contact the Minnesota-Wisconsin Ecological Services Field Office or re-evaluate the project in IPaC if: 1) the scope or location of the proposed Action is changed; 2) new information reveals that the action may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the Action is modified in a manner that causes effects to listed species or designated critical habitat; or 4) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project changes are final or resources committed.

For non-Federal representatives: Please note that when a project requires consultation under section 7 of the Act, the Service must consult directly with the Federal action agency unless that agency formally designates a non-Federal representative (50 CFR 402.08). Non-Federal representatives may prepare analyses or conduct informal consultations; however, the ultimate responsibility for section 7 compliance under the Act remains with the Federal agency. Please include the Federal action agency in additional correspondence regarding this project.

Species-specific information

Listed Plants: You have indicated that your Action has no effect (NE) on a threatened or endangered plant species, without a Federal nexus of any kind (i.e., the project is not on Federal land; no Federal funding, authorization, or permitting required; no Federal agency involvement in planning or implementation). Although your Endangered Species Act requirements are met, we recommend you contact the Minnesota or Wisconsin Department of Natural Resources regarding compliance with state law. **You may need a state permit if your Action will harm state listed plants. We encourage landowners to maintain habitat for listed plant species and avoid disturbing listed plants to the extent possible.**

Bald and Golden Eagles: Bald eagles, golden eagles, and their nests are protected under the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d) (Eagle Act). The Eagle Act prohibits, except when authorized by an Eagle Act permit, the “taking” of bald and golden eagles and defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” The Eagle Act’s implementing regulations define disturb as “… to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

If you observe a bald eagle nest in the vicinity of your proposed project, you should follow the National Bald Eagle Management Guidelines (May 2007). For more information on eagles and conducting activities in the vicinity of an eagle nest, please visit our regional eagle website or

contact Margaret at Margaret_Rheude@fws.gov. **If the Action may affect bald or golden eagles, additional coordination with the Service under the Eagle Act may be required.**

The following species and/or critical habitats may also occur in your project area and **are not** covered by this conclusion:

- Northern Long-eared Bat *Myotis septentrionalis* Endangered

Coordination with the Service is not complete if additional coordination is advised above for any species.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

North Zumbro Sanitary District

2. Description

The following description was provided for the project 'North Zumbro Sanitary District':

> Create a new regional sanitary district to serve the communities of Goodhue, Pine Island, Wanamingo, Zumbrota and the Prairie Island Indian Community. A new wastewater treatment facility (WWTF) will be built near the City of Zumbrota. Lift stations and piping will be installed to connect all communities. The new WWTF will treat wastewater from the cities of Goodhue, Pine Island, Wanamingo, Zumbrota and the Prairie Island Indian Community. The wastewater is municipal wastewater and includes two Significant Industrial Users.
>
> The new WWTF will include an overflow retention basin (250’ diameter circular tank), screening and grit removal (30’x50’ building), oxidation ditches (300’x125’ structure), two final clarifiers (80’ diameter each),UV disinfection (30’x50’ building), aerobic digestion tanks (60’x120’ structure), and biosolids storage (two 3-MG 160’-diameter circular tanks). The new WWTF will include an influent pump station (40’x60’ building), main process building housing RAS, WAS, and sludge storage pumps, chem feed, blowers, and main electrical (50’x120’), administration building (60’x80’), maintenance garage (50’x100’), storage building (50’x100’), and generator pad (20’x50’). The Design Year for this Facility is 2045.
>
> The new WWTF facility footprint will allow for future expansion on site beyond Design Year 2045, which could add the following additional units: a second overflow retention basin (250’ diameter circular tank), additional oxidation ditches (300’x125’ structure), two additional final clarifiers (80’ diameter each),additional aerobic digestion (60’x120’ structure), expansion of the main process building (adds 50’x120’), and additional biosolids storage (two additional 3-MG 160’-diameter circular tanks). These units would allow for doubling the WWTF capacity.
>
> The new WWTF will discharge to the North Fork Zumbro River. Biosolids will be land-applied onto agricultural fields nearby the proposed facility.
>
> The new WWTF has two potential alternative sites under consideration. Both alternative sites are located within 1-1/4 miles of each other along the North Fork Zumbro River, in Zumbrota Township east of the City of Zumbrota. WWTP Site 1 is the primary site under consideration. The site is 48 gross acres.

To bring wastewater to the new WWTF, new pumping stations and forcemains will be constructed and the old WWTFs will be demolished in all four cities.

The Zumbrota conveyance project will construct a new pump station (40'x60' building) at Zumbrota's existing WWTF, and construct a new forcemain from the pump station to the new centralized WWTF. The new WWTF Site 1 is located approximately one-half (1/2) mile directly east and across the North Fork Zumbro River from the existing Zumbrota WWTF site. The corridor for the forcemain alignment is ½ mile times 20' wide (1 acre).

The existing Zumbrota WWTF is located directly off of Highway 58, in the northeastern part of the City of Zumbrota. The WWTF is approximately ten (10) acres and includes trickling filters, activated sludge, aerobic sludge digestion, and sludge holding ponds. The existing WWTF process units, buildings, and ponds will be decommissioned and demolished. Driveway paving will remain. The new Zumbrota pump station will be built on this site.

Project construction should start in 2025 and be complete in 2026. A 1-year startup period will be in 2026-27. Demolition of the existing wastewater treatment facilities will follow in 2028.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.299764749999994,-92.65656184844298,14z

QUALIFICATION INTERVIEW

1. This determination key is intended to assist the user in evaluating the effects of their actions on Federally listed species in Minnesota and Wisconsin. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes. Additionally, this key DOES NOT cover wind development, purposeful take (e.g., for research or surveys), communication towers that have guy wires or are over 450 feet in height, aerial or other large-scale application of any chemical (such as insecticide or herbicide), and approval of long-term permits or plans (e.g., FERC licenses, HCP's).

   Click **YES** to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

   Yes
2. Is the action being funded, authorized, or carried out by a Federal agency?

   No
3. Are you the Federal agency or designated non-federal representative?

   No
4. Does the action involve the installation or operation of wind turbines?

   No
5. Does the action involve purposeful take of a listed animal?

   No
6. Does the action involve a new communications tower?

   No
7. Does the activity involve aerial or other large-scale application of ANY chemical, including pesticides (insecticide, herbicide, fungicide, rodenticide, etc)?

   No
8. Does the action occur near a bald eagle nest?

   Note: Contact the Minnesota or Wisconsin Department of Natural Resources for an up-to-date list of known bald eagle nests.

   No
9. Will your action permanently affect local hydrology?

   No
10. Will your action temporarily affect local hydrology?

    No

11. Will your project have any direct impacts to a stream or river (e.g., Horizontal Directional Drilling (HDD), hydrostatic testing, stream/road crossings, new stormwater outfall discharge, dams, other in-stream work, etc.)?

    No

12. Does your project have the potential to impact the riparian zone or indirectly impact a stream/river (e.g., cut and fill; horizontal directional drilling; construction; vegetation removal; pesticide or fertilizer application; discharge; runoff of sediment or pollutants; increase in erosion, etc.)?

    Note: Consider all potential effects of the action, including those that may happen later in time and outside and downstream of the immediate area involved in the action.

    Endangered Species Act regulation defines "effects of the action" to include all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR 402.02).

    Yes

13. Will your action disturb the ground or existing vegetation?

    Note: This includes any off-road vehicle access, soil compaction (enough to collapse a rodent burrow), digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application (herbicide, fungicide), vegetation management (including removal or maintenance using equipment or prescribed fire), cultivation, development, etc.

    Yes

14. Will your action include spraying insecticides?

    No

15. Does your action area occur entirely within an already developed area?

    Note: Already developed areas are already paved, covered by existing structures, manicured lawns, industrial sites, or cultivated cropland, AND do not contain trees that could be roosting habitat. Be aware that listed species may occur in areas with natural, or semi-natural, vegetation immediately adjacent to existing utilities (e.g. roadways, railways) or within utility rights-of-way such as overhead transmission line corridors, and can utilize suitable trees, bridges, or culverts for roosting even in urban dominated landscapes (so these are not considered "already developed areas" for the purposes of this question). If unsure, select NO..

    No

16. Does Minnesota dwarf trout lily occur in the action area?

    Yes

17. Did you conduct a survey to determine if Minnesota dwarf trout lily occurs in the action area?

    If yes, please upload survey results. A survey is not required, but is highly encouraged. Contact the Minnesota Department of Natural Resources for accepted survey methodology.

    No

18. Will the project indirectly alter the habitat or resources of Minnesota dwarf trout lily? (I.e., could your action result in a change in canopy cover, microclimate, humidity; increase in invasive species; soil compaction; hydrologic alterations, etc.?)
    If unsure, select yes.

    No

19. Could the action directly harm Minnesota dwarf trout lily?
    (I.e., does your action include prescribed fire, herbicide application, trampling, grazing, increase in erosion/siltation, cutting/clearing, cultivation, crushing by vehicle, reduce to possession, etc.?)

    No

20. Does prairie bush-clover occur in the action area?

    Yes

21. Did you conduct a survey to determine if prairie bush-clover (PBC) occurs in the action area? If yes, please upload survey results.

    No

22. Will the project indirectly alter the habitat or resources of prairie bush-clover?
    (I.e., could your action result in a change in canopy cover, microclimate, humidity, increase in invasive species, hydrologic alterations, etc.?)
    If unsure, select yes.

    No

23. Could the action directly harm prairie bush-clover?
    (I.e., does your action include prescribed fire, herbicide application, trampling, grazing, cutting/clearing, cultivation, crushing by vehicle, reduce to possession, etc.?)

    No

24. [Hidden Semantic] Does the action area intersect the monarch butterfly species list area?

    Automatically answered
    Yes

25. Under the ESA, monarchs remain warranted but precluded by listing actions of higher priority. The monarch is a candidate for listing at this time. The Endangered Species Act does not establish protections or consultation requirements for candidate species. Some Federal and State agencies may have policy requirements to consider candidate species in planning. We encourage implementing measures that will remove or reduce threats to these species and possibly make listing unnecessary.

    If your project will have no effect on monarch butterflies (for example, if your project won't affect their habitat or individuals), then you can make a "no effect" determination for this project.

    Are you making a "no effect" determination for monarch?

    Yes

26. [Hidden semantic] Does the action intersect the Tricolored bat species list area?

    Automatically answered

    Yes

27. The tricolored bat was proposed for listing as endangered on September 13, 2022. During winter, tricolored bats hibernate in caves, abandoned mines, and abandoned tunnels ranging from small to large in size. During spring, summer and fall months, they roost primarily among leaf clusters of live or recently dead deciduous/hardwood trees.

    What effect determination do you want to make for the tricolored bat (Only make a "may affect" determination if you think the project is likely to jeopardize the continued existence of the species)?

    1. "No effect"

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Eleanor Brandt
Address: 126 E Superior St
City: Duluth
State: MN
Zip: 55801
Email eleanor.brandt@widseth.com
Phone: 2184517087

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793 Fax: (952) 646-2873

In Reply Refer To: January 22, 2024
Project Code: 2024-0039163
Project Name: North Zumbro Sanitary District

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:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

Threatened and Endangered Species
The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance
Please refer to refer to our Section 7 website for guidance and technical assistance, including step-by-step instructions for making effects determinations for each species that might be present and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, USDA Rural Development projects, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

We recommend running the project (if it qualifies) through our **Minnesota-Wisconsin Federal Endangered Species Determination Key (Minnesota-Wisconsin ("D-key"))**. A demonstration video showing how-to access and use the determination key is available. Please note that the Minnesota-Wisconsin D-key is the third option of 3 available d-keys. D-keys are tools to help Federal agencies and other project proponents determine if their proposed action has the potential to adversely affect federally listed species and designated critical habitat. The Minnesota-Wisconsin D-key includes a structured set of questions that assists a project proponent in determining whether a proposed project qualifies for a certain predetermined consultation outcome for all federally listed species found in Minnesota and Wisconsin (except for the northern long-eared bat- see below), which includes determinations of “no effect” or “may affect, not likely to adversely affect." In each case, the Service has compiled and analyzed the best available information on the species’ biology and the impacts of certain activities to support these determinations.

If your completed d-key output letter shows a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.

For Federal projects with a “Not Likely to Adversely Affect” (NLAA) determination, our concurrence becomes valid if you do not hear otherwise from us after a 30-day review period, as indicated in your letter.

If your d-key output letter indicates additional coordination with the Minnesota-Wisconsin Ecological Services Field Office is necessary (i.e., you get a “May Affect” determination), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of the key; ESA compliance cannot be concluded using the key for “May Affect” determinations unless otherwise indicated in your output letter.

Note: Once you obtain your official species list, you are not required to continue in IPaC with d-keys, although in most cases these tools should expedite your review. If you choose to make an effects determination on your own, you may do so. If the project is a Federal Action, you may want to review our section 7 step-by-step instructions before making your determinations.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **no effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species on our office website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **no effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

Northern Long-Eared Bats
Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

This species hibernates in caves or mines only during the winter. In Minnesota and Wisconsin, the hibernation season is considered to be November 1 to March 31. During the active season (April 1 to October 31) they roost in forest and woodland habitats. Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected.

Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas,
- Trees found in highly developed urban areas (e.g., street trees, downtown areas),
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A monoculture stand of shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:

- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
- Any activity in or near the entrance to a cave or mine,
- Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
- Construction of one or more wind turbines, or
- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No**

Effect determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

If any of the above activities are proposed, and the northern long-eared bat appears on the user's species list, the federal project user will be directed to either the range-wide northern long-eared bat D-key or the Federal Highways Administration, Federal Railways Administration, and Federal Transit Administration Indiana bat/ Northern long-eared bat D-key, depending on the type of project and federal agency involvement. Similar to the Minnesota-Wisconsin D-key, these d-keys helps to determine if prohibited take might occur and, if not, will generate an automated verification letter.

Please note: On November 30, 2022, the Service published a proposal final rule to reclassify the northern long-eared bat as endangered under the Endangered Species Act. On January 26, 2023, the Service published a 60-day extension for the final reclassification rule in the Federal Register, moving the effective listing date from January 30, 2023, to March 31, 2023. This extension will provide stakeholders and the public time to preview interim guidance and consultation tools before the rule becomes effective. When available, the tools will be available on the Service's northern long-eared bat website (https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis). Once the final rule goes into effect on March 31, 2023, the 4(d) D-key will no longer be available (4(d) rules are not available for federally endangered species) and will be replaced with a new Range-wide NLEB D-key (range-wide d-key). For projects not completed by March 31, 2023, that were previously reviewed under the 4(d) d-key, there may be a need for reinitiation of consultation. For these ongoing projects previously reviewed under the 4(d) d-key that may result in incidental take of the northern long-eared bat, we recommend you review your project using the new range-wide d-key once available. If your project does not comply with the range-wide d-key, it may be eligible for use of the Interim (formal) Consultation framework (framework). The framework is intended to facilitate the transition from the 4(d) rule to typical Section 7 consultation procedures for federally endangered species and will be available only until spring 2024. Again, when available, these tools (new range-wide d-key and framework) will be available on the Service's northern long-eared bat website.

Whooping Crane

Whooping crane is designated as a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, then you are not required to consult. For additional information on this designation and consultation requirements, please review "Establishment of a Nonessential Experimental Population of Whooping Cranes in the Eastern United States."

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. Should bald or golden eagles occur within or near the project area please contact our office for further coordination. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the

mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

State Department of Natural Resources Coordination
While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.

Minnesota
Minnesota Department of Natural Resources - Endangered Resources Review Homepage
Email: Review.NHIS@state.mn.us

Wisconsin
Wisconsin Department of Natural Resources - Endangered Resources Review Homepage
Email: DNRERReview@wi.gov

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

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
3815 American Blvd East
Bloomington, MN 55425-1659
(952) 858-0793

PROJECT SUMMARY

Project Code: 2024-0039163
Project Name: North Zumbro Sanitary District
Project Type: Wastewater Facility - New Construction
Project Description: Create a new regional sanitary district to serve the communities of Goodhue, Pine Island, Wanamingo, Zumbrota and the Prairie Island Indian Community. A new wastewater treatment facility (WWTF) will be built near the City of Zumbrota. Lift stations and piping will be installed to connect all communities. The new WWTF will treat wastewater from the cities of Goodhue, Pine Island, Wanamingo, Zumbrota and the Prairie Island Indian Community. The wastewater is municipal wastewater and includes two Significant Industrial Users.

The new WWTF will include an overflow retention basin (250’ diameter circular tank), screening and grit removal (30’x50’ building), oxidation ditches (300’x125’ structure), two final clarifiers (80’ diameter each),UV disinfection (30’x50’ building), aerobic digestion tanks (60’x120’ structure), and biosolids storage (two 3-MG 160’-diameter circular tanks). The new WWTF will include an influent pump station (40’x60’ building), main process building housing RAS, WAS, and sludge storage pumps, chem feed, blowers, and main electrical (50’x120’), administration building (60’x80’), maintenance garage (50’x100’), storage building (50’x100’), and generator pad (20’x50’). The Design Year for this Facility is 2045.

The new WWTF facility footprint will allow for future expansion on site beyond Design Year 2045, which could add the following additional units: a second overflow retention basin (250’ diameter circular tank), additional oxidation ditches (300’x125’ structure), two additional final clarifiers (80’ diameter each),additional aerobic digestion (60’x120’ structure), expansion of the main process building (adds 50’x120’), and additional biosolids storage (two additional 3-MG 160’-diameter circular tanks). These units would allow for doubling the WWTF capacity.

The new WWTF will discharge to the North Fork Zumbro River. Biosolids will be land-applied onto agricultural fields nearby the proposed facility.

The new WWTF has two potential alternative sites under consideration. Both alternative sites are located within 1-1/4 miles of each other along the North Fork Zumbro River, in Zumbrota Township east of the City of Zumbrota. WWTP Site 1 is the primary site under consideration. The site is 48 gross acres.

To bring wastewater to the new WWTF, new pumping stations and forcemains will be constructed and the old WWTFs will be demolished in all four cities.

The Zumbrota conveyance project will construct a new pump station (40’x60’ building) at Zumbrota’s existing WWTF, and construct a new forcemain from the pump station to the new centralized WWTF. The new WWTF Site 1 is located approximately one-half (1/2) mile directly east and across the North Fork Zumbro River from the existing Zumbrota WWTF site. The corridor for the forcemain alignment is ½ mile times 20’ wide (1 acre).

The existing Zumbrota WWTF is located directly off of Highway 58, in the northeastern part of the City of Zumbrota. The WWTF is approximately ten (10) acres and includes trickling filters, activated sludge, aerobic sludge digestion, and sludge holding ponds. The existing WWTF process units, buildings, and ponds will be decommissioned and demolished. Driveway paving will remain. The new Zumbrota pump station will be built on this site.

Project construction should start in 2025 and be complete in 2026. A 1-year startup period will be in 2026-27. Demolition of the existing wastewater treatment facilities will follow in 2028.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.3012599,-92.65655013360748,14z

Counties: Goodhue County, Minnesota

ENDANGERED SPECIES ACT SPECIES

There is a total of 6 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.

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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	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Whooping Crane *Grus americana* Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non-Essential

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Minnesota Dwarf Trout Lily *Erythronium propullans* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/597	Endangered
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.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE

SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere

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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

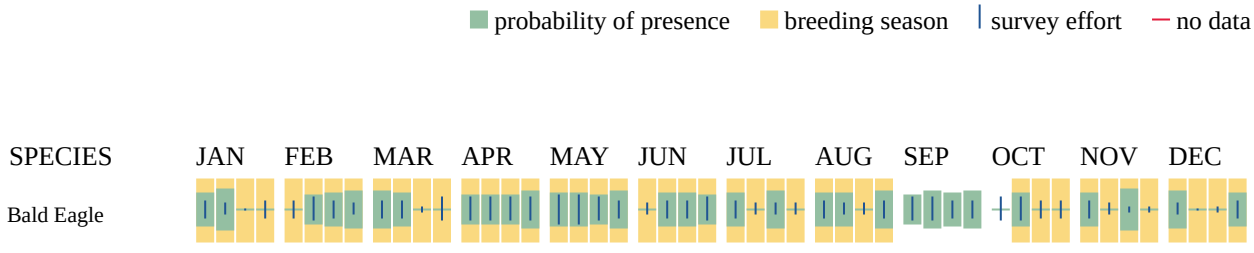
Probability of Presence (▪)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Non-BCC
Vulnerable

Golden Eagle
Non-BCC
Vulnerable

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

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[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

---

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)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10561	Breeds elsewhere

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere
Henslow's Sparrow *Ammodramus henslowii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere

NAME	BREEDING SEASON
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere

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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
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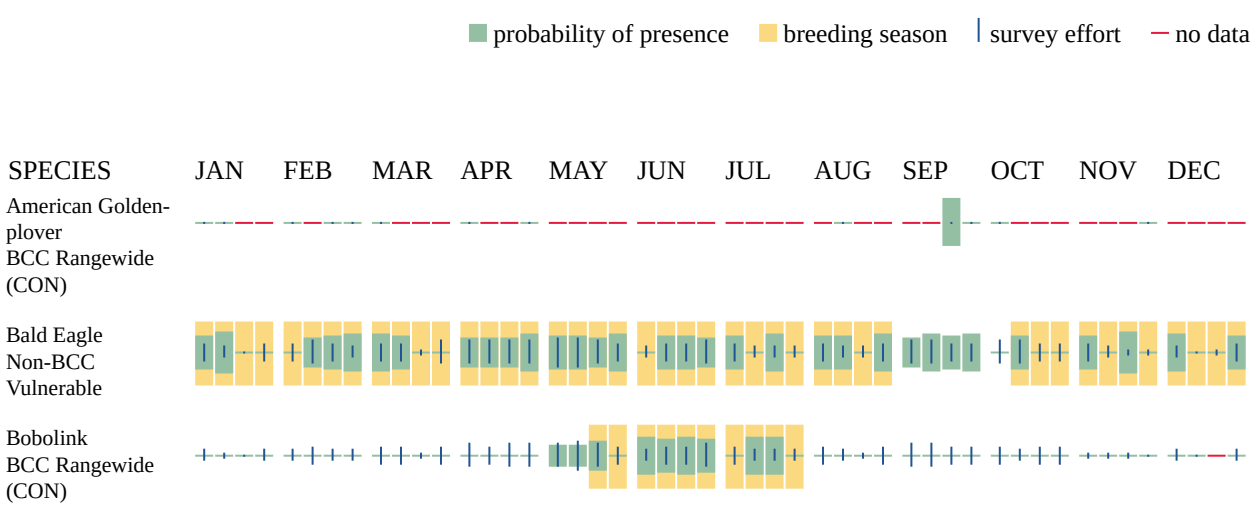


Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R2UBH
- R4SBC

FRESHWATER POND

- PUBHx
- PUBKx

FRESHWATER EMERGENT WETLAND

- PEM1Ad
- PEM1A

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1A

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Eleanor Brandt
Address: 126 E Superior St
City: Duluth
State: MN
Zip: 55801
Email eleanor.brandt@widseth.com
Phone: 2184517087

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Pine Island city (Goodhue County, MN; Olmsted County, MN)

Appendix ?

