

Montrose Alternative Urban Areawide Review (AUAR) Update

for the City of Montrose, Minnesota

April 2023

Completed by:

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Chapter 1: Introduction

The Montrose AUAR study area consists of approximately 5,300 developable acres surrounding the City of Montrose. It is proposed to include low, medium, and high-density residential, industrial, and commercial development. The project includes construction of roads, homes, businesses, trails, parks, ponds, and utilities such as storm water, wastewater, and water supply piping. This AUAR also analyzes the impacts of approximately 1,700 acres of development that exists or is in a various stage of approval and 100 acres of railroad right-of-way, for a total analysis area of approximately 7,100 acres.

Pursuant to Minnesota Rules, part 4410.3610, subpart 7, regardless of any significant changes an AUAR and plan for mitigation must be revised every five years until all development in the study area has received final approval. The City of Montrose adopted the Montrose Final AUAR and Mitigation Plan in 2008, and an update to the Montrose Final AUAR and Mitigation Plan was published in 2018.

The Montrose AUAR study area has not been fully developed since the publication of the previous AUAR Update in 2018. Thus, this report is intended to serve as an update to the 2018 AUAR Update. The analysis that was completed for the 2018 AUAR Update and associated mitigation measures remain valid for most of the document. This report will provide details on the updated areas of analysis, and the rest of the original 2008 AUAR and 2018 AUAR Update will be incorporated into this report by reference.

Chapter 2: Project Description

The City of Montrose is located in Wright County, northwest of the Twin Cities Seven-County Metropolitan Area as illustrated in *Figure 1, "Regional Location."* The AUAR study area surrounds the City of Montrose, but does not include the existing developed area of the City, or "Study Area Exception" properties that are already developed or in the process of being developed. *Figure 2, "Environmental Study Area - USGS,"* shows the AUAR study area, City limits, and Study Area Exception properties on a USGS map. *Figure 3, "Environmental Study Area - Aerial,"* shows the AUAR study area, City limits, and Study Area Exception properties on an aerial photograph. Even though the AUAR study area does not include the existing developed areas and areas in the process of being developed, the cumulative impact analyses were completed for the entire AUAR area, including the existing developed areas. The Mitigation Plan was also written with the existing developed and developing areas in mind.

The AUAR area does not lie entirely within the City of Montrose. Marysville, Woodland and Franklin Townships, and the Wright County Board have given RGU authority for the AUAR area to the City of Montrose. The City of Montrose has orderly annexation agreements with Marysville and Woodland Townships. The area included in the annexation agreement with these townships coincides with the study area boundary. The majority of the existing land use in the AUAR area is agricultural related, including farmsteads, assorted agricultural accessory buildings, and agriculture production fields.

The City of Montrose has experienced a population growth averaging approximately 11 percent per year, between the year 2000 at 1,143 and the 2021 American Community Survey (ACS) five-year population estimate of 3,703. The land use vision identified in the Full Build Scenario of this AUAR is projected to yield an estimated population of 35,558, including approximately 14,043 households, and 11,204 employees. The 2017 Comprehensive Plan acknowledges this Full Build capacity potential, but focuses on a projected 2040 population of 6,055 and the Interim Build capacity of a population of 21,000 with 8,585 households and approximately 7,452 employees to guide development for the next 20+ years.

The AUAR will be evaluated every five years, pursuant to Minnesota Rule 4410.3610 sub. 7. The re-evaluation process will allow the AUAR to be a working document that will change as development trends, environmental requirements and needs, and local, state, and federal requirements change.

It is recognized that all communities in this area have and will continue to grow. The City of Montrose is taking a proactive approach to deal with the associated impacts of growth by completing this AUAR.

I. Background

In 2008, the City of Montrose first completed this Alternative Urban Areawide Review (AUAR) to plan for projected population growth and development. The 2008 AUAR development scenario was based on two stages, an Interim Build and a Full Build, to provide context and identify priorities to guide growth. These development stages are presented in *Figure 4, "Interim Build Land Use"* and *Figure 5, "Full Build Land Use."* The 2008 AUAR, with the related Comprehensive Plan and impact studies, established substantial growth plans for as soon as 2030, with the Full Build stage providing a long-term community vision. Therefore, the growth of population, households, and employment anticipated in the 2008 AUAR formally established the intent for a large development expansion (5,300 acres of new development within a 7,100-acre area). This area and capacity for development remain consistent with long-term annexation and land use plans. The population, household, and employment assumptions for each stage in the 2008 AUAR are provided in *Table 1, "2008 AUAR Development Scenario Stages."*

Table 1: 2008 AUAR Development Scenario Stages				
2008 AUAR Stages	Population	Households	Employment	
			Retail	Non-Retail
No Build (unplanned to 2030)	8,092	3,312	141	262
Interim Build (2020-2030)	21,030	8,585	3,358	4,094
Full Build (2030 & beyond)	35,558	14,043	4,212	6,992

The City of Montrose understands that it has not experienced sustained growth at the pace implied in 2008. The City of Montrose has experienced a population growth averaging approximately 11 percent per year, between the year 2000 at 1,143 and the 2021 American Community Survey (ACS) five-year population estimate of 3,703, which is far below the 2008 AUAR "Interim Build (2020-2030)" target of 21,030.