NHIS Review

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

April 2, 2024
Correspondence # MCE 2023-00977

Daniel McInnis
Widseth Smith and Nolting and Associates, Inc.

RE: Natural Heritage Review of the proposed North Zumbro Sanitary District – Alternate Route,

County	Township (N)	Range (W)	Sections
Goodhue	111	15	28, 33
Goodhue	110	15	4, 8, 9, 17, 19, 20, 29-32
Goodhue	110	16	28-36
Goodhue	109	15	5, 6, 8, 17, 20, 29, 32, 33

Dear Daniel McInnis,

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas

- The proposed project is partially within four areas identified by the Minnesota Biological Survey (MBS) as Sites of *High* or *Moderate* Biodiversity Significance. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as *High* contain very good quality occurrences of the rarest species, high quality examples of the rare native plant communities, and/or important functional landscapes. Sites ranked as *Moderate* contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. These areas are
    - **Pine Island 22** in T109N R15W Section 32. Ranked as a *High* MBS Site with a mapped native plant community in it. This riparian forest, FFs59c – Elm – Ash – Basswood Terrace Forest, has a state conservation rank of S2: Imperiled.

- **Pine Island 8** in T109N R15W Section 8. Ranked as a *Moderate* MBS Site with a mapped native plant community in it. This is MHs37a – Red Oak – White Oak Forest which has a state conservation rank of S3: Vulnerable to Extirpation.

- **Minneola 30** in T110N R16W Section 30. Ranked as a *Moderate* MBS Site with two mapped native plant communities in it. These are FFs59c – Elm – Ash – Basswood Terrace Forest, state-ranked as S2: Imperiled, and MHs39 – Southern Mesic Maple-Basswood Forest, state-ranked as S2: Imperiled, S3: Vulnerable to Extirpation.

- **Forest Mills Lowlands** in T110N R15W Sections 29 and 30. Ranked as a *Moderate* MBS Site with two mapped native plant communities in it. These are FFs59c – Elm – Ash – Basswood Terrace Forest, state-ranked as S2: Imperiled, and MHs39 – Southern Mesic Maple-Basswood Forest, state-ranked as S2: Imperiled, S3: Vulnerable to Extirpation. This MBS Site is along the North Fork Zumbro River and within part of the project area. This Site also has records of twinleaf (*Jeffersonia diphylla*) and snow trillium (*Trillium nivale*), both species of special concern.

Given the ecological significance of these areas, we recommend that the project be designed to avoid impacts to the native plant communities by either directional boring or confining construction activities to the opposite side of the road. Actions to minimize disturbance to the other Sites may include, but are not limited to, the following recommendations:

- Confine construction activities to the opposite side of the road from the Sites of Biodiversity. If this is not feasible, confine construction activities to the existing road rights-of-way.
- As much as possible, operate within already-disturbed areas.
- Retain a buffer between proposed activities and the MBS Site.
- Inspect and clean all equipment prior to bringing it to the site to prevent the introduction and spread of invasive species.
- If possible, conduct the work under frozen ground conditions.
- Use effective erosion prevention and sediment control measures.
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible.
- Use only weed-free mulches, topsoils, and seed mixes. Of particular concern is birdsfoot trefoil (*Lotus corniculatus*) and crown vetch (*Coronilla varia*), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas, such as roadsides.

Construction in streambeds, lakes, and wetlands should be avoided whenever possible. We recommend either changing the project boundary to avoid such areas or employing directional

boring techniques to install pipe under the area. Additional actions to minimize disturbance may include, but are not limited to, the following recommendations:

- Work in watercourses should be conducted during low flow whenever possible.
- Winter construction in frozen soils is the preferred method for placement in wetlands.
- Wetland basins, lake beds, and stream/riverbeds should be restored to preconstruction contours. The work should not promote wetland drainage.
- If directional boring is planned:
  - Bore pits should be placed at least 10 feet from the water's edge.
  - Wildlife friendly erosion control methods should be employed to prevent excavation material from entering the water.
  - Pits should be filled, graded to preconstruction contours, and re-vegetated with native species suitable to the local habitat upon completion.

The Minnesota Biological Survey (MBS) considered land near the proposed project in T109N R15W Section 5 for a Site of Biodiversity Significance. It was determined to be *Below* the minimum biodiversity threshold for statewide significance. This area, however, may have conservation value at the local level as habitat for native plants and animals, corridors for animal movements, buffers surrounding higher quality natural areas, or as areas with high potential for restoration of native habitat. As such, indirect impacts from surface runoff or the spread of invasive species should be considered during project design and implementation.

MBS Sites of Biodiversity Significance and DNR Native Plant Communities can be viewed using the Explore page in Minnesota Conservation Explorer or their GIS shapefiles can be downloaded from the MN Geospatial Commons. Please contact the NH Review Team if you need assistance accessing the data. Reference the MBS Site Biodiversity Significance and Native Plant Community websites for information on interpreting the data. To receive a list of MBS Sites of Biodiversity Significance and DNR Native Plant Communities in the vicinity of your project, create a Conservation Planning Report using the Explore Tab in Minnesota Conservation Explorer.

- If the Wetland Conservation Act (WCA) is applicable to this project, please note that wetlands within *High* or *Outstanding* MBS Sites of Biodiversity Significance and one or more Native Plant Communities near this project may qualify as "rare natural communities" under this Act. Minnesota Rules, part 8420.0515, subpart 3 states that a wetland replacement plan for activities that modify a rare natural community must be denied if the local government unit determines the proposed activities will permanently adversely affect the natural community. If the proposed project includes a wetland replacement plan under WCA, please contact your DNR Regional Ecologist for further evaluation. For technical guidance on Rare Natural Communities, please visit WCA Program Guidance and Information.

State-listed Species

- Glade mallow (*Napaea dioica*), a state-listed threatened plant, has been documented in the floodplains of the North Fork Zumbro River and Middle Fork Zumbro River near the proposed project near Wanamingo, Zumbrota, and Pine Island. Most populations of this species in Minnesota are located on stream banks and floodplains in the valleys of small- to medium-sized streams. Glade mallow may occur in full sun, under a canopy of trees in full shade, or in partial shade in canopy openings. Appropriate habitat is likely to be flooded in the spring but would only be moist by mid-summer. Minnesota's Endangered Species Statute (Minnesota Statutes, section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 6134) prohibit the take of endangered or threatened plants or animals, including their parts or seeds, without a permit. **To demonstrate avoidance, a qualified surveyor will need to determine if suitable habitat exists within the activity impact area and, if so, conduct a survey prior to any project activities.** Surveys must be conducted by a qualified surveyor and follow the standards contained in the Rare Species Survey Process and Rare Plant Guidance. Visit the Natural Heritage Review page for a list of certified surveyors and more information on this process. Project planning should take into account that any botanical survey needs to be conducted during the appropriate time of the year, which may be limited.

- State-listed threatened mussels have been found in the North Fork Zumbro River near the proposed project. Ellipse (*Venustaconcha ellipsiformis*) was found near Wanamingo and fluted-shell (*Lasmigona costata*) was found near Zumbrota. Minnesota's Endangered Species Statute (Minnesota Statutes, section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 6134) prohibit the take of threatened or endangered species without a permit. **Please contact the Endangered Species Environmental Review Coordinator at Review.NHIS@state.mn.us, if the proposed project will include any disturbance to the riverbed or any downstream sedimentation in T110N R16W Section 30 or T110N R15W Section 29 or 30, as a mussel survey and/or relocation may be required prior to construction.** You will need to discuss potential surveyors, survey protocol, and other requirements before any survey work is initiated.

- Several other rare fish and mussel species have been documented in the North Fork Zumbro River and Middle Fork Zumbro River near the proposed project area. These species are particularly vulnerable to deterioration in water quality, especially increased siltation. As such, effective erosion prevention and sediment control practices should be implemented and maintained near the river throughout the duration of the project and incorporated into any stormwater management plan. The new treatment facility discharge site is likely to alter sedimentation patterns nearby and we recommend steps be taken to minimize this. We recommend you avoid work in the water from early May to late July to avoid impacts during spawning season for the fish species.

- The Natural Heritage Information System (NHIS) tracks bat roost trees and hibernacula plus some acoustic data, but this information is not exhaustive. Even if there are no bat records listed nearby, all seven of Minnesota's bats, including the federally endangered northern long-eared bat (*Myotis septentrionalis*), can be found throughout Minnesota. During the active season (approximately April-November) bats roost underneath bark, in cavities, or in crevices of both live and dead trees. Tree removal can negatively impact bats by destroying roosting habitat, especially during the pup rearing season when females are forming maternity roosting colonies and the pups cannot yet fly. To minimize these impacts, **the DNR recommends that tree removal be avoided from June 1 through August 15.**

- Please visit the DNR Rare Species Guide for more information on the habitat use of these species and recommended measures to avoid or minimize impacts.

Federally Protected Species

- To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- The Environmental Assessment Worksheet should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance. Sufficient information should be provided so the DNR can determine whether a takings permit will be needed for any of the above protected species.

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit the Natural Heritage Review website for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

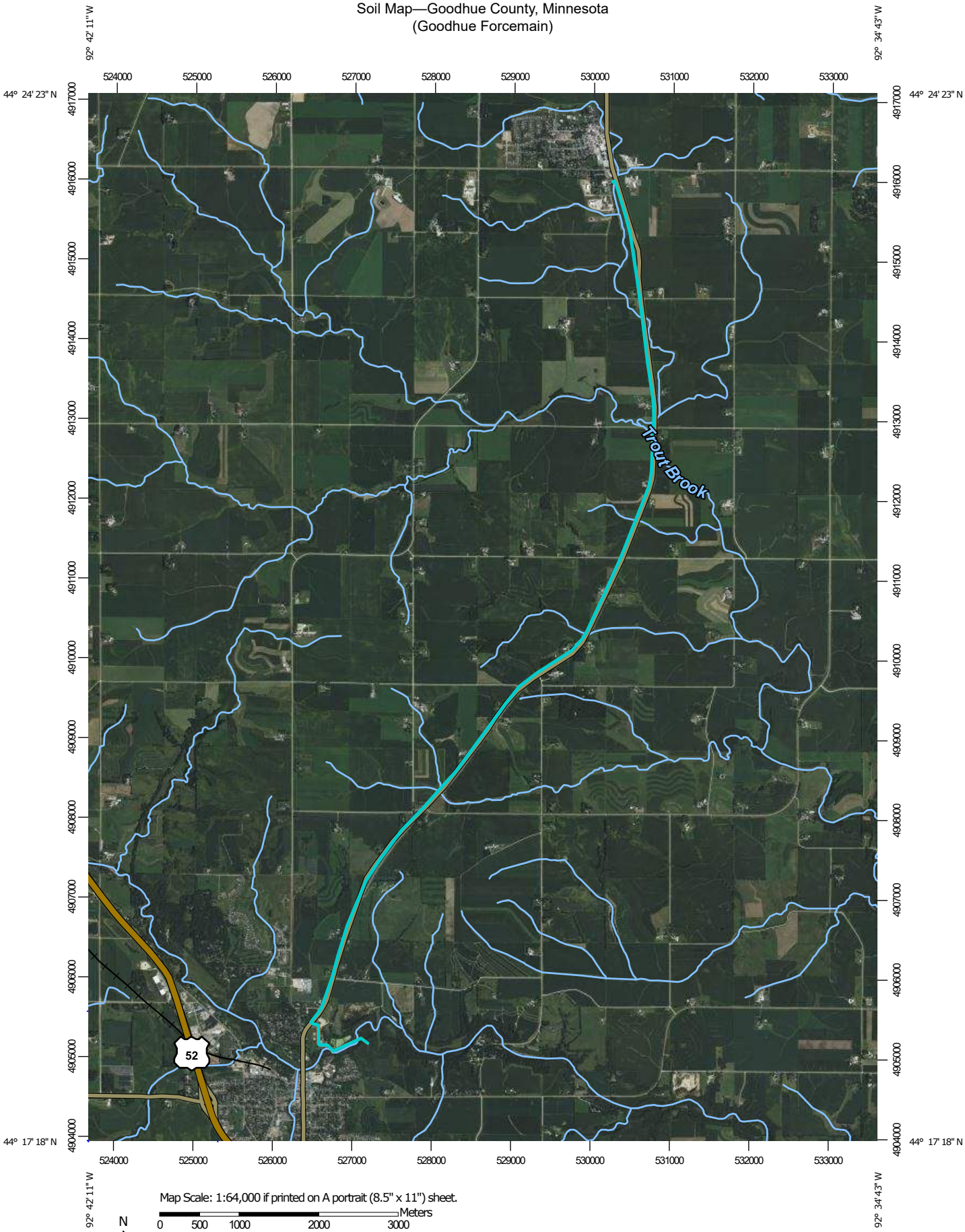
James Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

Cc: Melissa Collins, Jennie Skancke, Amanda Weise

Appendix ?

USDA Soils Map

Soil Map—Goodhue County, Minnesota
(Goodhue Forcemain)



Map Scale: 1:64,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 3000 6000 12000 18000

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.

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: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
M506B	Kasson silt loam, 2 to 6 percent slopes	0.6	1.0%
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, eroded	0.4	0.8%
N514B	Joy-Ossian, occasionally flooded, complex, 1 to 5 percent slopes	2.1	3.6%
N519B	Vasa silt loam, 1 to 4 percent slopes	0.6	0.9%
N522A	Otter silt loam, channeled upland, 0 to 2 percent slopes, frequently flooded	0.2	0.3%
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	2.7	4.5%
N579A	Dakota silt loam, 0 to 3 percent slopes	3.4	5.7%
N585B	Mt. Carroll-Hersey complex, 2 to 6 percent slopes	27.0	45.4%
N585C2	Mt. Carroll-Hersey complex, 6 to 12 percent slopes, moderately eroded	16.4	27.6%
N596C2	Eleva sandy loam, 6 to 12 percent slopes, moderately eroded	0.5	0.9%
N598D2	Winneshiek-Waucoma complex, 12 to 18 percent slopes, moderately eroded	0.1	0.2%
N601C2	Oak Center-Hersey complex, 6 to 12 percent slopes, moderately eroded	0.7	1.1%
N602A	Joy silt loam, 1 to 3 percent slopes	1.3	2.1%
N610B	Waucoma loam, 2 to 6 percent slopes	0.5	0.8%
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	2.0	3.3%
N619A	Kennebec-Lawson, channeled, complex, 0 to 3 percent slopes, flooded	0.4	0.6%
N639F	Frontenac-Lacrescent complex, 20 to 45 percent slopes, rocky	0.1	0.2%
W	Water	0.5	0.8%
Totals for Area of Interest		**59.3**	**100.0%**

Soil Map—Goodhue County, Minnesota
(Goodhue WWTF)

Map Scale: 1:613 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

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: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

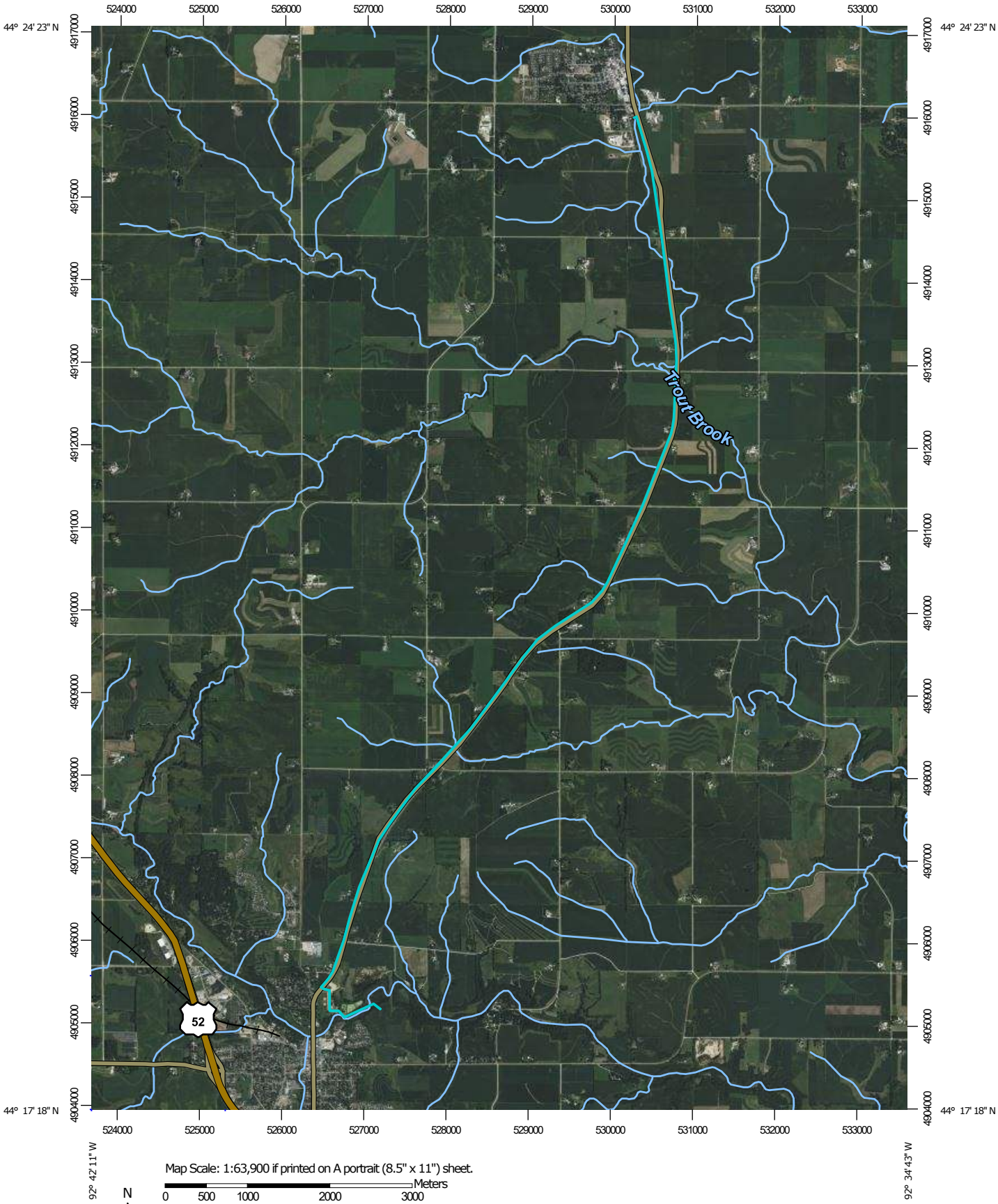
Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	0.1	15.0%
N585B	Mt. Carroll-Hersey complex, 2 to 6 percent slopes	0.8	85.0%
Totals for Area of Interest		**1.0**	**100.0%**

Erosion Hazard (Road, Trail)—Goodhue County, Minnesota
(pine island)



MAP LEGEND

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

Soils

Soil Rating Polygons
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Soil Rating Lines
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Soil Rating Points
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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)

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

Soil Survey Area: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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Erosion Hazard (Road, Trail)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
M506B	Kasson silt loam, 2 to 6 percent slopes	Moderate	Kasson (85%)	Slope/erodibility (0.50)	0.3	1.0%
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, eroded	Moderate	Bassett, eroded (50%)	Slope/erodibility (0.50)	0.2	0.7%
			Kasson, eroded (40%)	Slope/erodibility (0.50)		
N514B	Joy-Ossian, occasionally flooded, complex, 1 to 5 percent slopes	Moderate	Joy (60%)	Slope/erodibility (0.50)	1.1	3.5%
			Buckhart (10%)	Slope/erodibility (0.50)		
			Barremills, drainageway (5%)	Slope/erodibility (0.50)		
N519B	Vasa silt loam, 1 to 4 percent slopes	Moderate	Vasa (70%)	Slope/erodibility (0.50)	0.3	0.9%
			Hersey (10%)	Slope/erodibility (0.50)		
			Mt. Carroll (5%)	Slope/erodibility (0.50)		
N522A	Otter silt loam, channeled upland, 0 to 2 percent slopes, frequently flooded	Slight	Otter, channeled upland, frequently flooded (85%)		0.1	0.3%
			Littleton, occasionally flooded (10%)			
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	Moderate	Barremills, drainageway, occasionally flooded (85%)	Slope/erodibility (0.50)	1.4	4.5%
			Osco (10%)	Slope/erodibility (0.50)		
N579A	Dakota silt loam, 0 to 3 percent slopes	Slight	Dakota (90%)		1.7	5.5%
			Richwood (10%)			
N585B	Mt. Carroll-Hersey complex, 2 to 6 percent slopes	Moderate	Mt. Carroll (47%)	Slope/erodibility (0.50)	14.3	46.4%
			Hersey (46%)	Slope/erodibility (0.50)		
			Vasa (7%)	Slope/erodibility (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
N585C2	Mt. Carroll-Hersey complex, 6 to 12 percent slopes, moderately eroded	Severe	Mt. Carroll (47%)	Slope/erodibility (0.95)	8.4	27.3%
			Hersey (46%)	Slope/erodibility (0.95)		
N596C2	Eleva sandy loam, 6 to 12 percent slopes, moderately eroded	Severe	Eleva, moderately eroded (60%)	Slope/erodibility (0.95)	0.2	0.8%
			Alvin, moderately eroded (15%)	Slope/erodibility (0.95)		
N598D2	Winneshiek-Waucoma complex, 12 to 18 percent slopes, moderately eroded	Severe	Winneshiek, moderately eroded (46%)	Slope/erodibility (0.95)	0.1	0.2%
			Waucoma, moderately eroded (30%)	Slope/erodibility (0.95)		
			Channahon, moderately eroded (14%)	Slope/erodibility (0.95)		
			Mt. Carroll, moderately eroded, limestone substratum (10%)	Slope/erodibility (0.95)		
N601C2	Oak Center-Hersey complex, 6 to 12 percent slopes, moderately eroded	Moderate	Oak Center, moderately eroded (42%)	Slope/erodibility (0.50)	0.3	1.1%
			Hersey, moderately eroded (20%)	Slope/erodibility (0.50)		
			Gale, moderately eroded (14%)	Slope/erodibility (0.50)		
			Mt. Carroll, moderately eroded (5%)	Slope/erodibility (0.50)		
N602A	Joy silt loam, 1 to 3 percent slopes	Slight	Joy (71%)		0.7	2.3%
			Joy, till substratum (10%)			
			Ossian, frequently flooded, very brief (5%)			
N610B	Waucoma loam, 2 to 6 percent slopes	Moderate	Waucoma (67%)	Slope/erodibility (0.50)	0.2	0.8%
			Winneshiek (14%)	Slope/erodibility (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Channahon (5%)	Slope/erodibility (0.50)		
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	Slight	Kalmarville, frequently flooded (50%)		1.0	3.2%
			Radford, frequently flooded (30%)			
			Kennebec, occasionally flooded (10%)			
			Otter, frequently flooded, ponded (5%)			
			Klum, occasionally flooded (5%)			
N619A	Kennebec-Lawson, channeled, complex, 0 to 3 percent slopes, flooded	Slight	Kennebec, occasionally flooded (50%)		0.2	0.6%
			Lawson, channeled, frequently flooded (35%)			
			Otter, frequently flooded (5%)			
N639F	Frontenac-Lacrescent complex, 20 to 45 percent slopes, rocky	Severe	Frontenac (55%)	Slope/erodibility (0.95)	0.1	0.2%
			Lacrescent (25%)	Slope/erodibility (0.95)		
			Nasset (10%)	Slope/erodibility (0.95)		
			Lindstrom (5%)	Slope/erodibility (0.95)		
			Elizabeth (2%)	Slope/erodibility (0.95)		
				Slope/erodibility (0.95)		
W	Water	Not rated	Water (100%)		0.3	0.8%
Totals for Area of Interest					**30.7**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Moderate	18.1	58.8%
Severe	8.8	28.5%
Slight	3.6	11.8%
Null or Not Rated	0.3	0.8%

Rating	Acres in AOI	Percent of AOI
Totals for Area of Interest	**30.7**	**100.0%**

Description

FOR - Forestry

The ratings in this interpretation indicate the hazard of soil loss from unsurfaced roads and trails. The ratings are based on soil erosion factor K, slope, and content of rock fragments.

The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," or "severe." A rating of "slight" indicates that little or no erosion is likely; "moderate" indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and "severe" indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

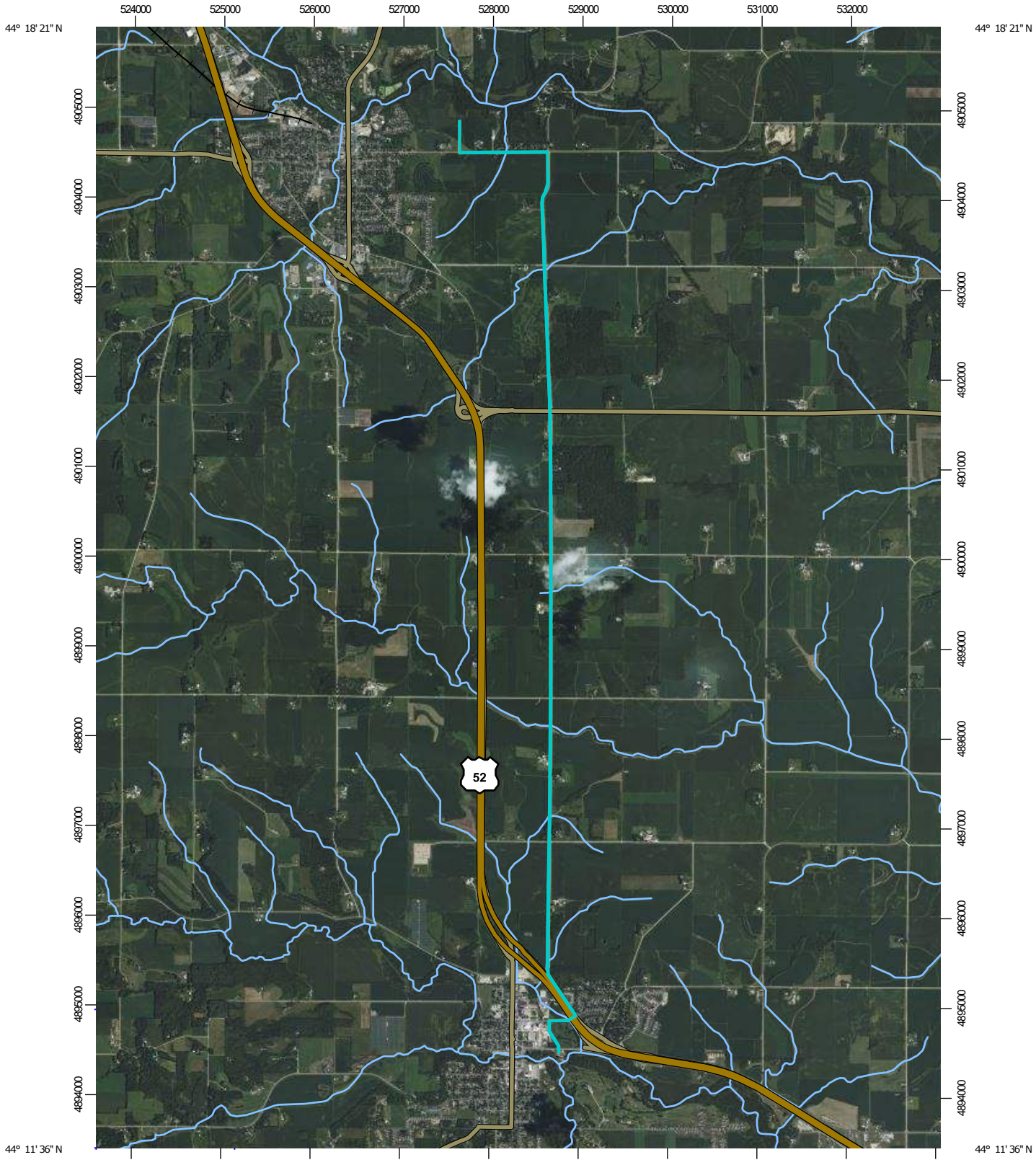
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Map—Goodhue County, Minnesota
(Pine Island Forcemain)



Map Scale: 1:60,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 2500 5000 10000 15000

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.

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)

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Soil Survey Area: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
M505A	Klinger silt loam, 1 to 4 percent slopes	2.7	5.1%
M506B	Kasson silt loam, 2 to 6 percent slopes	8.9	16.7%
M510A	Maxfield silt loam, 0 to 2 percent slopes	1.3	2.4%
M522D2	Bassett-Racine complex, 12 to 18 percent slopes, moderately eroded	0.3	0.7%
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, eroded	6.1	11.4%
M525A	Dakota silt loam, 0 to 3 percent slopes	1.2	2.2%
M536D2	Meridian, till substratum-Bassett complex, 12 to 18 percent slopes, moderately eroded	0.9	1.7%
M540F	Frontenac-Bellechester complex, 18 to 45 percent slopes	0.3	0.6%
N514B	Joy-Ossian, occasionally flooded, complex, 1 to 5 percent slopes	1.1	2.0%
N519B	Vasa silt loam, 1 to 4 percent slopes	0.7	1.4%
N574B	Downs-Hersey complex, 2 to 6 percent slopes	11.3	21.2%
N574C2	Downs-Hersey complex, 6 to 12 percent slopes, moderately eroded	6.5	12.3%
N574D2	Downs-Hersey complex, 12 to 18 percent slopes, moderately eroded	0.2	0.4%
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	2.8	5.3%
N579A	Dakota silt loam, 0 to 3 percent slopes	3.3	6.3%
N602A	Joy silt loam, 1 to 3 percent slopes	2.1	4.0%
N606B	Richwood silt loam, 1 to 6 percent slopes	0.7	1.2%
N608C2	Malardi loam, 6 to 12 percent slopes, moderately eroded	0.2	0.3%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	1.0	1.9%
N615A	Otter silt loam, 0 to 2 percent slopes, occasionally flooded	0.6	1.1%
N619A	Kennebec-Lawson, channeled, complex, 0 to 3 percent slopes, flooded	1.0	1.8%
Totals for Area of Interest		**53.3**	**100.0%**

Soil Map—Goodhue County, Minnesota
(Pine Island WWTF)

Map Scale: 1:944 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 45 90 180 270

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
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- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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Survey Area Data: Version 19, Sep 9, 2023

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

Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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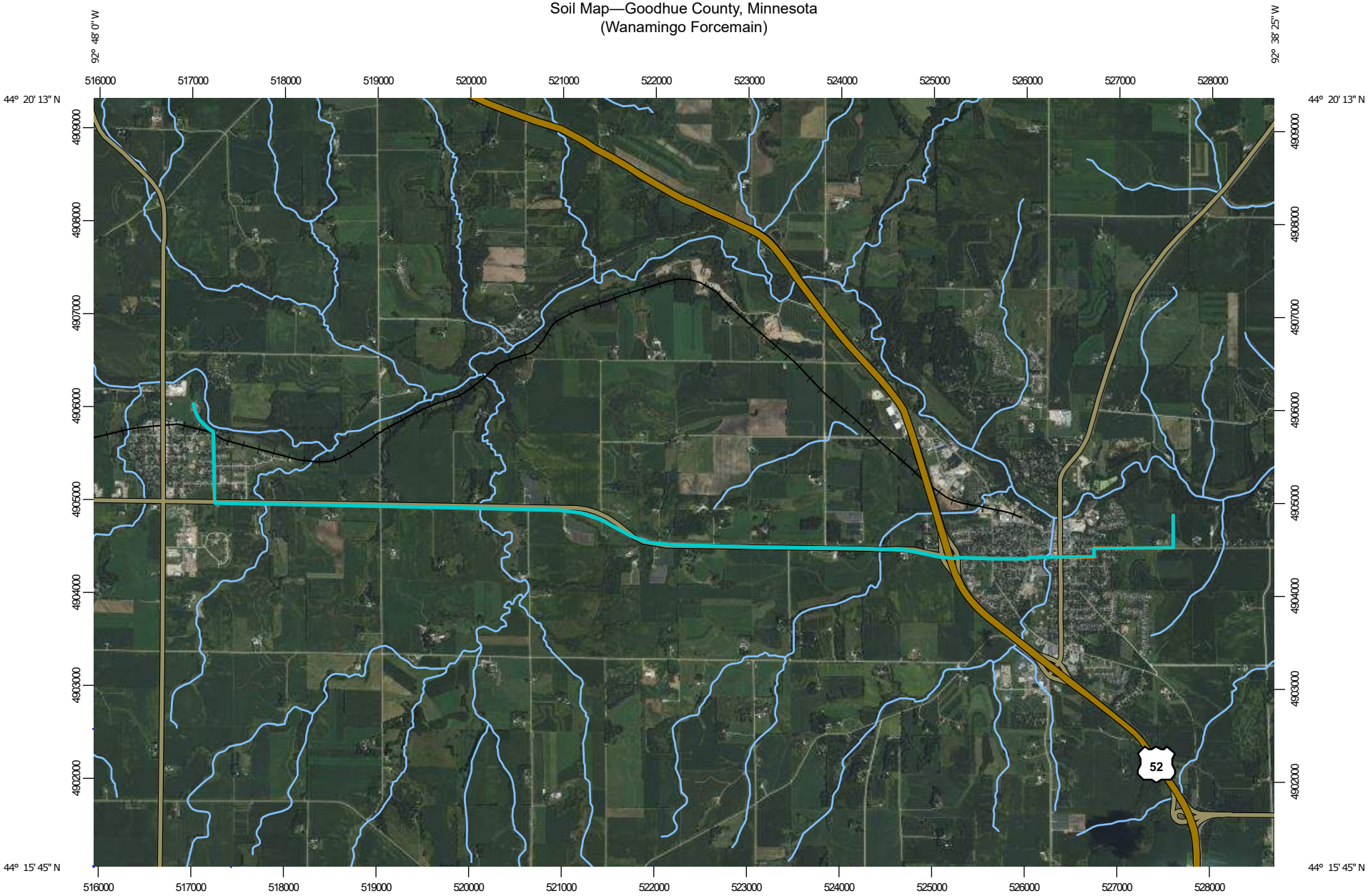
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	2.2	90.0%
N615A	Otter silt loam, 0 to 2 percent slopes, occasionally flooded	0.2	10.0%
Totals for Area of Interest		**2.4**	**100.0%**

Soil Map—Goodhue County, Minnesota
(Wanamingo Forcemain)



Map Scale: 1:58,200 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 2500 5000 10000 15000

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
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Coordinate System: Web Mercator (EPSG:3857)

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1027A	Coland, frequently flooded-Spillville, occasionally flooded complex, 0 to 2 percent slopes	0.2	0.4%
M505A	Klinger silt loam, 1 to 4 percent slopes	3.7	6.8%
M506B	Kasson silt loam, 2 to 6 percent slopes	18.2	33.3%
M507B	Marquis silt loam, 2 to 6 percent slopes	1.9	3.5%
M510A	Maxfield silt loam, 0 to 2 percent slopes	6.5	11.9%
M522E	Bassett-Racine complex, 18 to 25 percent slopes	0.0	0.0%
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, eroded	10.5	19.2%
M525A	Dakota silt loam, 0 to 3 percent slopes	0.6	1.1%
M532A	Maxfield silty clay loam, 0 to 2 percent slopes, occasionally flooded	1.7	3.0%
M536C2	Meridian, till substratum-Bassett complex, 6 to 12 percent slopes, moderately eroded	0.4	0.7%
M536D2	Meridian, till substratum-Bassett complex, 12 to 18 percent slopes, moderately eroded	0.0	0.0%
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	2.1	3.8%
N579A	Dakota silt loam, 0 to 3 percent slopes	4.1	7.6%
N607D2	Meridian silt loam, 12 to 18 percent slopes, moderately eroded	0.2	0.3%
N609D	Hawick sandy loam, 12 to 18 percent slopes	0.5	0.8%
N609E	Hawick sandy loam, 18 to 45 percent slopes	0.4	0.7%
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	0.3	0.5%
N615A	Otter silt loam, 0 to 2 percent slopes, occasionally flooded	1.9	3.6%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
N616A	Littleton silt loam, 0 to 2 percent slopes, occasionally flooded	1.5	2.7%
Totals for Area of Interest		**54.6**	**100.0%**

Soil Map—Goodhue County, Minnesota
(Wanamingo WWTF)

Map Scale: 1:735 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

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: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

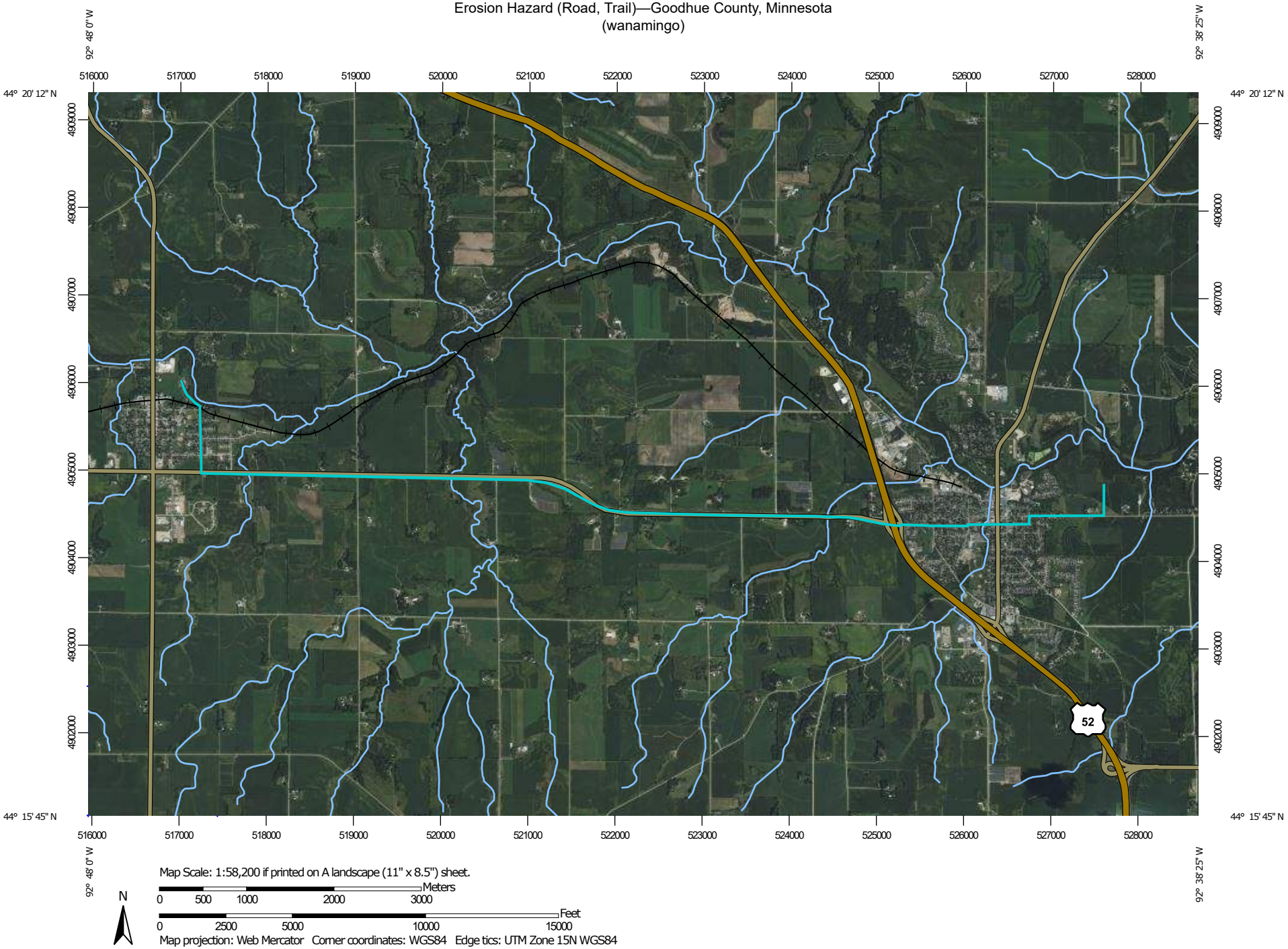
Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
N579A	Dakota silt loam, 0 to 3 percent slopes	1.3	90.1%
N609E	Hawick sandy loam, 18 to 45 percent slopes	0.1	9.9%
Totals for Area of Interest		**1.5**	**100.0%**

Erosion Hazard (Road, Trail)—Goodhue County, Minnesota
(wanamingo)



MAP LEGEND

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

Soils

Soil Rating Polygons
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Soil Rating Lines
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Soil Rating Points
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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)