The 2017 Comprehensive Plan Update reevaluated land use designations and anticipated growth through 2040, presenting conservative, moderate, and fast growth projections for 2040. The range of projections is far below the population capacities reflected in the 2008 Interim and Full Build scenarios. The 2017 Comprehensive Plan used the moderate growth projection of 6,055 in 2040 to plan for housing units and land use, reflected in *Table 2, "2017 Comprehensive Plan Population Projections."* This moderate growth anticipates a population increase of 3,208 persons from 2010 to 2040, which is in the middle of the projection range and is less than 20 percent of the 2030 levels assumed in the 2008 AUAR.

Table 2: 2017 Comprehensive Plan Population Projections		
Year	Projected City Population	Population Growth (2010 base)
2015	3,079	232
2020	3,500	421
2025	4,000	500
2030	4,600	600
2035	5,300	700
2040	6,055	755
Projection Range		
2040 - Conservative	4,465	1,618
2040 - Fast	7,500	4,653

Additionally, community surveys conducted as part of the 2017 comprehensive planning process showed a desire to promote infill development. This approach, which anticipates contiguous infill development, should also influence a slower rate of change and fewer impacts by 2040 than expected in 2008.

The 2017 Comprehensive Plan update for the City of Montrose also led to slight changes in planned land use for the AUAR study area. As part of the 2018 AUAR Update, a stretch of commercial land use in the north central portion of the AUAR area became marked as public and park space, and a medium density residential parcel near the west central border of the study area became marked as high density residential. These land use adjustments are reflected in *Figure 4, "Interim Build Land Use,"* *Figure 5, "Full Build Land Use,"* and *Figure 6, "Ultimate Land Use Plan,"* and do not change the overall potential impacts described in this document.

The 2018 AUAR Update primarily served to report the above-noted reduced rates of growth and confirm the City's plan to retain a large reserve capacity for expansion – essentially the same capacity reflected in the 2008 AUAR and in the 2017 Comprehensive Plan Update. The AUAR Interim Build Stage remains the 20-year focus for development and is the primary area intended to meet the City's development needs through the year 2040 or beyond. The Full Build Stage is maintained to provide land use guidance beyond 2040 and flexibility in development, should the need of the City outgrow the Interim Build Stage.

Accordingly, this 2023 AUAR Update maintains much of the content from the 2008 AUAR and 2018 AUAR Update. The capacity for City expansion and development remains unchanged for the Interim Build and Full Build stages. The location of the AUAR study area, its acreage, and the potential impacts, are mostly the same as in 2008 and 2018, and the information on potential impacts is considered accurate, unless otherwise specified. Areas of analysis where potential impacts and/or associated mitigation measures may have been changed or revised since the 2018 AUAR Update are discussed in subsequent chapters of this document. The rest of the original 2008 AUAR and previous 2018 AUAR Update will be incorporated into this report by reference.

II. Development Summary

The City of Montrose's Comprehensive Plan was updated and approved by City Council in 2017 and includes a land use plan, staging plan, a public facilities plan (water system plan, wastewater system plan, storm water management plan and transportation plan) and an implementation program. The Comprehensive Plan complies with the requirements of the Environmental Quality Board. Land uses have been determined for the entire AUAR area. The AUAR area will consist of Low, Medium and High Density Residential, Commercial, Industrial, Mixed Use, and Agricultural, as well as public and semi-public land uses, and state Wildlife Management Areas (WMAs).

Staging

Only one development scenario is being evaluated in this AUAR. The scenario evaluated in this AUAR is consistent with the City's Comprehensive Plan and with the known development plans of the property owners in the area. This scenario was broken into two stages: Interim Build and Full Build. Land uses for the Interim Build are shown on *Figure 4, "Interim Build Land Use,"* and land uses for the Full Build are shown on *Figure 5, "Full Build Land Use."* The ultimate land use plan, along with shoreland and floodplain overlay districts and wetlands, is shown on *Figure 6, "Ultimate Land Use Plan."* This staging plan was developed to direct growth to infill areas of the City to promote an efficient use of existing

infrastructure and to work towards the completion of parallel roadways to TH 12 to reduce local travel demand on the highway.

The scenario under evaluation includes construction of roads, ponds, and utilities such as storm water, wastewater, and water supply piping. Utilities such as water, sanitary sewer and storm sewer will be constructed simultaneously with the streets.

Stormwater Management

The AUAR study area is located within the North Fork of the Crow River watershed, which is under the management authority of Wright County. The City has developed a Surface Water Management Plan (SWMP) that describes how water resources will be managed in the City, including portions of the AUAR area, and provides a plan for regional storm water ponds. Subwatersheds to cover the entire AUAR area have been delineated and are described in the City's Comprehensive Plan, which includes the Stormwater Management Plan. Existing storm water drainage areas will be modified slightly under the proposed storm water drainage areas. This is discussed in detail in *Chapter 3.II.C.2, "Water Quality: Surface Water Runoff."*

Municipal Water

Public water service is not presently available to the entire AUAR area. Development within the AUAR area will require that additional public water facilities be constructed to serve projected water demand from future development. A series of 12-inch, 10-inch and 8-inch water supply pipes will be constructed to provide water supply to the area. Four additional water towers totaling 2.75 million gallons will provide adequate water storage to serve the AUAR area. Additional wells will be constructed to provide water supply for the area. All areas are discussed in detail in *Chapter 3.II.C.1, "Water Use."*

Sanitary Sewer

Similar to municipal water, sanitary sewer service is not currently available to the entire AUAR area. Existing sanitary sewer lines will need extension to serve properties in the AUAR area. Eight additional lift stations will be required to serve the AUAR area as well as expansions and upgrades to two other lift stations. Multiple trunk lines and force mains will be required as well. Expansions and process changes will be required to the existing Montrose Regional Wastewater Treatment Facility to treat the additional sanitary sewer flows. Each of these items are discussed in detail in *Chapter 3.II.C.3, "Water Quality: Wastewater."*

Roadways

A detailed traffic impact analysis was completed for the AUAR area, evaluating the effects of traffic on the area roadway system. The traffic analysis for proposed development in the AUAR area includes an analysis of the cumulative impacts of other existing developments near the study area in Montrose (including area within Waverly, MN). The analysis evaluates the traffic impacts of the "exception" properties as the No-Build Scenario, as well as the Interim Build and Full Build scenarios.

The mitigation needed to assure acceptable operations at each intersection was determined through the traffic analysis summarized in *Item 21 of the 2018 AUAR Update*. The final proposed lanes and traffic control measures recommended for the roadways studied are included in *Appendix A of the 2018 AUAR Update*. These lane and traffic control recommendations assure Level of Service D or better for all intersections, except where traffic volumes are extremely low or where delay and volume would not be expected to meet signal warrant requirements. Note that the roadway improvements recommended should be built concurrent with any development of the area. This is discussed in detail in *Item 21 of the 2018 AUAR Update* and in *Appendix A of the 2018 AUAR Update*.

Parks, Trails, and Natural Resources/Open Space Preservation

The City and developer negotiate the type of park, open space and trail dedication at the time of development review. It is anticipated that the City will obtain neighborhood park property and trail segments within the AUAR area through parkland dedication at the time of subdivision approvals. This is discussed in *Item 9 of the 2018 AUAR Update*.

Schools

Currently, there is one elementary school in the City of Montrose. The Buffalo/Montrose/Hanover School District bought 32 acres of land west of CSAH 12 south of CR 107 for a future junior high school. Based on the previous AUAR future Full Build Scenario population of approximately 35,000, it is anticipated that there would be 3 additional elementary schools built on approximately 20 acres each within the City. The proposed junior high and additional elementary schools have been considered in the traffic analysis in *Appendix A of the 2018 AUAR Update*.

III. Project Magnitude Data

Table 3: Project Magnitude Data			
Total Project Acreage:		5,300 developable acres in a total of approximately 7,100 acres (complete AUAR buildout)	
No. of Residential Units	Low Density: 10,315	Medium Density: 3,368	High Density: 360
Commercial, industrial or institutional building area (gross floor space): 6.63M ft ²			
Indicate areas of specific uses (in square feet) ¹			
<u>Commercial Office:</u> 868,161	<u>Commercial – Retail:</u> 2,015,834	<u>Industrial – Business Office Park:</u> 731,808	
<u>Industrial – Light:</u> 1,293,680	<u>Industrial – Heavy:</u> 1,463,616	<u>Manufacturing:</u> N/A	
<u>Institutional:</u> N/A	<u>Agricultural:</u> N/A	<u>Other commercial (specify):</u> None	
<u>Building height (If over 2 stories, compare to heights of nearby buildings):</u> 2-3 (Most nearby buildings are 1-2 stories.)			