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

Soil Survey Area: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Erosion Hazard (Road, Trail)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
1027A	Coland, frequently flooded-Spillville, occasionally flooded complex, 0 to 2 percent slopes	Slight	Coland, frequently flooded (50%)		0.1	0.4%
			Spillville, occasionally flooded (40%)			
			Kalmarville, frequently flooded (5%)			
			Hoopeston, occasionally flooded (5%)			
M505A	Klinger silt loam, 1 to 4 percent slopes	Slight	Klinger (95%)		2.3	7.9%
			Maxfield (5%)			
M506B	Kasson silt loam, 2 to 6 percent slopes	Moderate	Kasson (85%)	Slope/erodibility (0.50)	9.5	32.7%
M507B	Marquis silt loam, 2 to 6 percent slopes	Moderate	Marquis (85%)	Slope/erodibility (0.50)	0.9	3.2%
			Kenyon (5%)	Slope/erodibility (0.50)		
M510A	Maxfield silt loam, 0 to 2 percent slopes	Slight	Maxfield (90%)		3.4	11.6%
			Klinger (10%)			
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, eroded	Moderate	Bassett, eroded (50%)	Slope/erodibility (0.50)	5.5	19.0%
			Kasson, eroded (40%)	Slope/erodibility (0.50)		
M525A	Dakota silt loam, 0 to 3 percent slopes	Slight	Dakota (85%)		0.3	1.0%
			Lawler (10%)			
			Marshan (5%)			
M532A	Maxfield silty clay loam, 0 to 2 percent slopes, occasionally flooded	Slight	Maxfield, occasionally flooded (70%)		0.9	3.2%
			Maxfield (15%)			
			Colo, frequently flooded (15%)			
M536C2	Meridian, till substratum-Bassett complex, 6 to 12 percent slopes,	Severe	Meridian, till substratum, moderately eroded (45%)	Slope/erodibility (0.95)	0.2	0.7%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	moderately eroded		Lilah, moderately eroded (5%)	Slope/erodibility (0.95)		
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	Moderate	Barremills, drainageway, occasionally flooded (85%)	Slope/erodibility (0.50)	1.1	3.7%
			Osco (10%)	Slope/erodibility (0.50)		
N579A	Dakota silt loam, 0 to 3 percent slopes	Slight	Dakota (90%)		2.2	7.7%
			Richwood (10%)			
N607D2	Meridian silt loam, 12 to 18 percent slopes, moderately eroded	Severe	Meridian, moderately eroded (85%)	Slope/erodibility (0.95)	0.1	0.4%
			Lilah, moderately eroded (10%)	Slope/erodibility (0.95)		
			Fort Dodge (5%)	Slope/erodibility (0.95)		
N609D	Hawick sandy loam, 12 to 18 percent slopes	Severe	Hawick (70%)	Slope/erodibility (0.95)	0.3	0.9%
			Malardi (15%)	Slope/erodibility (0.95)		
			Salida (5%)	Slope/erodibility (0.95)		
			Fort Dodge (5%)	Slope/erodibility (0.95)		
			Warsaw (5%)	Slope/erodibility (0.95)		
N609E	Hawick sandy loam, 18 to 45 percent slopes	Severe	Hawick (70%)	Slope/erodibility (0.95)	0.2	0.6%
			Billett (15%)	Slope/erodibility (0.95)		
			Salida (10%)	Slope/erodibility (0.95)		
			Fort Dodge (5%)	Slope/erodibility (0.95)		
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	Slight	Kalmarville, frequently flooded (50%)		0.2	0.6%
			Radford, frequently flooded (30%)			
			Kennebec, occasionally flooded (10%)			
			Otter, frequently flooded, ponded (5%)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Klum, occasionally flooded (5%)			
N615A	Otter silt loam, 0 to 2 percent slopes, occasionally flooded	Slight	Otter, occasionally flooded (76%)		1.0	3.3%
			Otter, frequently flooded (14%)			
			Littleton, occasionally flooded (10%)			
N616A	Littleton silt loam, 0 to 2 percent slopes, occasionally flooded	Slight	Littleton, occasionally flooded (62%)		0.9	3.1%
			Kennebec, occasionally flooded (14%)			
			Otter, occasionally flooded (14%)			
			Lawler, occasionally flooded (10%)			
Totals for Area of Interest					**29.1**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Moderate	17.1	58.6%
Slight	11.3	38.8%
Severe	0.7	2.6%
Totals for Area of Interest	**29.1**	**100.0%**

Description

FOR - Forestry

The ratings in this interpretation indicate the hazard of soil loss from unsurfaced roads and trails. The ratings are based on soil erosion factor K, slope, and content of rock fragments.

The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," or "severe." A rating of "slight" indicates that little or no erosion is likely; "moderate" indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and "severe" indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

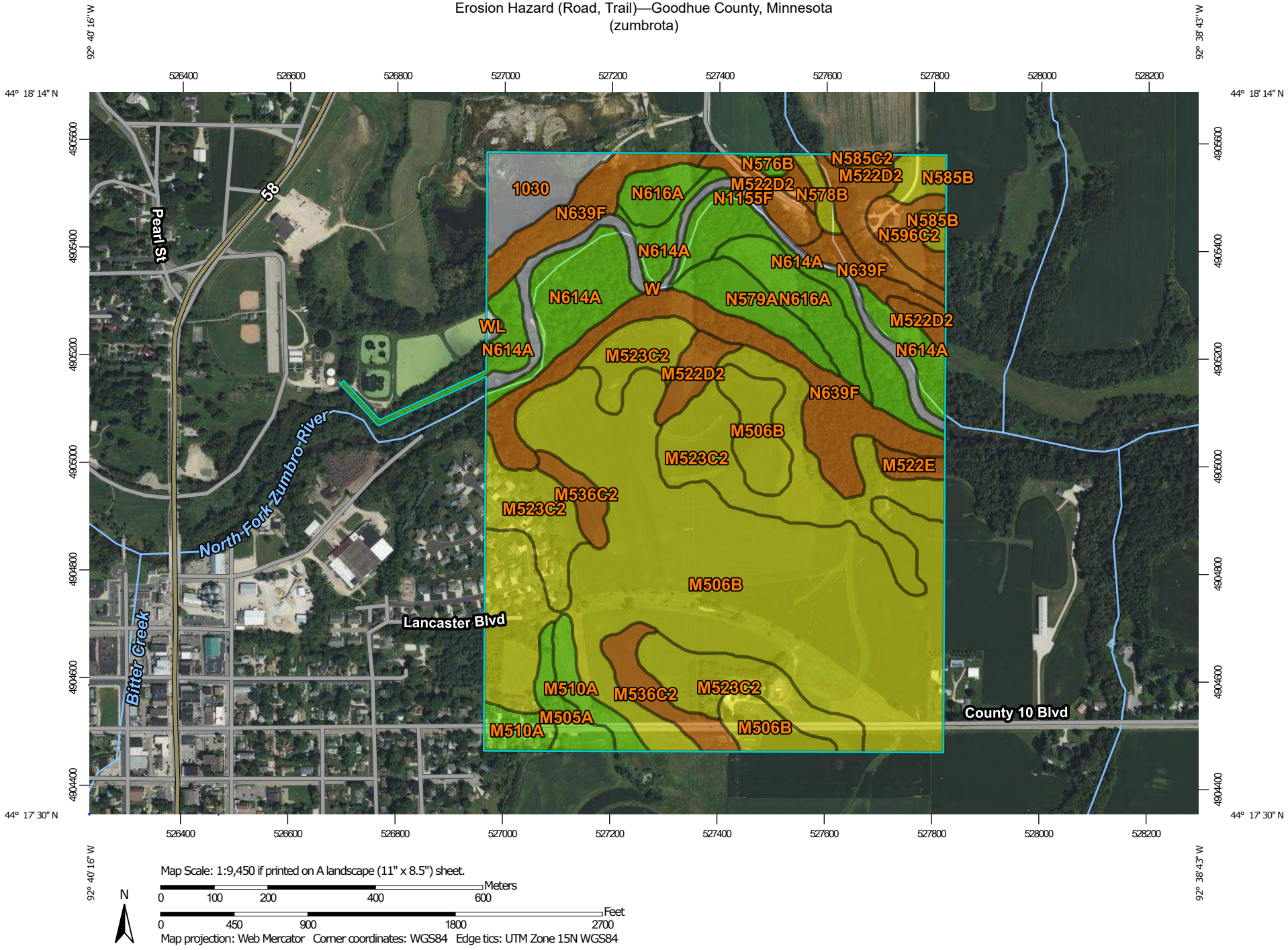
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Erosion Hazard (Road, Trail)—Goodhue County, Minnesota
(zumbrota)



Map Scale: 1:9,450 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Soil Rating Lines
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Soil Rating Points
- Very severe
- Severe
- Moderate
- Slight
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Erosion Hazard (Road, Trail)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
1030	Pits, sand and gravel	Not rated	Pits, sand and gravel (95%)		6.1	2.6%
			Water, sand and gravel (5%)			
M505A	Klinger silt loam, 1 to 4 percent slopes	Slight	Klinger (95%)		3.1	1.3%
			Maxfield (5%)			
M506B	Kasson silt loam, 2 to 6 percent slopes	Moderate	Kasson (85%)	Slope/erodibility (0.50)	84.8	35.8%
M510A	Maxfield silt loam, 0 to 2 percent slopes	Slight	Maxfield (90%)		5.5	2.3%
			Klinger (10%)			
M522D2	Bassett-Racine complex, 12 to 18 percent slopes, moderately eroded	Severe	Bassett, moderately eroded (50%)	Slope/erodibility (0.95)	9.7	4.1%
			Racine, moderately eroded (40%)	Slope/erodibility (0.95)		
M522E	Bassett-Racine complex, 18 to 25 percent slopes	Severe	Bassett (50%)	Slope/erodibility (0.95)	1.5	0.6%
			Racine (40%)	Slope/erodibility (0.95)		
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, eroded	Moderate	Bassett, eroded (50%)	Slope/erodibility (0.50)	38.2	16.1%
			Kasson, eroded (40%)	Slope/erodibility (0.50)		
M536C2	Meridian, till substratum-Bassett complex, 6 to 12 percent slopes, moderately eroded	Severe	Meridian, till substratum, moderately eroded (45%)	Slope/erodibility (0.95)	6.5	2.7%
			Lilah, moderately eroded (5%)	Slope/erodibility (0.95)		
N576B	Rasset fine sandy loam, 0 to 6 percent slopes	Slight	Rasset (90%)		0.6	0.3%
			Dakota (5%)			
			Crowfork (5%)			
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	Moderate	Barremills, drainageway, occasionally flooded (85%)	Slope/erodibility (0.50)	1.3	0.5%
			Osco (10%)	Slope/erodibility (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
N579A	Dakota silt loam, 0 to 3 percent slopes	Slight	Dakota (90%)		5.0	2.1%
			Richwood (10%)			
N585B	Mt. Carroll-Hersey complex, 2 to 6 percent slopes	Moderate	Mt. Carroll (47%)	Slope/erodibility (0.50)	2.9	1.2%
			Hersey (46%)	Slope/erodibility (0.50)		
			Vasa (7%)	Slope/erodibility (0.50)		
N585C2	Mt. Carroll-Hersey complex, 6 to 12 percent slopes, moderately eroded	Severe	Mt. Carroll (47%)	Slope/erodibility (0.95)	0.6	0.3%
			Hersey (46%)	Slope/erodibility (0.95)		
N596C2	Eleva sandy loam, 6 to 12 percent slopes, moderately eroded	Severe	Eleva, moderately eroded (60%)	Slope/erodibility (0.95)	3.5	1.5%
			Alvin, moderately eroded (15%)	Slope/erodibility (0.95)		
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	Slight	Kalmarville, frequently flooded (50%)		24.7	10.4%
			Radford, frequently flooded (30%)			
			Kennebec, occasionally flooded (10%)			
			Otter, frequently flooded, ponded (5%)			
			Klum, occasionally flooded (5%)			
N616A	Littleton silt loam, 0 to 2 percent slopes, occasionally flooded	Slight	Littleton, occasionally flooded (62%)		9.4	4.0%
			Kennebec, occasionally flooded (14%)			
			Otter, occasionally flooded (14%)			
			Lawler, occasionally flooded (10%)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
N639F	Frontenac-Lacrescent complex, 20 to 45 percent slopes, rocky	Severe	Frontenac (55%)	Slope/erodibility (0.95)	23.8	10.0%
			Lacrescent (25%)	Slope/erodibility (0.95)		
			Nasset (10%)	Slope/erodibility (0.95)		
			Lindstrom (5%)	Slope/erodibility (0.95)		
			Elizabeth (2%)	Slope/erodibility (0.95)		
				Slope/erodibility (0.95)		
N1155F	Brodale-Bellechester complex, 30 to 60 percent slopes, rocky	Severe	Brodale (55%)	Slope/erodibility (0.95)	3.0	1.3%
			Bellechester (35%)	Slope/erodibility (0.95)		
			Brodale, siltstone (9%)	Slope/erodibility (0.95)		
W	Water	Not rated	Water (100%)		6.6	2.8%
WL	Water, waste lagoon	Not rated	Water, waste lagoon (95%)		0.3	0.1%
Totals for Area of Interest					**237.0**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Moderate	127.1	53.7%
Severe	48.5	20.5%
Slight	48.3	20.4%
Null or Not Rated	13.0	5.5%
Totals for Area of Interest	**237.0**	**100.0%**

Description

FOR - Forestry

The ratings in this interpretation indicate the hazard of soil loss from unsurfaced roads and trails. The ratings are based on soil erosion factor K, slope, and content of rock fragments.

The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," or "severe." A rating of "slight" indicates that little or no erosion is likely; "moderate" indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and "severe" indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

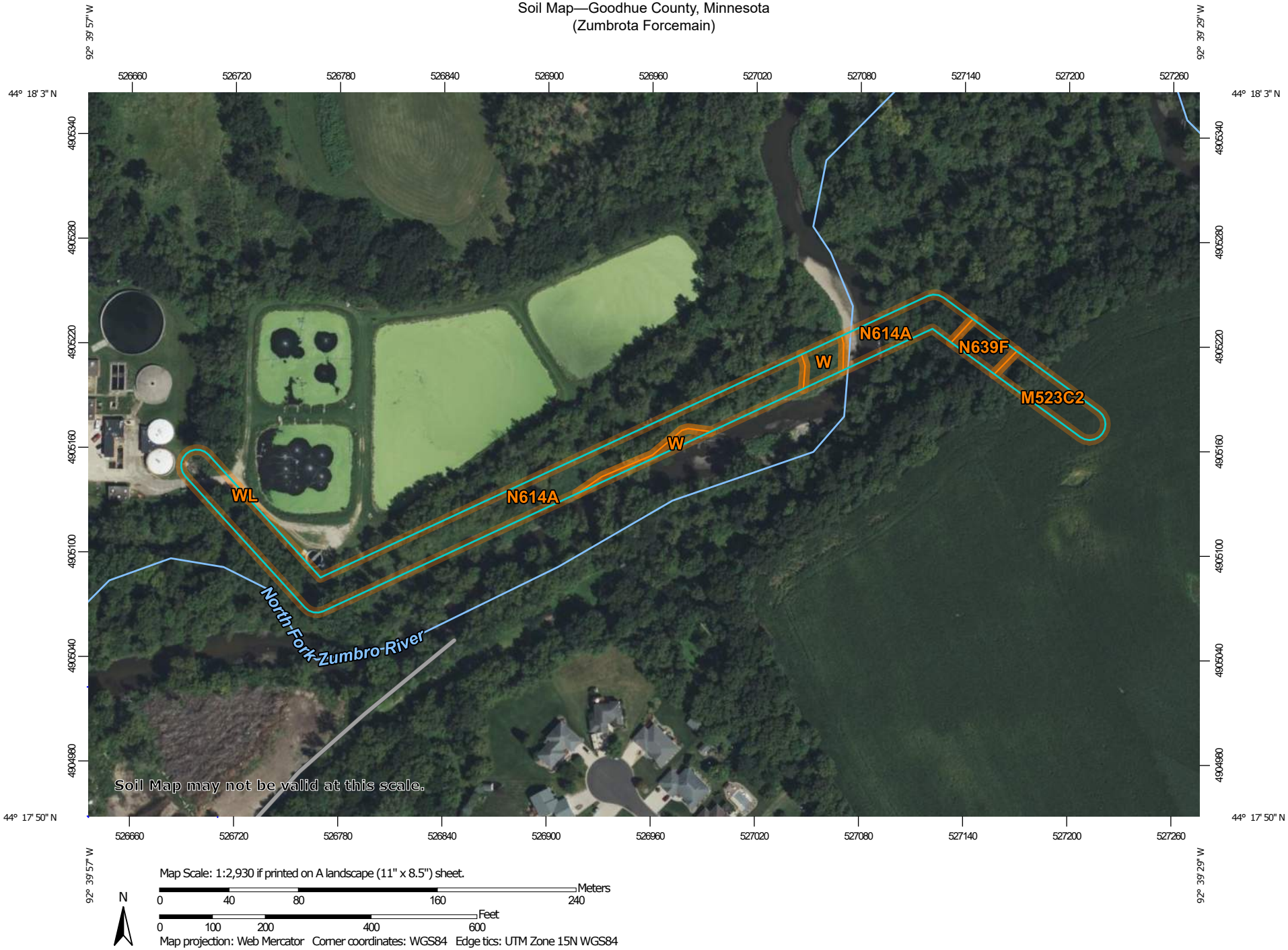
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Map—Goodhue County, Minnesota
(Zumbrota Forcemain)



Map Scale: 1:2,930 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 40 80 160 240

Feet
0 100 200 400 600

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)

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

Soil Survey Area: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

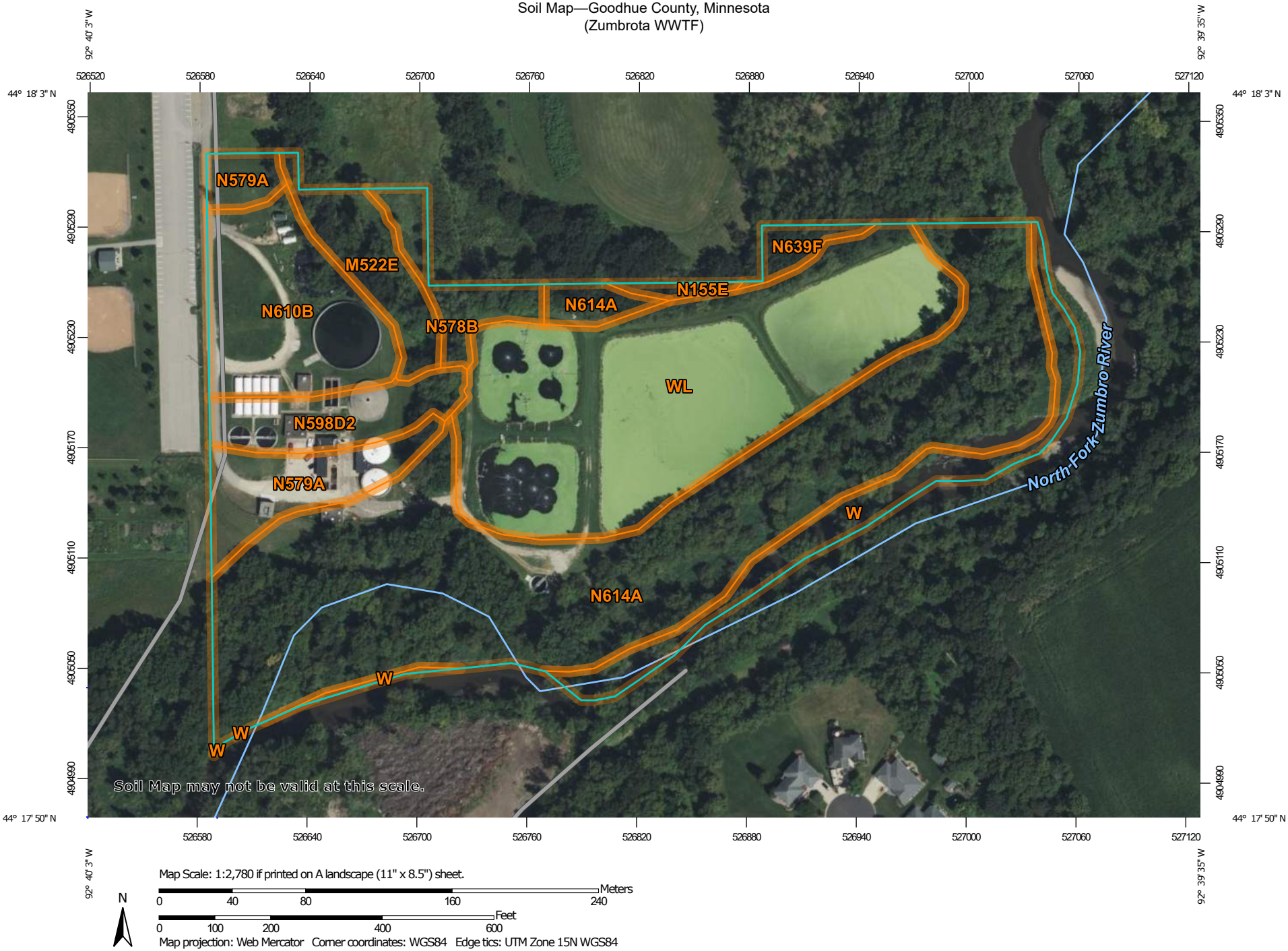
Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
M523C2	Bassett-Kasson complex, 6 to 12 percent slopes, eroded	0.3	10.8%
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	2.2	77.7%
N639F	Frontenac-Lacrescent complex, 20 to 45 percent slopes, rocky	0.1	5.0%
W	Water	0.2	6.4%
WL	Water, waste lagoon	0.0	0.0%
Totals for Area of Interest		**2.8**	**100.0%**

Soil Map—Goodhue County, Minnesota
(Zumbrota WWTF)



Map Scale: 1:2,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 40 80 160 240

Feet
0 100 200 400 600

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: Goodhue County, Minnesota
Survey Area Data: Version 19, Sep 9, 2023

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

Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
M522E	Bassett-Racine complex, 18 to 25 percent slopes	0.9	3.9%
N155E	Brodale flaggy fine sandy loam, 20 to 30 percent slopes	0.1	0.5%
N578B	Barremills silt loam, drainageway, 1 to 5 percent slopes, occasionally flooded	0.6	2.7%
N579A	Dakota silt loam, 0 to 3 percent slopes	1.3	5.6%
N598D2	Winneshiek-Waucoma complex, 12 to 18 percent slopes, moderately eroded	1.0	4.2%
N610B	Waucoma loam, 2 to 6 percent slopes	2.1	8.9%
N614A	Kalmarville-Radford complex, 0 to 3 percent slopes, frequently flooded	9.8	40.9%
N639F	Frontenac-Lacrescent complex, 20 to 45 percent slopes, rocky	0.2	1.0%
W	Water	1.4	5.9%
WL	Water, waste lagoon	6.4	26.5%
Totals for Area of Interest		**24.1**	**100.0%**

Appendix ?