¹ Areas given in each category are estimates based on land use assumptions and are subject to change

Figure 6, “Ultimate Land Use Plan,” shows the Ultimate Land Use Plan for the AUAR study area. Information to determine whether land was developable was gathered from the National Wetlands Inventory, the Protected Waters Inventory, FEMA, Organic Deposits, and Wildlife Management Areas. The maximum densities for commercial and industrial floor space and residential units were calculated by multiplying the usable upland area by the assumed development densities. The AUAR area encompasses about 7,100 acres, of which about 5,300 acres are usable upland and approximately 1,700 acres were identified as undevelopable, and another 100 acres is within undevelopable railroad right-of-way. All development densities have been applied to usable acres rather than total acres. Table 3, “Project Magnitude Data,” summarizes the approximate usable area calculations for each land use designation and excludes the “exception” properties that are already developed or in the process of being developed.

For cumulative impact analysis purposes, Table 4, “Residential Development Assumptions,” Table 5, “Non-Residential Development Assumptions – Land Use,” and Table 6, “Non-Residential Development Assumptions – Intensity,” identify the residential and non-residential development assumptions for Full Build Scenario of the AUAR boundary. Residential land uses would be the majority land use in the AUAR area, with approximately 4,400 of the 4,900 residential land use acres being low density residential. Non-residential land uses total approximately 1,900 acres. The largest acreage of non-residential land uses are Public/Semipublic land uses due to the extent of the Woodland and Malardi WMAs comprising nearly 1,000 acres.

Table 4: Residential Development Assumptions						
Land Use	Total Acres	Undevelopable Acres	Developable Acres	Households Per Acre	Total Households	Population
Low Density Residential	4,386	955	3,431	3	10,315	26,118
Medium Density Residential	417	77	340	8	2,720	8,528
High Density Residential	114	17	97	12	1,164	912
Total Residential	4,924	1,049	3,875	NA	14,199	35,558

Table 5: Non-Residential Development Assumptions - Land Use			
Non-Residential Land Use Acreages	Total Acres	Undevelopable Acres	Developable Acres
Commercial	357	28	329
Industrial	513	93	420
Mixed Use	90	5	85
Public/Semi-Public	1,103	882	161
Railroad Right-of-Way	100	100	0
Total Non-Residential	2,163	1,108	995

Table 6: Non-Residential Development Assumptions - Intensity							
Non-Residential Land Use Yields	Allocation of Developable Acres	Acres Per Land Use Type	Net Sq. Ft. of Building	Building Sq. Ft. Per Employee	Total Employees	Retail Employees	Non-Retail Employees
Commercial-Retail	70%	239.4	2,085,653	495	4,212	4,212	NA
Commercial-Office	30%	102.6	893,851	265	3,375	NA	3,375
Industrial-Light	40%	168	1,463,616	1,030	1,421	NA	1,421
Industrial-Heavy	40%	168	1,463,616	1,500	976	NA	976
Industrial-Business Park	20%	84	731,808	600	1,220	NA	1,220
Total Non-Residential	NA	NA	6,638,544	NA	11,204	4,212	6,992

The one development scenario in this AUAR was broken into two stages: Interim Build and Full Build. This was done to direct growth to infill areas of the City to promote an efficient use of existing infrastructure and to work towards the completion of parallel roadways to TH 12 to reduce local travel demand on TH 12. As outlined in the Comprehensive Plan, growth will be directed to Interim Build properties identified in *Figure 4, "Interim Build Land Use,"* which also includes land identified as "exceptions" in *Figure 3 of the 2018 AUAR Update*. When there is less than a 10-year supply of a specific land use available for development within the Interim Build area, property within the Full Build area identified in *Figure 5* would be made eligible for development. It is also anticipated that as the AUAR is reported on every five years that the Comprehensive Plan may be updated to confirm its guidance or to accommodate anticipated development needs. If the Comprehensive Plan is updated, the AUAR will be evaluated to determine whether revisions are required to maintain consistency, which is the case for this 2018 AUAR Update.

Table 7, "Staging Scenarios," identifies the population, households, and employment for 2014, and forecasts based on the Ultimate Land Use Plan identified in the City of Montrose's Comprehensive Plan for the "exception" properties (also identified as the No Build scenario for traffic analysis purposes), the Interim Build, and Full Build stages. The population is the total, including the existing developed parts of the City.

Table 7: Staging Scenarios				
Staging Scenario	Population	Households	Employment	
			Retail	Non-Retail
2014 (Comprehensive Plan Conditions)	3,079	1,140	568	
No Build	8,092	3,312	141	262
Interim Build	21,030	8,585	3,358	4,094
Full Build	35,558	14,043	4,212	6,992
2040 Forecast	6,055	2,422	7,452	

Chapter 3: Impact Analysis

I. Areas of No Anticipated Change

There are no anticipated changes to the following areas of analysis as part of the 2023 AUAR Update:

- Land Use
- Water Resources
 - Physical Impacts on Water Resources
 - Water-Related Land Use Management
 - Water Surface Use
- Geology, Soils, and Topography/Land Forms
- Visual
- Air
- Noise
- Transportation
- Cumulative Impacts
- Other Potential Environmental Impacts

For more information related to these subjects, please refer to the 2018 Montrose AUAR Update, which is available on the City of Montrose's website.