Wetland Delineation Report, Notice of Decision, and Jurisdictional Determination

Notice of Decision

Jurisdictional Determination

Appendix ?

MDH Well Logs

Appendix ?

Source Water Protection Areas

Appendix ?

USGS Hydrography Map

Appendix ?

Phase I Environmental Site Assessment

Appendix ?

Phase 1 Archaeological Report

Appendix ?

SHPO Database Review

Appendix ?

GHG Emissions Calculations

Appendix ?

Air Assessment Report

Appendix L. Notifications, Certifications, and Comments

Revisions:
April 8, 2024: Public Hearing Information Enclosed

This appendix consists of the Public Notice Affidavit for the April 8, 2024 Public Hearing.

No other comments have been received as of April 19, 2024.

Public Notice Affidavit of Publication

[S]tate of Minnesota

County of Goodhue
being duly sworn, on oath says that he/she is the publisher or authorized agent and employee of the publisher of the newspaper known as

News-Record

and has full knowledge of the facts which are stated below:

(A) The newspaper has complied with all of the requirements constituting qualification as a qualified newspaper, as provided by Minnesota Statute 331A.02, 331A.07, and other applicable laws, as amended.

(B) The printed notice, which is attached, was cut from the columns of said newspaper, and was printed and published once a week, for ______ successive week(s); it was first published on Wednesday the 20 day of March, 2024 and was thereafter printed and published on every ______ to and including ______, the ______ day of ______, 2024, and printed below is a copy of the lower case alphabet from A to Z, both inclusive, which is hereby acknowledged as being the size and kind of type used in the composition and publication of the notice:

abcdefghijklmnopqrstuvwxyz

BY: [signature]

TITLE: Office Manager

Subscribed and sworn to before me on this 20 day of March 2024.

[signature]
NOTARY PUBLIC

RATE INFORMATION

(1) Lowest classified rate paid by commercial users for comparable space. — $11.50 inch rate

(2) Maximum rate allowed by law for the above matter.................................... — $11.50 inch rate

(3) Rate actually charged for the above matter... — $6.50 inch rate, 1st printing

$6.50 inch rate, 2nd printing and thereafter

$30.88 TOTAL

City of Wanamingo

PUBLIC HEARING NOTICE
WASTEWATER SYSTEM IMPROVEMENTS

The City of Wanamingo has scheduled a public hearing for 7 p.m. on Monday, April 8, 2024. The public hearing will be held at the Wanamingo City Hall, 401 Main Street, Wanamingo, MN. The City of Wanamingo has prepared a Facilities Plan which recommends the construction of a new regional wastewater treatment facility. At the public hearing, information will be presented on the various treatment alternatives considered, the reason for choosing the selected alternative, the location of the proposed project site and the estimated impacts on wastewater rates.

The hearing will provide an opportunity for all parties to comment on the proposed plan. Written comments may be presented at the hearing or mailed to Michael Boulton, City Administrator, City of Wanamingo, PO Box 224W, Wanamingo, MN 55983. Interested parties may review the Facilities Plan at the City office during regular business hours.

Michael Boulton
City Administrator

12-1a

Peter ... ...rud
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2027

Appendix M. Preliminary Effluent Limits Review Letter

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

May 11, 2022

Brandon Theobald, P.E.
WHKS, Inc.
2905 South Broadway
Rochester, MN 55904

RE: Request for Preliminary Effluent Limitations Applicable to the Proposed Wastewater Treatment Facility at the City of Wanamingo, NPDES Permit No. MN0022209.

Dear Brandon Theobald:

This is in response to your request of April 5, 2022 for preliminary effluent limitations applicable to a proposed new Wastewater Treatment Facility (WWTF) at the City of Wanamingo, Goodhue County, Minnesota. The City of Wanamingo – along with the Cities of Goodhue, Pine Island and Zumbrota are exploring the possibility of establishing a sanitary sewer district called North Zumbro Sanitary District. The formation of this district would result in the construction of a new wastewater treatment facility to serve all four cities and would be located near the existing Zumbrota facility. The preliminary effluent limitations for the proposed facility are draft values and not finalized until the National Pollutant Discharge Elimination System (NPDES) permit process and Antidegradation Assessment has undergone a complete review, been public noticed, the public's comments considered, and either our Commissioner or a delegated representative signs the permit.

Please be aware that receiving the preliminary effluent limits in the table below does not mean that your proposed new facility has been approved. As part of the permitting process, your project must comply with antidegradation requirements (see the Antidegradation Requirements section below for important details). You must demonstrate that the chosen project alternative is the least degrading prudent and feasible alternative. In many cases, the least degrading prudent and feasible alternative may not be your preferred option or the option discussed in this letter.

DISCHARGE SCENARIOS

The preliminary effluent limitations request is for a continuous discharge to the Zumbro River, North Fork in Goodhue County, Minnesota. The discharge scenario is:

1. A mechanical treatment system that includes activated sludge using the Enhanced Biological Nutrient Removal via oxidation ditches with chlorination that discharges on a continuous basis through outfall SD001 (T101N, R16W, S30) to Zumbro River, North Fork in Goodhue County. The capacity of the proposed WWTF is average wet weather flow (AWWF) of 0.4580 mgd and average dry weather flow (ADWF) of 0.1940 mgd.

The Zumbro River, North Fork in Goodhue County has been assigned use classifications of 2Bg, 3C, 4A, 4B, 5 and 6 waters of the state under Minnesota Pollution Control Agency (MPCA) rules chapter 7050. These multiple classifications include consideration for aquatic life and recreation, industrial consumption, agriculture and wildlife, aesthetic enjoyment and navigation, and other beneficial uses not specifically listed.

PRELIMINARY EFFLUENT LIMITATIONS

The preliminary effluent limitations applicable to the proposed new WWTF in Wanamingo are summarized in Table 1.

Table 1 - EFFLUENT LIMITATIONS

	PROPOSED FACILITY
TREATMENT OPTION	MECHANICAL SYSTEM
DISCHARGE TYPE	CONTINUOUS DISCHARGE
OUTFALL	SD001
AWWF, mgd	0.458
ADWF, mgd	0.194
River Flow (7Q10), cfs	15.36
Dilution Ratio	22:1
Antidegradation Review Needed	Yes
Environmental Review Needed	Yes
Frozen Mass Limits Possible	NA
Chloride Linkage	NA
CBOD5-Ammonia Linkage Eligible	NA
POLLUTANT/PARAMETER	
CBOD5, mg/L (kg/day)*	25 (43)
TSS, mg/L (kg/day)*	30 (52)
Fecal Coliform Organisms, orgs/100 mL[1]	200
pH (Standard Unit)	6.0 – 9.0
Total Residual Chlorine, mg/L[1]	0.038
Phosphorus[2]	1.0

*mass limits are in parenthesis (kg/day)
[1]Applicable from April – October. Dechlorination is required if chlorine is used for disinfection.
[2]Effective period is January - December

MONITORING REQUIREMENTS

Monitoring for the listed parameters in the Table 2 will be required in addition to the NPDES permit monitoring requirements for the effluent limitations in Table 1.
Influent Station – WS001
Effluent Station – SD001

Table 2 - MONITORING REQUIREMENTS

Station	Parameter Desc	Units	Monitoring method	Monitoring frequency	Effective period
SD 001	Mercury, Dissolved (as Hg)	ng/L	Grab	1 x Year	Jul
SD 001	Mercury, Total (as Hg)	ng/L	Grab	1 x Year	Jul
SD 001	Nitrite Plus Nitrate, Total (as N)	mg/L	24-Hour Flow Composite	1 x Quarter	Mar, Jun, Sep, Dec
SD 001	Nitrogen, Ammonia, Total (as N)	mg/L	24-Hour Flow Composite	1 x Month	Mar, Sep
SD 001	Nitrogen, Kjeldahl, Total	mg/L	24-Hour Flow Composite	1 x Quarter	Mar, Jun, Sep, Dec
SD 001	Nitrogen, Total (as N)	mg/L	Calculation	1 x Quarter	Mar, Jun, Sep, Dec
SD 001	Phosphorus, Total (as P)	kg/d	24-Hour Flow Composite	1 x Week	-
SD 001	Phosphorus, Total (as P)	mg/L	24-Hour Flow Composite	1 x Week	-
SD 001	Solids, Total Dissolved (TDS)	mg/L	24-Hour Flow Composite	1 x Month	Mar, Sep
SD 001	Solids, Total Suspended (TSS), assoc. with Mercury	mg/L	Grab	1 x Year	Jul
WS 001	Nitrite Plus Nitrate, Total (as N)	mg/L	24-Hour Flow Composite	1 x Quarter	Mar, Jun, Sep, Dec
WS 001	Nitrogen, Kjeldahl, Total	mg/L	24-Hour Flow Composite	1 x Quarter	Mar, Jun, Sep, Dec
WS 001	Nitrogen, Total (as N)	mg/L	Calculation	1 x Quarter	Mar, Jun, Sep, Dec
WS 001	Phosphorus, Total (as P)	mg/L	24-Hour Flow Composite	1 x Week	-

ANTIDEGRADATION REQUIREMENT (Antidegradation Assessments and Capped Mass Limits)

Antidegradation is one of the fundamental protections in the Clean Water Act, and all newly issued or re-issued wastewater permits must comply with both state and federal antidegradation rules. The goal of antidegradation is to preserve waters of high quality and to ensure that they are not degraded unless balanced by important economic or social development. See Minn. R. 7050.0250 to 7050.0335. The antidegradation assessment process may result in more restrictive effluent limits.

For wastewater permitting, antidegradation concerns are triggered when a new discharge is proposed or when an existing discharger is proposing to increase the loading of any parameter of concern in its discharge.

An antidegradation assessment is a substantial valuation that must consider all beneficial uses of the receiving water, potential economic impacts, all possible treatment options and the potential environmental degradation for every pollutant that triggers the need for an antidegradation assessment. The proposed changes to the facility may result in an increase in pollutant loading to surface waters or other causes of degradation to surface waters. If a change to the facility will result in a

net increase in pollutant loading or other causes of degradation that exceed the maximum loading authorized through conditions specified in the existing permit, the changes to the facility are subject to antidegradation requirements found in Minn. R. 7050 to 7050.0335.

New and expanded NPDES permits that result in net increases in pollutant loading to surface waters are required to undergo an antidegradation review (Minn. R. 7050.0280). When applied to a proposed activity that is not regulated by an existing control document (i.e. permit), any loading or other causes of degradation resulting from the proposed activity constitute a net increase (7050.0255 Subp. 26). In this situation, the new proposed treatment system constitutes a net increase in loading; and therefore, an antidegradation review must be completed and approved in order for the effluent limitations to be final for the selected option.

In order to comply with the antidegradation requirements the permittee must choose one of the two following options:

1. "Cap" mass limit at their current levels in lieu of an antidegradation review.

2. Submit an antidegradation review that meets the antidegradation requirements in Minn. R. 7050.

The permittee must submit the antidegradation assessment to the Minnesota Pollution Control Agency (MPCA). The MPCA staff will review the assessment to determine if it satisfies state and federal rules. The MPCA has recently developed a guidance document for developing antidegradation assessments that you may find helpful. If the City of Brewster believes they will not be able to meet the limits shown in Table 1, please contact the MPCA before starting the antidegradation process.

TOTAL MAXIMUM DAILY LOAD (TMDL) Requirements/Waste Load Allocation
The Wanamingo WWTP discharges to the North Fork of Zumbro River in the Zumbro River Watershed. There are 21 impairments downstream of this discharge, including the following parameters: aluminum, benthic macroinvertebrates bioassessments, fecal coliform, mercury in fish tissue, turbidity, Escherichia coli (E. coli), PCBs in fish tissue, and sulfate. Following are the TMDLs that are applicable to this facility's discharge.

Wasteload Allocations:

Zumbro River Watershed TMDL
E. coli

- WLA = 2.18 billion organisms per day (Appendix B, page 104, Table 57)
- The WLA is based on the facility's AWWDF and the E. coli standard of 126 org/100 mL.
- The WLA is equivalent to the current permitted effluent fecal coliform limit of 200 org/100 mL. (page 47-48)

Total Suspended Solids

- WLA = 0.06 tons per day (Appendix B, page 104, Table 57)
- The WLA is based on the facility's AWWDF and permitted 30 mg/L concentration limit for TSS. (page 68)

- The WLA is roughly equivalent to the current permitted effluent TSS mass limit of 52 kg/day. The difference is most likely due to rounding errors.

Lower Mississippi River Basin Regional Fecal Coliform TMDL
- WLA = 0.10 t-organisms/month (April – October). (page 89)
- The WLA is based on the AWWDF and the permitted discharge fecal coliform limit of 200 organisms per 100 mL.
- The WLA is equivalent to the current permitted effluent fecal coliform limit of 200 org/100 mL.

Zumbro River Watershed Turbidity TMDL
- TSS WLA = 52.0 kg/day (page 79, Appendix A)
- The WLA was based on the AWWDF and the permitted concentration limit of 30 mg/L.
- The WLA is equivalent to the current permitted effluent TSS mass limit.

Statewide Mercury TMDL - Mercury in Fish Tissue and Mercury in Water Column Impairments
- Mercury limits, monitoring, and MMP requirements in the permit should be in accordance with the Mercury Permit Writers Guidance.

On that basis, public comment documentation for permit issuance would include modification of the TMDLs' WLAs to include the discharge from the proposed facility.

If you have any questions or comments regarding this letter, please call me at 651-757-2381 or Email gbolahan.gbadamosi@state.mn.us.

Sincerely,

Gbolahan I. Gbadamosi

This document has been electronically signed.

Gbolahan I. Gbadamosi, P.E.
Engineer
Environmental Analysis and Outcomes Division

GG/ct

Enclosures

Antidegradation Assessments Memo

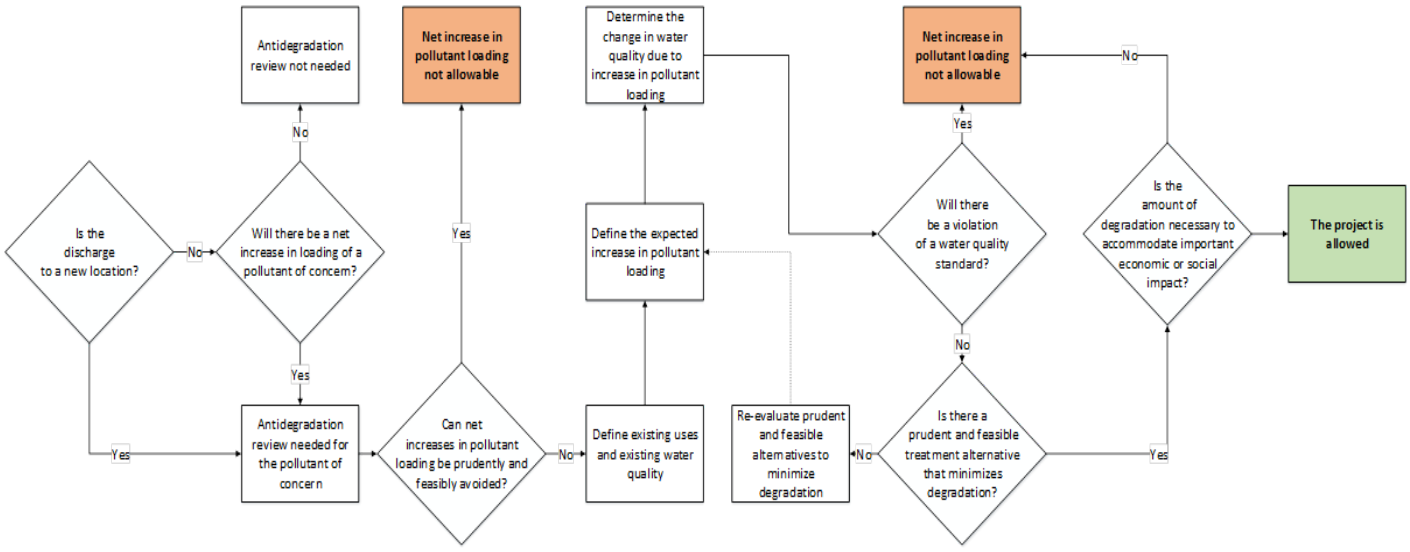
Antidegradation is one of the fundamental protections in the Clean Water Act, and all newly issued or re-issued wastewater permits must comply with both state and federal antidegradation rules. The goal of antidegradation is to preserve waters of high quality and to ensure that they are not degraded unless balanced by important economic or social development.

For wastewater permitting, antidegradation concerns are triggered when a new discharge is proposed or when an existing discharger is proposing to increase the loading of any parameter of concern in its discharge. An antidegradation assessment is a substantial valuation that must consider all beneficial uses of the receiving water, potential economic impacts, all possible treatment options, and the potential environmental degradation for every pollutant that triggers the need for an antidegradation assessment. A flowchart summary of the antidegradation assessment process required by state rules (Minn. R. 7050.0280) is shown in Figure 1.

Antidegration assessments frequently require permittees to perform additional water quality monitoring to ensure that appropriate water quality evaluations are performed. The water quality monitoring required for an antidegradation assessment is permit-specific and is intended to fill gaps in existing water quality knowledge. Filling these water quality gaps could require additional monitoring of the discharge, receiving waters upstream and downstream of the discharger or significant industrial users permitted by the discharger.

Figure 1. Antidegradation Assessment Chart

Summary of the antidegradation assessment process required by Minn. R. 7050.0280



Completing an antidegradation assessment can require a significant amount of time, data and writing effort (Figure 1). It is reasonable to expect at least six to twelve months of effort to complete an antidegradation assessment. The permittee is expected to complete the antidegradation assessment, but the MPCA must approve it as a part of permit documents. The MPCA is responsible for defending the assessment during public comment and in any future legal proceedings. Antidegradation assessments are frequently legally contested, and as such, the MPCA will only approve an assessment of

high quality that complies with state and federal antidegradation rules. MPCA staff may provide assistance to the permittee with the antidegradation process. Because of the workload associated with completing an antidegradation assessment, most permittees looking to expand their permitted flow rates choose to accept “frozen mass limits.” “Frozen mass limits” represent the full authorized load in the previous permit for the pollutants of interest. If the permittee is willing to accept “frozen mass limits” while also expanding their flow rates, then the receiving water would receive no net increase in authorized loading because of the expansion, and an antidegradation assessment would not be needed. In this scenario, permitted concentration limits would stay the same as in the last permit issuance, however “effective” concentration limits would be lower in order to comply with voluntary mass limits. If the permittee voluntarily accepts mass cap limits for the pollutants of concern, they will have satisfied antidegradation rules, and they will not need to submit an antidegradation assessment for the next permit issuance.

Appendix N. Responses to MPCA Facility Plan Review Comments

Revisions:
August 22 2024: MPCA Facility Plan Review Comments 280813 8-5-2024 with responses in-line.

From: Glenn Gustafson
Sent: Friday, August 23, 2024 9:38 AM
To: Corey.hower@state.mn.us
Cc: Angie Kolz; Bill Angerman; Brandon Theobald
Subject: FW: [EXTERNAL] Wanamingo Facility Plan comments 280813 8-5-2024

Corey, here are our responses to the MPCA's Wanamingo Facility Plan comments 280813 8-5-2024. Responses are in-line with comments below with underlined red text.

Per our conversation on 6/6/24, all responses and supporting materials are included in a revised appendix being transmitted today. The facility plan report body will not be revised. Wanamingo Facility Plan Appendix Revised August 22, 2024 is being transmitted via FTP. Link to follow.