II. Areas Requiring Updated Analysis

The following areas of analysis have been updated as part of the 2023 AUAR Update:

- Cover Types
- Permits and Approvals Required
- Water Resources
 - Water Use
 - Water Quality: Surface Water Runoff
 - Water Quality: Wastewater
- Contamination/Hazardous Materials/Wastes
- Fish, Wildlife, and Ecologically Sensitive Resources
- Historic Properties

A. Cover Types

Table 8, “Cover Type Acreage Estimation for AUAR Area,” provides approximate cover type acreage for current conditions in the AUAR area, after the Interim Build, and after the Full Build. These values are approximations based on desired future and uses in Figure 6, “Ultimate Land Use.” As parcel and park development occurs, actual land cover acreage will change. “Developed” land cover includes impervious surfaces and pervious surfaces, such as lawns, landscaping, and parks.

Table 8: Cover Type Acreage Estimation for AUAR Area			
Cover Type	Existing Conditions	Interim Build	Full Build
Wetlands and shallow lakes (<2 meters deep) *	1,849	1,849	1,849
Deep lakes (>2 meters deep) *	23	23	23
Wooded/forest	221	137	100
Brush/Grassland	1,361	700	150
Cropland	2,748	1,366	0
Developed	890	3,017	4,970
TOTAL	7,092	7,092	7,092

* Existing acreage for these cover types was updated to ensure that the Wetlands and Shallow Lakes acreage matches the total acreage of NWI Wetlands within the AUAR area (listed in Item 12 and Table 12-1 of the 2018 AUAR Update). For more information related to wetlands, please refer to Item 12 and Table 12-1 of the 2018 AUAR Update.

B. Permits and Approvals Required

Table 9: Permits and Approvals Required		
Unit of Government	Type of Application	Status
City of Montrose	Preliminary and Final Plat Approval/PUD	To be applied for.
City of Montrose	Street and Utility Plan Approval	To be applied for.
City of Montrose	Grading Permit	To be applied for.
City of Montrose	Building Permits	To be applied for.
City of Montrose	Municipal Water Connection Permit	To be applied for.
City of Montrose	Municipal Sewer Connection Permit	To be applied for.
City of Montrose	Zoning Amendment	To be applied for.
City of Montrose	Certificate of Wetland Replacement	To be applied for.
City of Montrose	Tree Survey/Preservation Plan	To be applied for.
City of Montrose	Tree Reforestation/Replacement Plan	To be applied for.
City of Montrose	Conditional Use Permit	To be applied for.
Wright County Highway Dept.	Access Permit	To be applied for.
Wright County Highway Dept.	Utility Work in Right of Way	To be applied for.
MN Department of Transportation	Access Permit	To be applied for.
MN Department of Transportation	Drainage Permit	To be applied for.
MN Department of Transportation	Utility Crossing	To be applied for.
MN Department of Transportation	Work in Right of Way	To be applied for.
MN Department of Health	Watermain Extension Approval	To be applied for.
MN DNR Division of Waters	General Permit 97-0005 for Temporary Water Appropriations	To be applied for, if needed.
MN DNR Division of Waters	Water Appropriations Permit	Existing Permit – To be Modified
MN Pollution Control Agency	NPDES/SDS General Permit	Existing Permit – To be Modified
MN Pollution Control Agency	Sanitary Sewer Extension Permit	To be applied for.
MN Pollution Control Agency	NPDES General Stormwater Permit for Construction Activity	To be applied for.
MN Pollution Control Agency	Section 401 Water Quality Certification/Waiver	To be applied for.
MN Pollution Control Agency	Municipal Separate Storm Sewer Systems (MS4) Permit	To be applied for when determined by MPCA
US Army Corps of Engineers	Section 404 Permit	To be applied for.

C. Water Resources

1. Water Use

There are numerous existing wells within the AUAR boundary listed on the County Well Index Online from the Minnesota Department of Health (MDH). As properties that have wells are developed, these wells will be sealed and properly abandoned in accordance with MDH regulations. Other unregistered wells encountered during construction will be sealed and properly abandoned in compliance with MDH regulations prior to site development. The existing farmsteads will be connected to City water mains when development reaches them.