Glenn Gustafson
Voice: 651.895.4719 I www.whks.com

From: Hower, Corey (MPCA) <corey.hower@state.mn.us>
Sent: Monday, August 5, 2024 2:01 PM
To: rholmes24@gmail.com
Cc: Glenn Gustafson <ggustafson@whks.com>; Brandon Theobald <BTheobald@Whks.com>
Subject: [EXTERNAL] Wanamingo Facility Plan comments 280813 8-5-2024

Dear Mayor Holmes,

The Minnesota Pollution Control Agency (MPCA) received the City of Wanamingo Facility Plan (Plan) on March 1, 2024. If you are requesting funding through the Clean Water Revolving Fund Loan Program (CWRF) for fiscal year 2026, this Plan will need to be approved by June 30, 2025.

Please address the following concerns regarding the Plan in order to facilitate continued review of your project.

1. Please submit the Design Flow and Loading Determination Guidelines worksheet. This should be attached in the appendix. https://www.pca.state.mn.us/sites/default/files/wq-wwtp5-20a.xlsx. Response: wq-wwtp5-20a worksheet and supporting documents are enclosed in Appendix P, revised August 22, 2024.

2. What mass loading will the city contribute to the North Zumbro Sanitary District? The existing (2024) and design year (2045) loads from the City of Wanamingo, in pounds per day (ppd), are:
Existing (2024):

CBOD5 average day 158 ppd, max month 283 ppd
TSS average day 207 pdd, max month 541 ppd
TKN average day 42 ppd, max month 47 ppd
TP average day 5 ppd, max month 9 ppd

Design Year (2045):

CBOD5 average day 220 ppd, max month 407 ppd
TSS average day 280 pdd, max month 686 ppd
TKN average day 55 ppd, max month 63 ppd
TP average day 7 ppd, max month 12 ppd

3. The overall costs of the project have used the proposed state special appropriations of $44.8 million deduction from the overall costs of the project. This money has not been approved, it can be used in tables, but the overall cost should be shown without the grant in the tables as well so the option costs can be directly compared. The $10 million dollars of special appropriations can be shown. Response: cost tables showing allocations without bonding bill funds are enclosed in Appendix Q, revised August 22, 2024.

4. Will the project proceed without the $44.8 million of special appropriations money? Response: the city councils will decide if this happens.

5. Has any flow equalization been determined if needed at the proposed lift station? This may prevent any oversizing of the lift station but will need other tankage for equalization. Could the retention basin from the current treatment plant be utilized? Response: local flow equalization was evaluated during the preliminary engineering phase and deemed not cost-effective. Retaining tankage at cities would increase maintenance and staffing costs while not yielding a significant cost savings at the lift station. We are planning equalization but it will be centralized at the new NZSSD facility.

6. Will the lift station be fully operational during a 25-year flood? Response: yes.

7. Is the new lift station located in the 500-year flood plain? If so, how will the lift station be protected? Response: new lift station is not located in the 500-year flood plain.

8. The existing facilities must have a complete evaluation included in the plan.
    a. Design capacities of each treatment unit described.
    b. Treatment capabilities of each treatment unit needs to be described and condition of equipment.
    c. An analysis to meet current or purposed permit requirements.
    d. Description and evaluation of problems that need to be corrected if possible.

    Response: table showing existing facility evaluation addressing each of the above points is enclosed in Appendix R, revised August 22, 2024.

9. Replacement and salvage costs should be added to the cost analysis of the options in the plan. Response: revised cost tables are enclosed in Appendix Q, revised August 22, 2024.

10. Alternative 1 needs more detail on what would be done to upgrade the existing treatment plant. Response: text providing more detail on Alternative 1 is enclosed as a paragraph under Table 18, in Appendix Q revised August 22, 2024.

11. Inflow and infiltration analysis was not included in the plan. Please add this section. Any ongoing or planned efforts to reduce I/I should be discussed. Response: text summarizing I/I reduction efforts is enclosed in Appendix S, revised August 22, 2024.

12. Has any of the Section 106, Protection of Historic Properties Review been completed? Please submit the exemption checklist form, and any submittals to the Minnesota Historical Preservation Office and response

letters. This review must be completed prior to submitting the environmental assessment worksheet. This does not need to be complete for the plan approval. Response: Section 106 form is enclosed in Appendix O, revised August 22, 2024.

13. The MPCA is encouraging communities to adopt the standard clear water intrusion ordinance from the League of Minnesota Cities. To that end, we would encourage the city to investigate service laterals for sources of clear water intrusion as well. This is not required, but encouraged when addressing I/I. Work on private property is currently not an eligible cost, which is why it is only encouraged. Inflow-and-Infiltration.docx (live.com) Response: noted and the City's narrative on I/I reduction is enclosed in Appendix S, revised August 22, 2024.

14. A draft of the environmental assessment worksheet should be submitted in the appendix of the plan. Response: Draft EAW is enclosed in Appendix K, revised August 22, 2024.

15. Abandonment of the existing retention basin will require to follow the Decommissioning or relining domestic wastewater ponds: Requirements and procedures document found at https://www.pca.state.mn.us/sites/default/files/wq-wwtp5-86.pdf. Response: noted.

Please contact me if you have any questions.

Sincerely,

Corey J. Hower, Engineer
Minnesota Pollution Control Agency (MPCA)
7381 Airport View Drive SW | Rochester, MN | 55902
(507)206-2603
Corey.hower@state.mn.us | www.pca.state.mn.us

Appendix O. Section 106 Form

Revisions:
August 22 2024: Section 106 Form Enclosed.

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

Section 106 Review Exemption Checklist

Clean Water State Revolving Fund Program

Wastewater and Stormwater Projects

(36 CFR Part 800)

Doc Type: Wastewater Point Source

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 provisions of the Section 106 review.

If the answer to all of the statements is "**No**", the project will be required to submit additional information to meet the provisions of the Section 106 review.

Project information

Project name: North Zumbro Joint WWTF and Conveyance, Cities of Goodhue, Pine Island, Wanamingo, and Zumbrota

MPCA Review engineer: Corey Hower

MPCA project number: 280820, 280825, 280813, 280812

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 which is less than 45 years old.	☐	☒
5. The project is limited to modifications within existing buildings or treatment components.	☐	☒
6. The project is limited to collection system rehabilitation/replacement in previously disturbed soil with no major extension/expansion in undisturbed soil.	☐	☒
7. The project is limited to sanitary sewer lining.	☐	☒
8. The project is limited to installation of a generator to provide backup power in emergency situations.	☐	☒

If "Yes" to any of 1- 8 above, please provide a brief written description of the project and complete the Certification Statement below.

Certification statement

We certify that the information provided on this form is complete and accurate and that this project meets the exempt criteria established by Minnesota Pollution Control Agency.

Project authorized official or Design engineer

Print name: Craig Britton

Organization: Widseth, Inc.

Signature:

Date (mm/dd/yyyy): 06/26/2024

Appendix P. wq-wwtp5-20a Flow and Loading Worksheet

Revisions:
August 22 2024: wq-wwtp5-20a worksheet and supporting information enclosed.

October 3, 2024: worksheet revised in response to MPCA comments.

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

Design flow and loading determination worksheets

Municipal/Industrial Wastewater

Doc Type: Engineering Report
wq-wwtp5-20a (Revised 3/2/23)

General information

This analysis spreadsheet is a tool for evaluation of wastewater treatment plant design data. 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. Refer to the Minnesota Pollution Control Agency (MPCA) guidance document *Design flow and loading determination. Guidelines for Wastewater Treatment Plants* (wq-wwtp5-20) for definitions, background, Table 1, and further details. This https://www.pca.state.mn.us/business-with-us/engineering-and-technical-information-for-construction-or-expansion

Instructions

For a mechanical plant with an existing sanitary sewer system, the tab **Design Flows - Table 2** must 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. Design Loadings - Table 3 is not a required submittal. Other methods of determining design loadings are acceptable, but must be attached with this form. Design loadings in pounds per day (#/day) must be entered in Summary Table 4.

To use this spreadsheet, follow the steps detailed below. The proper input location for each step is identified on the worksheets where appropriate. All input locations are shaded blue or green to distinguish them from calculation cells in the worksheets.

Step 1: Input the facility data into the **Design Flows - Table 2** worksheet (see tab on bottom bar below). This information will automatically be carried forward to the Design Loadings - Table 3 worksheet and Summary Table 4.

Step 2: Input the flow data into the **Design Flows - Table 2** worksheet. Use the Source column to indicate where the data came from.

Step 3: Input the Unit Basis into the **Design Loadings - Table 3** worksheet. Table 3 is not a required submittal. Other methods of determining design loadings are acceptable, but must be attached with this form. Design loadings in pounds per day (#/day) must be entered in **Summary Table 4.**

Step 4: Input the average dry weather (ADW) and average wet weather (AWW) data into the **Design Loadings - Table 3** worksheet.

Step 5: Input the design loadings in #/day to **Summary Table 4**. Table 2 and Table 4 are required submittals for Facility Plan approval with documentation used to determine loadings attached.

Design flow determination worksheet

Project name:	North Zumbro Joint WWTF and Conveyance - City of Wanamingo				Text input cell - green
Location:	Wanamingo				Number input cell - blue
Completed by:	AK	Date:	9/27/2024		Calculation cell - no color
Consultant:	WHKS/Widseth/ISG				

	(A) Determination of peak hourly wet weather design flows (PHWW):	**action**	**Gallons per day**	**Source**
1	Present peak hourly dry weather flow		124,000	DMR Data
2	Present peak hourly flow during high ground water period (no runoff)		367,000	Estimate
3	Present peak hourly dry weather flow [same as (1)]	-	124,000	
4	Present peak hourly infiltration [(2)-(4)	=	243,000	Estimate
5	Present hourly flow during high ground water period and runoff at point of greatest distance between Curves Y		881,000	Estimate
6	Present hourly flow during high ground water (no runoff) at same time of day as (5) measurement	-	346,000	Estimate
7	Present peak hourly inflow	=	535,000	Estimate
8	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event		535,000	Estimate
9	Present peak hourly infiltration [same as (4)]		243,000	Estimate
10	Peak hourly infiltration cost effective to eliminate	-	0	
11	Peak hourly infiltration after rehabilitation (where rehabilitation is cost effective)	=	243,000	Estimate
12	Present peak hourly adjusted inflow [same as (8)]		535,000	Estimate
13	Peak hourly inflow cost effective to eliminate	-	0	
14	Peak hourly inflow after rehabilitation (where rehabilitation is cost effective)	=	535,000	Estimate
15	Population increase: 350 persons @ 136 gpcd multiplied by 2.5 (peaking factor)		119,000	
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)]	=	1,021,000	Estimate

	(B) Determination of peak instantaneous wet weather design flow (PIWW):		Gallons Per Day	Source
20	Peak hourly wet weather design flow [same as (19)]		1,021,000	Estimate
21	Present peak hourly inflow adjusted for a 5-year 1-hour rainfall event [same as (8)]	-	535,000	Estimate
22	Present peak inflow adjusted for a 25-year 1-hour rainfall event	+	630,000	Estimate
23	Peak instantaneous wet weather design flow	=	1,116,000	Estimate

	(C) Determination of average dry weather design flow (ADW):		Gallons Per Day	Source
24	Present average dry weather flow		103,000	DMR Data
25	Population increase: 350 persons @ 100 gpcd		35,000	
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)]	=	138,000	

	(D) Determination of average wet weather design flow (AWW): **(30 day average for mechanical plants, 180 day average for controlled discharge ponds)**		Gallons Per Day	Source
30	Present average dry weather flow		103,000	DMR Data
31	Average infiltration after rehabilitation (where rehabilitation is cost effective)	+	244,500	Estimate
32	Average inflow after rehabilitation (where rehabilitation is cost effective)	+	-	Estimate
33	Population increase: 350 persons @ 150 gpcd	+	52,500	
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)]	=	400,000	DMR Data

(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.

Design loading determination worksheet

Project name	North Zumbro Joint WWTF and
Location	Wanamingo
Completed by	see attached
Consultant	Design Loads
Date	and basis

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	Input Cell - blue
	Calculation cell - no color

		Value	units	ADW	AWW
Residential waste	Population		people		
	Flow, GPD/person		gpd/person	flow from table 3 (editable)	flow from table 3 (editable)
	Flow, GPD (total)	0			
	BOD_5, #/day		mg/l	0.0	0.0
	TSS, #/day		mg/l	0.0	0.0
	NH_3-N, #/day		mg/l	0.0	0.0
	P, #/day		mg/l	0.0	0.0
Out-of-town students and workers	Number	0	people		
	Flow, GPD	0	gpd/person	0	0
	BOD_5, #/day	0	mg/l	0.0	0.0
	TSS, #/day	0	mg/l	0.0	0.0
	NH_3-N, #/day	0	mg/l	0.0	0.0
	P, #/day	0	mg/l	0.0	0.0
Seasonal residents	Number	0	people		
	Flow, GPD	0	gpd/person	0	0
	BOD_5, #/day	0	mg/l	0.0	0.0
	TSS, #/day	0	mg/l	0.0	0.0
	NH_3-N, #/day	0	mg/l	0.0	0.0
	P, #/day	0	mg/l	0.0	0.0
Industrial	Flow, GPD		GPD		
	Rated Flow, GPD		gpd/person	0	0
	BOD_5, #/day		mg/l	0.0	0.0
	TSS, #/day		mg/l	0.0	0.0
	NH_3-N, #/day		mg/l	0.0	0.0
	P, #/day		mg/l	0.0	0.0
Other (Specify)	Flow, GPD		GPD		
	Rated Flow, GPD		GPD	0	0
	BOD_5, #/day		mg/l	0.0	0.0
	TSS, #/day		mg/l	0.0	0.0
	NH_3-N, #/day		mg/l	0.0	0.0
	P, #/day		mg/l	0.0	0.0
Infiltration (in addition to Table 2 amount, if applicable)	GPD				
Inflow (in addition to Table 2 amount, if applicable)	GPD				
Total	Flow, GPD			0.0	0.0
	BOD_5, mg/l			#DIV/0!	#DIV/0!
	BOD_5, #/day			0.0	0.0
	TSS, mg/l			#DIV/0!	#DIV/0!
	TSS, #/day			0.0	0.0
	NH_3-N, mg/l			#DIV/0!	#DIV/0!
	NH_3-N, #/day			0.0	0.0
	P, mg/l			#DIV/0!	#DIV/0!
	P, #/day			0.0	0.0

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

Design flow and loading determination worksheets

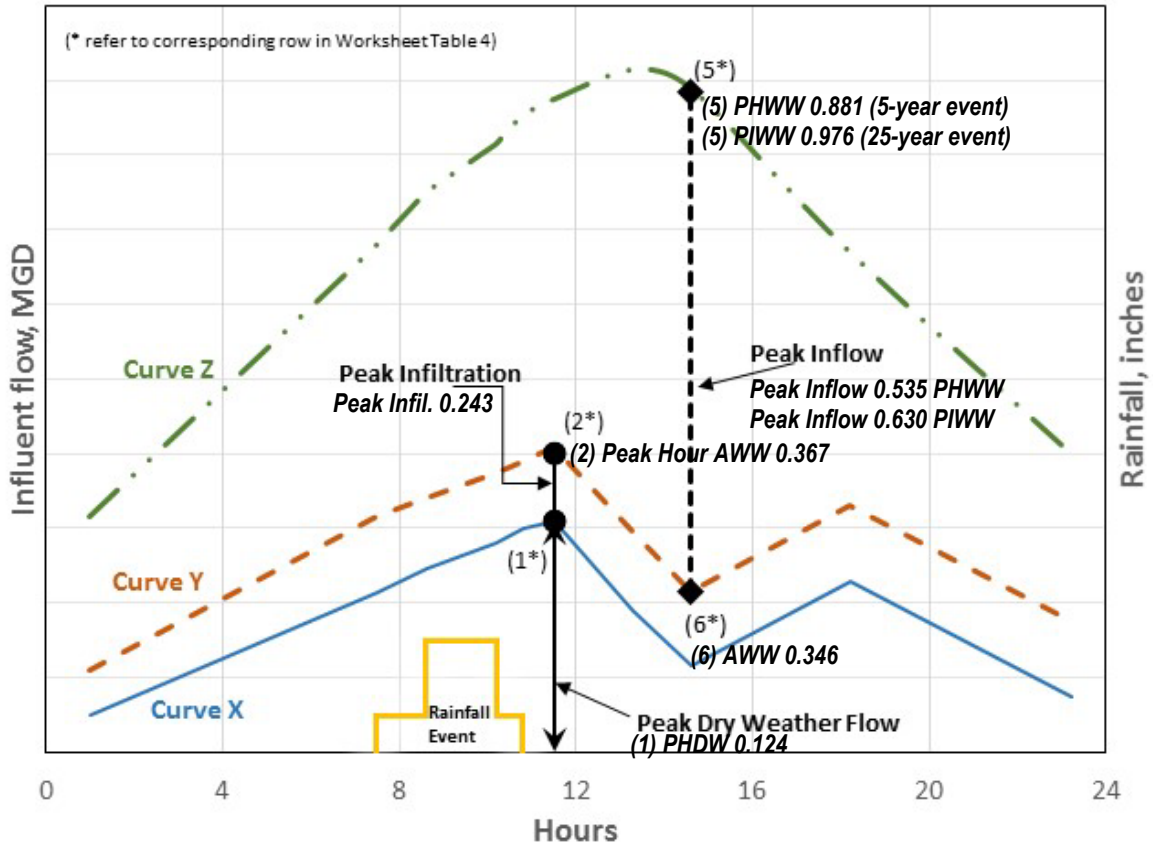
Municipal/Industrial Wastewater

Design flow and loading summary table

Project name	North Zumbro Joint WWTF and Conveyance - City of Wanamingo		Text input - green
Location	Wanamingo		Number input - blue
Completed by	AK	Date 9/27/2024	Calculation - no color
Consultant	WHKS/Widseth/ISG		
Population	1500		

	flow from table 2			
PHWW	1,021,000	gpd	1.021	mgd
PIWW	1,116,000	gpd	1.116	mgd
ADW	138,000	gpd	0.138	mgd
AWW	400,000	gpd	0.400	mgd
			mg/l based on AWW flow	
BOD	407	#/day	122.0	mg/l
TSS	686	#/day	205.6	mg/l
Phos	12	#/day	3.6	mg/l
Nitrogen	63	#/day	18.9	mg/l
Others (list)		#/day	0.0	mg/l
Others (list)		#/day	0.0	mg/l
Others (list)		#/day	0.0	mg/l
Others (list)		#/day	0.0	mg/l
Others (list)		#/day	0.0	mg/l
Others (list)		#/day	0.0	mg/l
Others (list)		#/day	0.0	mg/l

North Zumbro Joint WWTF and Conveyance - City of Wanamingo Flow Analysis



- Curve X: 24 hour flow with NORMAL groundwater conditions and no runoff ***ADW***
- Curve Y: 24 hour flow with HIGH groundwater conditions and no runoff ***AWW***
- Curve Z: 24 hour flow with HIGH groundwater conditions and runoff ***PHWW (5-vear event) PIWW (25-vear event)***

Basis

*(1&24&30) ADW 0.103 (MOR DATA). PHDW estimated = ADW * diurnal = 0.103 ADW * 1.2 diurnal assumed = 0.124*
(2) Peak Hourly during AWW = PHDW + [Peak Infiltration] = PHDW + [AWW - ADW] = 0.124 PHDW (per above) + [0.346 AWW (MOR DATA) - 0.103 ADW (MOR DATA)] =0.367 (infiltration = 0.243).
(5) PHWW = 0.881
(6) 0.346 AWW (MOR DATA)
(7&22) Peak Inflow 5-yr = PHWW - AWW =0.881 - 0.346 = 0.535 (PHWW); Peak Inflow 25-yr PIWW - AWW = 0.630 (PIWW)
(8) Peak Inflow (adjusted for 5-year 1-hour rainfall) = same as (7) b/c 7 was based on PHWW definition 5-year 1-hr rainfall
(10&13) same as existing
(15) 350 pop. increase @ 136 gpcpd x 2.5 PF
(16&26&34) Industrial increase 0 (no planned increase)
(17&27&35) Future unidentified industries and commercial allocation = 0 for all flow scenarios
(25) 350 pop. increase @ 100 gpcpd = 0.035
(26) ADW Industrial Increase = 0
(31) Average Infiltration = AWW - ADW = 0.346 AWW (MOR DATA) - 0.103 ADW (MOR DATA) = 0.243
(32) Average inflow N/A for AWW, no inflow when runoff not occurring, hourly flow is not applicable to average daily design parameter
(33) 350 pop. increase @ 150 gpcpd x 1.0 PF

(38) Daily data from MOR data 2012-2022 is considered accurate. Max Wet Weather Sept of 2016, outliers April and May of 2013 excluded from 10-year period. No SSOs, bypasses, or overflows reported during the analysis period. Hourly data does not exist. PHWW and PIWW based on Max day analysis and diurnal I&I analysis with Operators' recollection that typically during wet weather the plant runs slighly below capacity of 1.092.
(39) Groundwater data not available. AWW (wettest 30 days each year) used as representative of relative high groundwater conditions.
(40) Rainfall data on MORs during 2012-2022 (ten-year) period used as representative of rainfall conditions.
(41) Wanamingo has completed I&I reduction projects in the past and includes budget items in the CIP each year to maintain the system. In 2024 the City is in the process of completing a citywide sump pump inspection program and plans to develop a point-of-sale inspection program to maintain results. The City is planning to complete smoke testing this fall to look for cross connections. The City is planning on replacing 3 City blocks of aged sanitary sewer in 2026,. Calculations assume no further cost-effective I&I reduction in existing system. New construction is assumed to be drier than the existing system based on modern plumbing codes and building standards. This is reflected in lower gpcpd for planned growth than existing gpcpd.