Public water service is not presently available to the entire AUAR area. The City has three existing wells: unique well numbers 700302 (Well #4), 700301 (Well #5), and 843402 (Well #6). The wells have a total pumping capacity of 1,300 gpm. The Full Build area is anticipated to have a water demand of approximately 7,300 gpm. Additional wells will be required to meet these demands. Based upon an assumed average pumping capacity of 400 gpm for each well, it is anticipated that an additional 17 wells will need to be constructed to meet the demands of the Full Build area. Additional wells will be constructed as development within the areas progress and additional pumping capacity is warranted. The Minnesota Department of Natural Resources (DNR) Water Appropriations Permit will need to be amended to provide for this water usage.

The groundwater aquifer is considered “non-vulnerable” in the Montrose area, due to a thick clay layer that separates the water table that feeds the surface water from the drinking water aquifer. Therefore, additional pumping of the drinking water aquifer should not affect the surface waters, such as wetlands. The city is currently developing a wellhead protection plan to identify and manage potential sources of contamination in areas that supply water to the City’s wells.

Due to the unknown layout of plats within the AUAR area, a proposed well configuration layout would only be conceptual at this time and therefore is not included. Also, since watermains will be installed as development progresses and the location of future wells is dependent upon the proximity of adjacent watermains it would be difficult to determine the location of future wells at this time. As the AUAR is updated every five years, maps could be developed showing the location of more immediate proposed wells.

Monitoring wells to monitor effects of the increase in appropriation will be drilled at each proposed well location prior to the construction of the well. Test pumping and aquifer data at the proposed well location will be gathered and submitted to the DNR for approval prior to the new well construction. Also, the City converted well 3 to an environmental monitoring well, this increased their monitoring wells to three total. The system will allow the aquifer to be monitored at existing well locations for aquifer levels including drawdowns, static water level, and provide a history of aquifer level data useful in analyzing aquifer sustainability.

The City’s existing water supply meets all National Primary Drinking Water Regulations. The existing water supply does contain levels of manganese around 0.8 mg/L to 1.4 mg/L. These levels exceed the recommended secondary drinking water

standard of 0.05 mg/L. Polyphosphate is added into the distribution system to help combat the higher levels of manganese by keeping the manganese particles in suspension. Iron and manganese levels will continue to be monitored as new wells are constructed.

Development within the AUAR area will require that the City of Montrose trunk water distribution system be extended to serve future development. The trunk water distribution system will be installed as development occurs, and will be funded by development charges. The proposed trunk water main layout is shown in *Figures 12 through 16 of the 2018 AUAR Update*. *Figure 17 of the 2018 AUAR Update* shows the existing conditions water pressure. *Figure 18 of the 2018 AUAR Update* shows existing conditions fire flow. *Figure 19 of the 2018 AUAR Update* shows the proposed Interim Build water pressure. *Figure 20 of the 2018 AUAR Update* shows proposed Interim Build fire flow. *Figure 21 of the 2018 AUAR Update* shows the proposed Full Build water pressure. *Figure 22 of the 2018 AUAR Update* shows proposed Full Build fire flow.

Currently, the City of Montrose has one 250,000-gallon elevated water tower and one 50,000-gallon elevated water tower. The City's 5-year capital improvement plan includes plans to construct a new 250,000-gallon water tower to replace the existing 50,000 gallon water tower. This will bring the total storage capacity to 500,000 gallons. One additional 750,000-gallon water tower will be constructed within the Interim Build area towards the north boundary line and one 500,000 gallon tower would be constructed towards the south boundary line as shown in *Figure 12 of the 2018 AUAR Update*. Another 500,000-gallon and 1,000,000-gallon water tower will be constructed as part of the full build area. All towers will be constructed as development progresses and storage needs warrant an additional water tower. Water flow and pressure will be adequate for service to the entire AUAR area with the proposed water towers and trunk line distribution system.

One or more temporary Minnesota DNR Water Appropriation Permits may be necessary to conduct construction dewatering. Dewatering may be necessary during construction to install sanitary sewer, municipal water, and storm sewer in some areas. Construction dewatering is usually conducted less than 15 feet under the ground. Contractors will carry out these activities on a case-by-case basis at the minimum duration and quantity necessary to construct utility service for the affected sites. A temporary DNR Water Appropriation Permit will be required if construction dewatering and pumping from development exceeds 10,000 gallons per day or 1,000,000 gallons per year. The DNR General Permit 97-0005 for Temporary Water Appropriations will apply if construction dewatering does not exceed 50 million gallons in total and duration of one year from the start of pumping. The quantity and duration of construction dewatering is not known at this time, but dewatering activities will be temporary. It is not anticipated that construction dewatering or pumping will be extensive or continue long enough to impact domestic or municipal wells. Groundwater appropriated for construction dewatering purposes will be discharged into temporary or permanent ponds located within the AUAR area.