6. Loads

6.1. Introduction

This chapter summarizes the historic and projected design loads for five-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), Total Kjeldahl Nitrogen (TKN), and Total Phosphorus (TP) for the North Zumbro Sanitary Sewer District.

6.1.1. Definitions

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) is the organic load received at the WWTF. $CBOD_5$ values report the carbonaceous oxygen consumption component of BOD_5 while excluding the nitrogenous oxygen consumption component. The $CBOD_5$ values are obtained by suppressing nitrogenous microbes during the BOD_5 test.

Total Suspended Solids (TSS) is the solids load received at the WWTF. It includes all particles retained on a 45-micron filter. It excludes dissolved solids.

Total Nitrogen (TN) is the sum of all nitrogen loads received at the WWTF.

$$TN = TKN + NO_2 + NO_3 + N_2 \text{ (gas)}.$$

Nitrates/nitrites (NO_3/NO_2), and Nitrogen gas (N_2) are typically at negligible levels and are not evaluated in influent municipal wastewater. Therefore, TKN is commonly used as a proxy measure of TN in influent.

Total Kjeldahl Nitrogen (TKN) is the sum of ammonia and organic nitrogen.

$$TKN = NH_3 \text{ species} + \text{Organic N}.$$

Total Phosphorus (TP) is the total organic and inorganic phosphorus received at the WWTF.

Average Load (Average Day) is the average load for a continuous 12-month period.

Max Month is the highest average load in a continuous 30-day period.

Max Day is the highest average load for a 24-hour period.

6.1.2. Load Reporting Units

Loads are reported in Pounds per Day (PPD). Concentrations are reported as milligrams per liter (mg/L).

6.1.3. Data Sources and Lookback Period

Data were obtained from downloads of MPCA databases and supplemented by information provided directly from the cities. The lookback period for historic data is ten (10) years. Historic data date range was generally 2013-2022 but some exceptions exist, and these are noted in the applicable tables below.

6.1.4. Per Capita Loads

Equivalent load contribution per person was calculated and presented as pounds per capita per day (PPCPD) for each condition. Historic PPCPD was calculated using the average population of the 2010 and 2020 Census counts.

The ratios between maximum : average PPCPD rates were calculated for each city's historic data, to provide reference and comparison to typical values as an aid to future projections.

6.1.5. Zumbrota and DFA Loads

For Zumbrota, the historic values were determined to not be a good basis for design because DFA's pretreatment system only recently became active resulting in major changes in Zumbrota's loads. Therefore the 'historic' Zumbrota values are based on a set of assumptions rather than historic data. All assumptions are noted in the tables.

6.2. Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)

6.2.1. $CBOD_5$ Historic Industrial Load

Historic industrial $CBOD_5$ load data are presented in Table 26. Industrial historic load data were obtained from:

- Pine Island: Land O' Lakes values were recorded in the monthly operating reports.
- Zumbrota: Industrial loads from DFA changed following the installation of the pretreatment system at DFA so the table below shows 'N/A' for historic values.

Table 26 $CBOD_5$ Historic Industrial Loads, PPD

CBOD5	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Avg	0	7 PPD	0	N/A	N/A
Max Month	0	17 PPD	0	N/A	N/A
Max Day	0	112 PPD	0	N/A	N/A

6.2.2. $CBOD_5$ Projections for Industrial Loads

Projected industrial $CBOD_5$ load data are presented in Table 27.

The projections for Land O' Lakes are equal to the limits in its current Significant Industrial User (SIU) agreement with the City of Pine Island.

The projections for Dairy Farmers of America assume that its pretreatment system is active and discharges CBOD5 at 25 mg/L for Average Day and 40 mg/L for Max Day effluent concentration at its design industrial flow allocation in Million Gallons per Day (MGD).

Reserve capacities are based on typical domestic wastewater strength of 250 mg/L $CBOD_5$ and design industrial flow allocations in MGD.

Max day values are used for Max month values in design calculations.

Table 27 $CBOD_5$ Projected Industrial Loads, PPD

Year	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Projections for Design Year 2045					
Future Capacity. of Ex. Industries.	0	Land O' Lakes SIU, 100 PPD Avg limit and 200 PPD Max limit	0	DFA 0.600 MGD 25 mg/L (avg) or 40 mg/L (max), 125 PPD (avg) or 200 PPD (max).	225 PPD
Other Industry	0	0.040 MGD, 250 mg/L 83 PPD	0	0.095 MGD, 250 mg/L 198 PPD	281 PPD
Commercial	0	0.040 MGD, 250 mg/L 83 PPD	0	0	83 PPD
Reserve	0	0.170 MGD, 250 mg/L 355 PPD	0	0	355 PPD
Total 2045 $CBOD_5$	**0**	**621 PPD Avg 721 PPD Max**	**0**	**323 PPD Avg 398 PPD Max**	**944 PPD Avg 1,119 PPD Max**

6.2.1. $CBOD_5$ Historic Residential Load

Although not directly measured, calculations were made to estimate the residential contribution to $CBOD_5$ loads. Residential contributions were estimated by subtracting the measured industrial loads from the measured City total loads. The resultant Residential load (estimated) is provided in Table 28.

For Zumbrota, the historic values were determined to not be a good basis for design because DFA's pretreatment system only recently became active resulting in major changes in Zumbrota's loads. Therefore the 'historic' Zumbrota values are based on a set of assumptions rather than historic data. Zumbrota's per capita loading rate was assumed equal to the weighted average per capita rate of the other three cities. That rate was multiplied by Zumbrota's historic average 2010-2020 population of 3,489 to estimate historic loads in PPD.

Table 28 $CBOD_5$ Historic Residential Loads (Estimated), PPD

$CBOD_5$	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
	Res. = Total	Res. = Total - LOL	Res. = Total	Res. **(Assumed)**	Total
Average	112 PPD	378 PPD	158 PPD	384 PPD	1,032 PPD
Max Month	207 PPD	553 PPD	283 PPD	625 PPD	1,668 PPD
Max Day	351 PPD	757 PPD	493 PPD	959 PPD	2,561 PPD
Per Capita Calculations PPCPD					
Population	1,211	3,516	1,100	3,489	9,316
Average	0.09	0.11	0.14	0.11	0.11
Max Month	0.17	0.16	0.26	0.18	0.18
Max Day	0.29	0.22	0.45	0.28	0.28
Peaking Factor Ratios					
Max Month: Average	1.9 : 1	1.5 : 1	1.9 : 1	1.6 : 1	1.6 : 1
Max Day: Average	3.2 : 1	2.0 : 1	3.2 : 1	2.5 : 1	2.5 : 1

6.2.1. $CBOD_5$ Projections for Residential Load

Future residential projections for new growth areas were calculated based on the assumption that the $CBOD_5$ average per capita loading in new areas of all cities will be 0.17 PPCPD, which is the minimum recommended design loading per Ten States Standards. Max month (2.0 peaking factor) and max day (2.6 peaking factor) per capita loading in new areas are based on this assumed average load times Metcalf & Eddy textbook reference values for max: average ratios. The per-capita rates are shown as "Growth PPCPD" in the tables below.

Residential projections are based on population increases between the historic average 2010-2020 Census counts and the projected unrounded Design Year 2045 populations. The historic average population was chosen instead of the 2020 population since the loading design basis was heavily influenced by historic averages instead of peaks.

Table 29 $CBOD_5$ Projected Residential Loads, PPD

Flow	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Additional Residential Load from Population Growth					
Population Growth	+589 pop.	+3,984 pop.	+400 pop.	+1,911 pop.	+6,884 pop.
Average	+101 PPD	+675 PPD	+62 PPD	+326 PPD	+1,164 PPD
Max Month	+202 PPD	+1,350 PPD	+123 PPD	+652 PPD	+2,328 PPD
Max Day	+253 PPD	+1,668 PPD	+154 PPD	+815 PPD	+2,910 PPD
Growth Area Per Capita Rates PPCPD					
Average	0.17	0.17	0.17	0.17	0.17
Max Month	0.34 (2.0 PF)	0.34 (2.0 PF)	0.34 (2.0 PF)	0.34 (2.0 PF)	0.34 (2.0 PF)
Max Day	0.43 (2.6 PF)	0.43 (2.6 PF)	0.43 (2.6 PF)	0.43 (2.6 PF)	0.43 (2.6 PF)

6.2.1. Septage and Leachate Projections

The facility may receive septage haulers and these would have a seasonal impact. No separate calculation of septage has been made. The WWTF may choose to receive septage until its incoming loads meet the facility's design capacity, then reevaluate septage at that time.

6.2.2. Design 2045 $CBOD_5$

Design Year 2045 $CBOD_5$ loads for the Average Day, Max Month, and Max Day conditions are presented in Table 30 through Table 32. The Design 2045 $CBOD_5$ column is a summation of the historic rates plus the projected residential growth and industrial design allocation.

Table 30 $CBOD_5$ Average Day Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 $CBOD_5$ Avg
Goodhue	112 PPD	+101 PPD	213 PPD	0	213 PPD
Pine Island	378 PPD	+675 PPD	1,053 PPD	621 PPD	1,674 PPD
Wanamingo	158 PPD	+62 PPD	220 PPD	0	220 PPD
Zumbrota	384 PPD	+326 PPD	710 PPD	323 PPD	1,033 PPD
Total	**1,032 PPD**	**+1,164 PPD**	**2,196 PPD**	**944 PPD**	**3,140 PPD**

Table 31 $CBOD_5$ Max Month Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 $CBOD_5$ Max Mo.
Goodhue	207 PPD	+202 PPD	409 PPD	0	409 PPD
Pine Island	553 PPD	+1,350 PPD	1,903 PPD	721 PPD	2,624 PPD
Wanamingo	283 PPD	+123 PPD	407 PPD	0	407 PPD
Zumbrota	625 PPD	+652 PPD	1,276 PPD	398 PPD	1,674 PPD
Total	**1,668 PPD**	**+2,328 PPD**	**3,996 PPD**	**1,119 PPD**	**5,115 PPD**

Table 32 $CBOD_5$ Max Day Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 $CBOD_5$ Max Day
Goodhue	351 PPD	+253 PPD	604 PPD	0	604 PPD
Pine Island	757 PPD	+1,688 PPD	2,445 PPD	721 PPD	3,166 PPD
Wanamingo	493 PPD	+154 PPD	647 PPD	0	647 PPD
Zumbrota	959 PPD	+815 PPD	1,774 PPD	398 PPD	2,173 PPD
Total	**2,561 PPD**	**+2,910 PPD**	**5,471 PPD**	**1,119 PPD**	**6,590 PPD**

6.3. Total Suspended Solids (TSS)

6.3.1. TSS Historic Industrial Load

Historic industrial TSS load data are presented in Table 33. Industrial historic load data were obtained from:

- Pine Island: Land O' Lakes values were recorded in the monthly operating reports.
- Zumbrota: Like for $CBOD_5$, the table below shows 'N/A' for TSS due to recent startup of DFA's wastewater pretreatment system.

Table 33 TSS Historic Industrial Load, PPD

CBOD5	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Avg	0	19 PPD	0	N/A	N/A
Max Month	0	93 PPD	0	N/A	N/A
Max Day	0	723 PPD	0	N/A	N/A

6.3.2. TSS Projections for Industrial Loads

Projected industrial TSS load data are presented in Table 34.

Like $CBOD_5$, load limits for Land O'Lakes that appear in its agreement with the City of Pine Island are identified with 'SIU'. Dairy Farmers of America projections assume a concentration of 40 mg/L for Average Day and 50 mg/L for Max Day. Reserve projections are based on typical domestic strength TSS concentration of 300 mg/L. Max Day values are used for Max month values in design calculations.

Table 34 TSS Projected Industrial Loads, PPD

Year	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Projections for Design Year 2045					
Future Capacity. of Ex. Industries.	0	Land O' Lakes, SIU 100 PPD Avg limit and 200 PPD Max limit	0	DFA 0.600 MGD 40 mg/L (avg) or 50 mg/L (max), 200 PPD (avg) or 250 PPD (max).	300 PPD Avg 450 PPD Max
Other Industry	0	0.040 MGD, 300 mg/L 100 PPD	0	0.095 MGD, 300 mg/L 238 PPD	338 PPD
Commercial	0	0.040 MGD, 300 mg/L 100 PPD	0	0	100 PPD
Reserve	0	0.170 MGD, 250 mg/L 426 PPD	0	0	426 PPD
Total 2045 $CBOD_5$	**0**	**726 PPD Avg 826 PPD Max**	**0**	**438 PPD Avg 488 PPD Max**	**1,163 PPD Avg 1,313 PPD Max**

6.3.3. TSS Historic Residential Load

Although not directly measured, calculations were made to estimate the residential contribution to TSS loads. Residential contributions were estimated by subtracting the measured industrial loads from the measured City total loads. The resultant residential load (estimated) is provided in Table 35.

Like $CBOD_5$, Zumbrota's TSS per capita loading rate was assumed equal to the weighted average per capita rate of the other three cities. That rate was multiplied by Zumbrota's historic average 2010-2020 population of 3,489 to estimate historic loads in PPD.

Table 35 TSS Historic Residential Loads (Estimated), PPD

TSS	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
	Res. = Total	Res. = Total - LOL	Res. = Total	Res. **(Assumed)**	Total
Average	146 PPD	592 PPD	207 PPD	558 PPD	1,503 PPD
Max Month	407 PPD	975 PPD	541 PPD	1,151 PPD	3,075 PPD
Max Day	673 PPD	1,557 PPD	863 PPD	1,853 PPD	4,946 PPD
Per Capita Calculations PPCPD					
Population	1,211	3,516	1,100	3,489	9,316
Average	Average	0.12	0.17	0.19	0.16
Max Month	Max Month	0.34	0.28	0.49	0.33
Max Day	Max Day	0.56	0.44	0.78	0.53
Peaking Factor Ratios					
Max Month: Average	2.8 : 1	1.6 : 1	2.6 : 1	2.1 : 1	2.1 : 1
Max Day: Average	4.7 : 1	2.6 : 1	4.1 : 1	3.3 : 1	3.3 : 1

6.3.4. TSS Projections for Residential Loads

Future projections for all cities assume that existing residential contributors will maintain their historic PPCPD rates.

Table 36 presents the future residential growth projections. The residential per capita rate in new growth areas is assumed to be 0.20 PPCPD TSS, which is the Ten States Standards (10SS) recommended per capita loading rate. Max month and max day per capita loading in new areas is based on this assumed average load times a peaking factor of 2.0 for max month and 2.6 for max day.

Table 36 TSS Projected Residential Loads, PPD

Load	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Additional Residential Load from Population Growth					
Population Growth	+589 pop.	+3,984 pop.	+400 pop.	+1,911 pop.	+6,884 pop.
Average	+119 PPD	+794 PPD	+73 PPD	+383 PPD	+1,369 PPD
Max Month	+238 PPD	+1,589 PPD	+145 PPD	+767 PPD	+2,739 PPD
Max Day	+310 PPD	+2,065 PPD	+189 PPD	+997 PPD	+3,561 PPD
Growth Area Per Capita Rates PPCPD					
Average	0.20	0.20	0.20	0.20	0.20
Max Month	0.4 (2.0 PF)	0.4 (2.0 PF)	0.4 (2.0 PF)	0.4 (2.0 PF)	0.4 (2.0 PF)
Max Day	0.52 (2.6 PF)	0.52 (2.6 PF)	0.52 (2.6 PF)	0.52 (2.6 PF)	0.52 (2.6 PF)

6.3.5. Design 2045 TSS

Design Year 2045 TSS loads for the Average Day, Max Month, and Max Day conditions are presented in Table 37 through Table 39. The Design 2045 TSS column is a summation of the historic rates plus the projected residential growth and industrial design allocation.

Table 37 TSS Average Day Loads for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TSS Avg
Goodhue	146 PPD	+119 PPD	265 PPD	0	265 PPD
Pine Island	592 PPD	+794 PPD	1,386 PPD	726 PPD	2,112 PPD
Wanamingo	207 PPD	+73 PPD	280 PPD	0	280 PPD
Zumbrota	558 PPD	+383 PPD	942 PPD	438 PPD	1,380 PPD
Total	**1,503 PPD**	**+1,369 PPD**	**2,873 PPD**	**1,163 PPD**	**4,036 PPD**

Table 38 TSS Max Month Loads for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TSS Max Mo.
Goodhue	407 PPD	+238 PPD	645 PPD	0	645 PPD
Pine Island	975 PPD	+1,589 PPD	2,564 PPD	826 PPD	3,389 PPD
Wanamingo	541 PPD	+145 PPD	686 PPD	0	686 PPD
Zumbrota	1,151 PPD	+767 PPD	1,918 PPD	488 PPD	2,406 PPD
Total	**3,075 PPD**	**+2,739 PPD**	**5,813 PPD**	**1,313 PPD**	**7,127 PPD**

Table 39 TSS Max Day Loads for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TSS Max Day
Goodhue	673 PPD	+310 PPD	983 PPD	0	983 PPD
Pine Island	1,557 PPD	+2,065 PPD	3,622 PPD	826 PPD	4,488 PPD
Wanamingo	863 PPD	+189 PPD	1,052 PPD	0	1,052 PPD
Zumbrota	1,853 PPD	+997 PPD	2,850 PPD	488 PPD	3,338 PPD
Total	**4,946 PPD**	**+3,561 PPD**	**8,507 PPD**	**1,313 PPD**	**9,820 PPD**

6.4. Total Kjeldahl Nitrogen (TKN)

6.4.1. TKN Historic Industrial Loads

No historic TKN data exist for industrial users.

6.4.2. TKN Projections for Industrial Loads

Table 40 presents the future TKN industrial load projections and assumptions. Future assumptions for all industries assume a discharge TKN concentration of 50 mg/L excluding DFA. DFA ran a test of their pretreatment system in November 2023 and measured approximately 3 mg/L ammonia and 1 mg/L nitrate in the pretreatment system effluent, but their tests did not include TKN. In the absence of TKN data, the projection for DFA future loads was based on the assumed concentration of 10 mg/L for Average Day and 15 mg/l for Max Day.

Table 40 TKN Projected Industrial Loads, PPD

Year	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Projections for Design Year 2045					
Future Capacity. of Ex. Industries.	0	Land O' Lakes 0.100 MGD 50 mg/L (avg & max) 42 PPD (avg & max)	0	DFA 0.600 MGD 10 mg/L (avg) or 15 mg/L (max), 50 PPD (avg) or 75 PPD (max).	92 PPD Avg 117 PPD Max
Other Industry	0	0.040 MGD, 50 mg/L 17 PPD	0	0.095 MGD, 50 mg/L 40 PPD	57 PPD
Commercial	0	0.040 MGD, 50 mg/L 17 PPD	0	0	17 PPD
Reserve	0	0.170 MGD, 50 mg/L 70 PPD	0	0	70 PPD
Total 2045 TKN	**0**	**146 PPD Avg & Max**	**0**	**90 PPD Avg 115 PPD Max**	**236 PPD Avg 261 PPD Max**

6.4.3. TKN Historic Residential Loads

No substantial TKN data exist for Goodhue, Pine Island, or Zumbrota so 'historic' TKN loads were estimated based on historic populations and pound per capita rates from Ten

States Standards and textbook reference values (Metcalf & Eddy). Wanamingo, the only city with measured historic TKN data, closely matches the design standard and textbook values. Due to TKN sampling only being conducted once a month, max day TKN in Wanamingo was estimated based on textbook per capita values.

Table 41 TKN Historic Residential Loads (Estimated), PPD

TSS	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Average	44 PPD	127 PPD	42 PPD*	126 PPD	337 PPD
Max Month	56 PPD	162 PPD	47 PPD*	160 PPD	425 PPD
Max Day	70 PPD	204 PPD	64 PPD	202 PPD	541 PPD
Per Capita Calculations PPCPD					
Population	1,211	3,516	1,100*	3,489	9,316
Average	0.036	0.036	0.038*	0.036	0.036
Max Month	0.046	0.046	0.042	0.046	0.046
Max Day	0.058	0.058	0.058	0.058	0.058
Peaking Factor Ratios					
Max Month: Average	1.3 : 1	1.3 : 1	1.1 : 1	1.3 : 1	1.3 : 1
Max Day: Average	1.6 : 1	1.6 : 1	1.5 : 1	1.6 : 1	1.6 : 1
* Based on actual historical data					

6.4.4. TKN Projections for Residential Loads

Future projections for all cities assume that existing residential contributors will maintain their historic PPCPD rates.

Table 42 presents the TKN future residential growth projections for new growth areas. Loading rates are based on the same Ten States Standards recommended per capita rates that were used for 'historic' values. Max month (1.3 peaking factor) and max day (1.6 peaking factor) per capita loading in new areas is based on this assumed average load times reference values for max: average ratios (Max Month – Ten States Standards and Max Day – Metcalf and Eddy). Max Month and Max Day loadings will be further evaluated during final design.

Table 42 TKN Projected Residential Loads, PPD

Load	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Additional Residential Load from Population Growth					
Population Growth	+589 pop.	+3,984 pop.	+400 pop.	+1,911 pop.	+6,884 pop.
Average	+21 PPD	+143 PPD	+13 PPD	+69 PPD	+247 PPD
Max Month	+27 PPD	+183 PPD	+17 PPD	+88 PPD	+316 PPD
Max Day	+35 PPD	+232 PPD	+21 PPD	+112 PPD	+399 PPD
Growth Area Per Capita Rates PPCPD					
Average	0.036	0.036	0.036	0.036	0.036
Max Month	0.046 (1.3 PF)	0.046 (1.3 PF)	0.046 (1.3 PF)	0.046 (1.3 PF)	0.046 (1.3 PF)
Max Day	0.058 (1.6 PF)	0.058 (1.6 PF)	0.058 (1.6 PF)	0.058 (1.6 PF)	0.058 (1.6 PF)

6.4.5. *Design 2045 TKN*

Design Year 2045 TKN loads for the Average Day, Max Month, and Max Day conditions are presented in Table 43 though Table 45. The Design 2045 TKN column is a summation of the historic rates plus the projected residential growth and industrial design allocation.

Table 43 TKN Average Day Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TKN Avg
Goodhue	44 PPD	+21 PPD	65 PPD	0	65 PPD
Pine Island	127 PPD	+143 PPD	270 PPD	146 PPD	416 PPD
Wanamingo	42 PPD	+13 PPD	55 PPD	0	55 PPD
Zumbrota	126 PPD	+69 PPD	195 PPD	90 PPD	285 PPD
Total	**337 PPD**	**+247 PPD**	**584 PPD**	**236 PPD**	**821 PPD**

Table 44 TKN Max Month Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TKN Max Mo.
Goodhue	56 PPD	+27 PPD	83 PPD	0	83 PPD
Pine Island	162 PPD	+183 PPD	345 PPD	146 PPD	491 PPD
Wanamingo	47 PPD	+17 PPD	63 PPD	0	63 PPD
Zumbrota	160 PPD	+88 PPD	249 PPD	115 PPD	364 PPD
Total	**425 PPD**	**+316 PPD**	**740 PPD**	**261 PPD**	**1,001 PPD**

Table 45 TKN Max Month Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TKN Max Day
Goodhue	70 PPD	+35 PPD	105 PPD	0	105 PPD
Pine Island	204 PPD	+232 PPD	436 PPD	146 PPD	582 PPD
Wanamingo	64 PPD	+21 PPD	85 PPD	0	85 PPD
Zumbrota	202 PPD	+112 PPD	314 PPD	115 PPD	429 PPD
Total	**541 PPD**	**+399 PPD**	**940 PPD**	**261 PPD**	**1,201 PPD**

6.5. Total Phosphorus (TP)

6.5.1. *TP Historic Industrial Loads*

Historic industrial TP load data are presented in Table 46. Industrial historic load data were obtained from:

- Pine Island: Land O' Lakes values were recorded in the monthly operating reports.

- Zumbrota: Like for previous sections, the table below shows 'N/A' due to recent startup of DFA pretreatment. Their WWTF test in November of 2023 is the sole source of 'historic' values. The average result from that test was 3.72 mg/L TP.

Table 46 TP Historic Industrial Loads, PPD

CBOD5	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Avg	0	7 PPD	0	N/A	N/A
Max Month	0	13 PPD	0	N/A	N/A
Max Day	0	28 PPD	0	N/A	N/A

6.5.2. TP Projections for Industrial Loads

Table 47 presents the future TP industrial load projections and assumptions. Land O' Lakes is based on its current SIU agreement. Dairy Farmers of America is based on an assumed 2.0 mg/L TP and 0.600 MGD flow allocation. Reserves are based on assumed 8 mg/L TP and their industrial flow allocations.

Table 47 TP Projected Industrial Loads, PPD

Year	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Projections for Design Year 2045					
Future Capacity. of Ex. Industries.	0	Land O' Lakes 10 PPD (avg), SIU 15 PPD (max), SIU	0	DFA 0.600 MGD 2.0 mg/L (avg & max) 10 PPD (avg & max).	20 PPD Avg 25 PPD Max
Other Industry	0	0.040 MGD, 8 mg/L 3 PPD	0	0.095 MGD, 8 mg/L 6 PPD	59 PPD
Commercial	0	0.040 MGD, 8 mg/L 3 PPD	0	0	3 PPD
Reserve	0	0.170 MGD, 8 mg/L 11 PPD	0	0	11 PPD
Total 2045 TP	**0**	**27 PPD Avg 32 PPD Max**	**0**	**16 PPD Avg & Max**	**43 PPD Avg 48 PPD Max**

6.5.3. TP Historic Residential Loads

Table 48 presents the estimated historic residential Total Phosphorus loads. Like the previous sections, Zumbrota's 'historic' per capita values for TP were based on the weighted averages of the other three cities, and its historic population of 3,489.

Table 48 TP Historic Residential Loads (Estimated), PPD

TSS	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
	Res. = Total	Res. = Total - LOL	Res. = Total	Res. **(Assumed)**	Total
Average	5 PPD	13 PPD	5 PPD	14 PPD	37 PPD
Max Month	11 PPD	25 PPD	9 PPD	27 PPD	72 PPD
Max Day	24 PPD	39 PPD	15 PPD	41 PPD	119 PPD

Per Capita Calculations PPCPD					
Population	1,211	3,516	1,100	3,489	9,316
Average	0.0042	0.0037	0.0045	0.0039	0.0039
Max Month	0.009	0.007	0.008	0.008	0.008
Max Day	0.020	0.011	0.013	0.012	0.012
Peaking Factor Ratios					
Max Month: Average	2.1 : 1	1.9 : 1	1.8 : 1	2.1 : 1	2.1 : 1
Max Day: Average	4.8 : 1	3.0 : 1	2.9 : 1	3.1 : 1	3.1 : 1

6.5.4. TP Projections for Residential Loads

Future projections for all cities assume that existing residential contributors will maintain their historic PPCPD rates.

Table 49 presents the TP future residential growth projections for new areas. The projected average loading rate used for all cities is the recommended design loading rate of 0.0046 PPCPD TP per Ten States Standards. Projected max month and max day rates are based on the assumed average 0.0046 PPCPD rate and each city's individual historic max: average ratios. Peaking factors for Max Month and Max Day vary for each city and were derived from the historical max: average ratios for each city. Zumbrota's Max Month peaking factor was based on the weighted average of the other cities.

Table 49 TP Projected Residential Loads, PPD

Load	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
Additional Residential Load from Population Growth					
Population Growth	+589 pop.	+3,984 pop.	+400 pop.	+1,911 pop.	+6,884 pop.
Average	+3 PPD	+18 PPD	+2 PPD	+9 PPD	+31 PPD
Max Month	+6 PPD	+35 PPD	+3 PPD	+17 PPD	+61 PPD
Max Day	+13 PPD	+55 PPD	+5 PPD	+26 PPD	+99 PPD
Growth Area Per Capita Rates PPCPD					
Average	0.0046	0.0046	0.0046	0.0046	0.0046
Max Month	0.010 (2.1 PF)	0.009 (1.9 PF)	0.008 (1.8 PF)	0.009 (2.1 PF)	0.009 (2.1 PF)
Max Day	0.022 (4.8 PF)	0.014 (3.0 PF)	0.014 (2.9 PF)	0.014 (3.1 PF)	0.014 (3.1 PF)

6.5.5. Design 2045 TP

Design Year 2045 TP loads for the Average Day, Max Month, and Max Day conditions are presented in Table 50 through Table 52. The Design 2045 TP column is a summation of the historic rates plus the projected residential growth and industrial design allocation.

Table 50 TP Average Day Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TP Avg
Goodhue	5 PPD	+3 PPD	8 PPD	0	8 PPD
Pine Island	13 PPD	+18 PPD	31 PPD	27 PPD	58 PPD
Wanamingo	5 PPD	+2 PPD	7 PPD	0	7 PPD
Zumbrota	14 PPD	+9 PPD	23 PPD	16 PPD	39 PPD
Total	**37 PPD**	**+32 PPD**	**69 PPD**	**43 PPD**	**112 PPD**

Table 51 TP Max Month Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TP Max Month
Goodhue	11 PPD	+6 PPD	17 PPD	0	17 PPD
Pine Island	25 PPD	+35 PPD	60 PPD	32 PPD	92 PPD
Wanamingo	9 PPD	+3 PPD	12 PPD	0	12 PPD
Zumbrota	27 PPD	+17 PPD	44 PPD	16 PPD	60 PPD
Total	**72 PPD**	**+61 PPD**	**133 PPD**	**48 PPD**	**181 PPD**

Table 52 TP Max Day Load for Design Year 2045, PPD

City	Historic Residential	Residential Growth	Design 2045 Residential	Design 2045 Industrial	Design 2045 TP Max Day
Goodhue	24 PPD	+13 PPD	37 PPD	0	37 PPD
Pine Island	39 PPD	+55 PPD	94 PPD	32 PPD	126 PPD
Wanamingo	15 PPD	+5 PPD	20 PPD	0	20 PPD
Zumbrota	41 PPD	+26 PPD	67 PPD	16 PPD	83 PPD
Total	**119 PPD**	**+99 PPD**	**218 PPD**	**48 PPD**	**267 PPD**

Appendix Q. Revised Selected Cost Tables

Revisions:
August 22 2024: revised cost tables, responsive to MPCA comments #3, #9, and #10.

Table 1 revised to remove $44M bonding bill but keep $10M already received.

Table 1 REVISED 8-22-2024 State of Minnesota $10,000,000 Bonding Bill and NZSSD-Funded Portions of Project

Item	Amount
WWTF Project	
Total WWTF Project Cost	$83,300,000
State of Minnesota Bonding Bill	**$7,480,000**
NZSSD-Funded	**$75,820,000**
Conveyance Project	
Total Conveyance Project Cost	$28,000,000
State of Minnesota Bonding Bill	**$2,520,0000**
NZSSD-Funded	**$25,480,000**
Total Project	
Total Project	$111,300,000
State of Minnesota Bonding Bill	**$10,000,000**
NZSSD-Funded	**$101,300,000**

Table 2 revised to remove $44M bonding bill but keep $10M already received and show $28M conveyance construction costs.

Table 2 REVISED 8-22-2024 Project Cost Shares for Member Cities with $10,000,000 Bonding Bill funding

Item	Goodhue	Pine Island	Wanamingo	Zumbrota	Total
WWTF Project					
Share	8.0%	44.0%	9.0%	39.0%	100%
Amount before bonding	$6,664,000	$36,652,000	$7,497,000	$32,487,000	$83,300,000
Share bonding	$594,000	$3,292,000	$677,000	$2,917,000	$7,480,000
Amount	**$6,070,000**	**$33,360,000**	**$6,820,0000**	**$29,570,000**	**$75,820,000**
Conveyance Project					
Amount before bonding	$6,100,000	$11,800,000	$7,300,000	$2,800,000	$28,000,000
Share of 2023 bonding	$550,000	$1,060,000	$660,000	$250,000	$2,520,000
Amount	**$5,550,000**	**$10,740,000**	**$6,640,000**	**$2,550,000**	**$25,480,000**
Total Project Cost Share Amount					
Amount	**$11,620,000**	**$44,100,000**	**$13,460,000**	**$32,120,000**	**$101,300,000**

Table 16 revised to remove $44M bonding bill but keep $10M already received and show Wanamingo lift station and forcemain costs.

Table 16 REVISED 8-22-2024 Wanamingo's Share of NZSSD Project Costs

Item	Amount
WWTF Project	
NZSSD-Funded Total	$75,820,000
Wanamingo's WWTF Share	9.0%: $6,820,000
NZSSD Conveyance Project	
Wanamingo's Conveyance Amount	$6,640,000
Total Project	
Wanamingo's Share of NZSSD-Funded Project Cost	**$13,460,000**

Table 17 revised to remove $44M bonding bill but keep $10M already received and show Wanamingo lift station and forcemain costs.

Table 17 REVISED 8-22-2024 Wanamingo's Share of NZSSD O&M

Item	Amount
WWTF O&M	
Total WWTF O&M	$961,000 / year
Wanamingo's WWTF Share	9.0%: $86,000 / year
Conveyance O&M	
Wanamingo's Conveyance O&M	$24,000 / year
Total O&M	
Wanamingo's Share of NZSSD O&M	**$110,000 / year**

Table 18 revised to remove $44M bonding bill but keep $10M already received, show Wanamingo lift station and forcemain costs, and include salvage costs.

Table 18 REVISED 8-22-2024 Integrated Cost and Effectiveness Analysis

Item	Alt 1 – Upgrade Wanamingo WWTF	Alt 2 – Connect to NZSSD
Project Costs	$15,135,000	$13,460,000
O&M / year	$222,000 / year	$110,000 / year
O&M NPWs	$4,440,000	$2,200,000
Salvage Value	$3,685,000	$5,711,000
Total Net Present Worth	**$15,890,000**	**$9,949,000**
Comparison with lowest cost alternate	+$5,941,000 (+60%)	-
Non-Economic Factors		Consolidation / regionalization
Score	**2**	**1**

The upgraded Wanamingo WWTF would consist of new preliminary treatment building to house new mechanical screens and grit removal process. To meet proposed phosphorus and nitrogen limits, a new activated sludge treatment process utilizing the A20 process would be constructed. This would consist of anaerobic, anoxic and aerobic basin, new final clarifiers, and return and waste activated sludge pumping. A new

building would be needed to house the RAS and WAS pumps and chemical feed systems. A new ultraviolet light disinfection system would be constructed to performed disinfection of the plant effluent prior to discharge to the receiving stream. To treat solids generated as part of the activated sludge process, the plant upgrades would include construction of a new aerobic digestion process consisting of digester basins and building to house sludge pumps and aeration blowers. The new biosolids storage and handling process would also include new onsite biosolids storage tank.

Appendix R. Existing WWTF Condition Evaluation

Revisions:
August 22 2024: Existing WWTF Condition Evaluation enclosed.

Evaluation of Existing City of Wanamingo WWTF

Wanamingo WWTF – Evaluation Completed 8/22/2024

Treatment Unit	Capacity (MGD)	Capabilities and Condition	Meet Proposed Limits?	Problems
Preliminary and Primary Treatment				
Municipal Bar Screen	0.369 MGD; limited by downstream Parshall flume	¾" Course Bar Screen; Manual Clean, 1983	N/A	Bar screen design does not meet current design standards; channels are not properly sized to achieve velocities > 1.25 fps at design flow.
Industrial Bar Screen	0.369 MGD; limited by downstream Parshall flume	¾" Course Screen; Manual Clean, 1983	N/A	Bar screen design does not meet current design standards; channels are not properly sized to achieve velocities > 1.25 fps at design flow.
Influent Parshall Flumes (2)	1.202 MGD each	0.369 MGD per flume	No, current flume configuration inadequate for proposed design flows	Current hydraulics of flume and screen structure inadequate for proposed design flows.
Aerated Grit	1.67 MGD @ 4 min. Det. Time	6.5 Min. Det. Time @ PHWW Poor condition	Yes, detention time > 5 min @ proposed Design PHWW flow	Aging Equipment
Secondary Treatment				
Activated Sludge System	0.212 MG	426 ppd BOD5 @ 15 lb/1,000 CF Poor condition	No, process inadequate for BNR requirements	Aging Equipment; Existing process not capable of meeting proposed TP limits. Blowers are in poor condition. 3 blowers and 1 does not work.
Final Clarifiers Final Clarifier #1 (29 ft dia.) Final Clarifier #2 (25 ft dia.) Total	@ 900 gpd/SF 0.594 MGD 0.442 MGD 1.036 MGD	AWW flow w/ largest unit out of service, poor condition	No, SWDs appear to be < 12 ft	SWD too shallow;

Disinfection				
Chlorination Tanks	0.014 MG	20.5 min. CT at PHWW (709 gpm)	Yes, CT time > 15 min @ design PHWW	Aging equipment
Dechlorination Tank	0.003 MG	4 min. CT at PHWW (709 gpm)	Yes, CT time > 30 sec. @ design PHWW	Aging equipment
Solids Process				
Aerobic Digestion	0.132 MG	9.5 CF/P.E. Poor condtion	Yes, digester capacity > 3.0 CF/P.E.	Aging equipment
Sludge Holding	0.072 MG	40 days sludge storage at design 0.13 CF/P.E./Day Poor Condition	No, storage < recommended 120-180 days storage	Aging equipment; Inadequate sludge holding capacity for proposed design. Sludge pumping system is not operational. City has to put a drop in pump to pump the sludge out.
Whole Plant				
Electrical and Controls	N/A	1983 Poor condition		Aging equipment. No Scada system. Outside electrical box is underground and floods when it rains.
Flow Equalization	0.500 MG	1973 Poor condition	N/A	Liner needs replaced; mixing/aeration equipment needs replaced;
Buildings				
Bar Screen Building	N/A	1983 Poor condition	N/A	Aging facility; structure inadequate for proposed design flows. Roof leaks.
Control House	N/A	1973 Poor condition	N/A	Aging facility. Roof leaks.
Compressor Building	N/A	1973 w/ expansion in 1988 Poor condition	N/A	Aging facility; building not adequately sized for anticipated equipment

Notes on the columns in the table:

Treatment Unit is each major step in the treatment train.

Capacity (MGD) is design firm capacity in MGD.

Capabilities and Condition is twofold:

'Capabilities' is the design criteria for the unit. Capabilities of treatment units are their design levels for: BOD, TSS, Ammonia, Nitrogen, Phos, as applicable. Capability of hydraulic units are their capacities in MGD.

'Condition' is existing condition of equipment. Suggested options: Poor Needs repaired/replaced in 0-5 years, …Fair 5-10 years, …Good 10-20 years, or New (built in year ____).

Meet Proposed Limits is whether the treatment unit could meet the proposed permit requirements and future flows and loads for design year 2045. In most cases this will be 'no' because each city is proposing increased flows and the PELs have increased treatment stringency.

Problems is a list of problems that need to be corrected with the existing equipment. Suggested approach:

- age-related maintenance problems. Include problems with finding repair parts if applicable.
- deficiencies in emergency backups and/or redundancy if applicable.
- Deficiencies in meeting current codes (fire, electric, safety).
- ergonomic/configuration/functionality issues that impact how well it behaves for operators if applicable. Include if the unit gets flooded and/or inaccessible at times due to rain events.
- improvements that would be more efficient for electricity and humans like VFDs/flow pacing for energy efficiency, SCADA/automatic control, etc if applicable.
- 'Inadequate cap. for proposed limits' if applicable.

Appendix S. Collection System I/I Reduction Narrative

Revisions:
August 22 2024: Collection System Narrative enclosed.

From: Brandon Theobald
Sent: Thursday, May 30, 2024 12:51 PM
To: Glenn Gustafson; Angie Kolz
Subject: RE: NZSSD PMT meeting

GG,

The City of Wanamingo is in the process of completing a City wide sump pump inspection program. To maintain sump pump compliance, the City plans to develop a point-of-sale inspection program. The City is planning to complete smoke testing this fall to look for any cross connections. The City is planning on replacing 3 City blocks of aged sanitary sewer in 2026,

Let me know if you need anything else.

Thanks,

Brandon Theobald, P.E. I Associate
Voice: 507.288.3923 I www.whks.com

Click here to subscribe to our newsletter.

Appendix T. MPCA Letter of Preliminary Approval

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

October 3, 2024

VIA EMAIL

The Honorable Ryan Holmes
Mayor, City of Wanamingo
401 Main St
PO Box 244W
Wanamingo, MN 55983

RE: Wanamingo Wastewater Treatment Facility
Facility Plan Preliminary Approval
NPDES/SDS Permit Number MN0022209
MPCA Project No. 280813

Dear Mayor Holmes:

The Minnesota Pollution Control Agency (MPCA) is pleased to inform you that we are hereby granting preliminary approval of your facility plan.

The proposed plan is the background study for the eventual construction and operation of a Class SD Lift station that would pump wastewater to the North Zumbro Sanitary District wastewater treatment facility located in Zumbrota. The lift station will transfer 0.40 million gallons per day (MGD) average wet-weather flow, 1.021 MGD peak hourly wet-weather flow, 407 pounds (lb) $CBOD_5$ average per day and 686 lb suspended solids average per day. The approval is pursuant to Minn. Stat. §§ 115 and 116, as amended. The legal description of the location of the proposed lift station is Section 30, Township 110 North, Range 16 West, Wanamingo, Goodhue County.

The facility plan and related information indicate that the selected alternative for this project will consist of adding a lift station, and force main. The proposed project is described in detail in the facility plan received on March 1, 2024, titled, “Volume 3: Wanamingo Conveyance Facility Plan,” by WHKS, Widseth, and ISG, signed and dated on February 27, 2024.

This constitutes a formal decision in accordance with Minn. R. 7077.2000. Any request for review or reconsideration of this decision must be submitted within 45 days of the date of this letter. For clarification concerning Disputes Procedures, please contact your review engineer.

This preliminary approval is given when there is reasonable assurance that the treatment system, when constructed, will comply with the regulations and criteria of the MPCA. Final approval of the facility plan is contingent upon completion of the environmental review process and issuance of a NPDES/SDS permit.

Any questions regarding this approval should be directed to me at 507-206-2603 or by email at corey.hower@state.mn.us.

Sincerely,

Corey J. Hower

This document has been electronically signed.

Corey J. Hower
Engineering Specialist
Municipal Division

CJH:cac

cc: Glenn Gustafson, WHKS (electronic)
Jeff Freeman, PFA
Becky Sabie, PFA
Drew Brooksbank, PFA
Bill Dunn, MPCA
Gabriel Posteuca, MPCA
Pam Foster, MPCA
Activity APP20220001 @ AI ID 2725