2. Water Quality: Surface Water Runoff

This section identifies the selected technique for long-term treatment of storm water runoff, as well as rate and volume mitigation measures meeting State, County and City requirements. Storm water runoff from construction sites was addressed in *Item 16 of the 2018 AUAR Update*. The City's Surface Water Management Plan (SWMP) and the City's Comprehensive Plan indicate the desire for a regional approach to storm water treatment and management. The goals of surface water management include the following:

- Identification of waters receiving runoff from the site.
- Limitation of post-development discharges to pre-development discharges for the 2-, 10-, and 100-year rainfall events using regional retention basins.
- Provision of permanent-pool volume for water quality treatment in accordance with NURP guidelines.
- Emphasis on importance of reducing runoff volumes typically seen with new development.
- Maintenance or improvement of existing wetland value.
- Reduction of public expenditures necessary to control excessive volumes and rates of runoff.
- Flood reduction.
- Identification of current and future drainage patterns.
- Protection and enhancement of the area's natural habitat.
- Promotion of ground water recharge.
- Protection of water quantity and quality in wetlands.
- Reduction in erosion from surface flows.

Since there were areas of the AUAR area that were not covered by the SWMP, those areas were also modeled in the same method and are discussed below. Storm water runoff from the AUAR area travels in three general directions: north, south and east. The entire area is within the North Fork of the Crow River watershed, so it eventually drains to the North Fork of the Crow River, which lies northeast of the AUAR area.

The volume and rate of runoff water generated by the AUAR area will increase with the higher concentration of impervious area associated with development. The primary technique for mitigation of these effects will be through the construction of "wet" regional retention ponds, which will be designed to treat the runoff and maintain existing discharge rates for the design storms. Wet sedimentation ponds shall be designed in accordance with the MPCA NPDES Construction Stormwater Permit Requirements. The ponds will be located within outlots with the City of Montrose having ownership and being responsible for long-term maintenance. The regional ponds will not be built in wetlands. Wetlands are discussed in *Item 12 of the 2018 AUAR Update*. Based on the specific features of the site, low impact development (LID) techniques may be considered during the concept plan review process and strategies could include, but not be limited to: impervious area minimization, natural vegetation retention, infiltration or filtration techniques (when soils permit) to aid in the reduction of discharge volumes, and storm sewer reduction (i.e. more overland flow through grass/vegetated swales to increase infiltration). This will help reduce impervious surfaces and encourage treatment and infiltration of

storm water near where it falls.

The storm water runoff was modeled using the SCS TR-20 methodology within the HydroCAD storm water modeling software. Pre- and post-development conditions were analyzed for the 2-year, 10-year, and 100-year rainfall events. The analysis included existing land cover conditions, as well as potential future conditions.

The existing watershed boundaries, drainage patterns and node identifications as used in the modeling are indicated in *Figure 28 of the 2018 AUAR Update*. The majority of the soils within the central and southern areas of the study boundary are of HSG Type B, HSG Type B/D (Type D, but acts like Type B if drained) and Type A/D (Type D, but acts like Type A if drained), with isolated areas in HSG Type D. In the northeastern and eastern portions of the AUAR area, there are more HSG Type A, HSG Type A/D and HSG Type B/D soils. See Figure 27 for Hydrologic Classifications of soils in the AUAR area. The Type A soils allow for rapid infiltration, Type B soils allow for moderate infiltration, while the D soils have much slower infiltration rates and are often found in low, wet areas.

The potential for a junior high school to be constructed in the near future and more elementary schools to be constructed in the more distant future would involve replacement of a portion of low-density residential land use with a school site. The percentage of impervious surfaces would likely be higher for a school around the building and parking lot area, but there would also be playing fields associated with the school that would have a lower percentage of impervious surfaces. It is expected that the land area occupied by the school would average out to have a similar percentage of impervious as the residential land area. Accordingly, a separate analysis of school impacts on storm water was not undertaken.

The pond sizes and locations shown in *Figure 28 of the 2018 AUAR Update* are conceptual and based on land use assumptions, and will be finalized when specific development is proposed for each pond's watershed. Because the regional ponds' locations are flexible to some degree, they could be placed in parks. For that reason, proposed ponds and park search areas are included for reference. The pond outlet structures may vary somewhat from those modeled, but all outlet structures will contain skimming devices of some sort. 1.5-inch spaced trash rack rods are recommended to prevent discharge of floatable trash and litter to public waters. The storm sewer conveyance system will depend on detailed site layout and has not been included as part of this study.

The required volumes and surface areas for proposed ponds (*Figure 28 of the 2018 AUAR Update*) are summarized in *Table 10, "Regional Pond Design."* In addition to the runoff treatment and rate control, filtration measures may be incorporated as further development planning occurs. Localized methods, such as raingardens, may be implemented to achieve this goal; however, should smaller scale methods prove impractical, then a more regional filtration "shelf" may be desired for the regional ponds mentioned in this document.

Table 10: Regional Pond Design			
Pond I.D.	Drainage Area (Acre)	Required Volume (Acre-Ft)	Pond Surface Area (Acre)
A1-PD	160.7	17.59	4.15
A2-PD	113.8	27.80	6.56
A3-PD	46.4	1.17	0.28
A4a-PD	40.9	3.4	0.80
A4b-PD	59.7	12.44	2.94
A5a-PD	106.7	11.40	2.69
A5b-PD	16.7	1.69	0.40
A6a-PD	108.8	15.46	3.65
A7-PD	58.10	7.00	1.65
A8-PD	163.7	26.45	6.24
A9-PD	41.1	3.66	0.86
A10a-PD	52.4	4.81	1.13
A10b-PD	38.1	2.93	0.69
A10c-PD	92.1	8.51	2.01
A10d-PD	61.1	4.46	1.05
A11a-PD	59.1	4.98	1.18
A11b-PD	16.2	1.49	0.35
A13b-PD	57.2	4.93	1.16
A13c-PD	56.2	5.16	1.22
A15b-PD	32.4	2.50	0.59
A15c-PD	63.1	5.29	1.25
A15d-PD	26.5	1.68	0.40
A17a-PD	125.9	11.55	2.73
A17b-PD	136.6	15.46	3.65
A17c-PD	309.0	28.55	6.74
A18a-PD	161.1	15.72	3.71
A20a-PD	41.7	3.91	0.92
A20b-PD	104.8	10.41	2.46
A22b-PD	136.8	12.36	2.92
A23b-PD	146.3	14.24	3.36
A23c-PD	224.8	18.69	4.41

Table 10: Regional Pond Design			
Pond I.D.	Drainage Area (Acre)	Required Volume (Acre-Ft)	Pond Surface Area (Acre)
A23d-PD	58.1	5.58	1.32
A23e-PD	89.7	8.15	1.92
A23f-PD	12.2	1.04	0.25
A23g-PD	56.3	5.67	1.34
A25c-PD	20.2	2.04	0.48
A26a-PD	72.3	6.58	1.55
A29a-PD	16.8	1.54	0.36
A29b-PD	23.5	1.84	0.43
A27b-PD	55.6	5.01	1.18
A27c-PD	35.7	3.59	0.85
A27d-PD	96.6	9.50	2.24
A28a-PD	98.3	7.64	1.80
A28c-PD	75.2	7.38	1.74
A30a-PD	66.4	6.48	1.53
A30b-PD	101.7	7.70	1.82
A30d-PD	53.6	5.41	1.28
A30e-PD	43.8	3.76	0.89
A30f-PD	38.8	3.91	0.92
A30g-PD	30.1	2.77	0.65

Table 11, “Stormwater Model Results – Existing Conditions,” and Table 12, “Stormwater Model Results – Proposed Full-Build Conditions,” indicate the pre- and post-development flow rates for the design storms.

Table 11: Stormwater Model Results – Existing Conditions					
Sub-Catchment	Drainage Area (Acre)	Composite CN	Q2 (Cubic ft per sec) (P=2.7") ¹	Q10 (Cubic ft per sec) (P=4.1") ¹	Q100 (Cubic ft per sec) (P=5.9") ¹
A1	160.70	78	13.32	41.11	104.10
A2	113.80	78	70.40	159.51	286.82
A3	46.40	63	6.32	29.34	71.84
A4a	40.90	73	14.53	38.48	75.04
A4b	104.10	70	18.28	53.91	111.49
A5	349.50	77	25.09	82.48	206.78
A5a	106.70	78	13.93	45.61	118.32
A5b	16.70	78	7.14	16.26	29.34
A5c	114.00	71	20.14	57.65	117.28
A6	329.90	76	26.95	87.38	217.51
A6a	108.80	73	10.67	33.07	86.52
A7	58.10	73	4.62	11.75	22.83
A8	163.70	77	13.08	42.20	106.21
A9	42.30	69	15.57	48.75	101.40
A10a	52.40	72	20.96	57.92	114.51
A10b	59.10	69	20.96	39.64	83.34
A10c	92.10	78	8.70	28.56	71.18
A10d	61.10	74	7.77	24.96	63.88
A11a	32.70	79	22.44	49.48	87.79
A11b	16.20	72	6.66	18.27	36.20
A11c	104.60	79	11.98	38.06	100.71
A13a	52.60	78	33.70	76.26	137.24
A13b	57.20	76	27.71	66.48	123.03
A13c	56.20	75	21.57	53.49	100.62
A14b	53.00	71	10.69	30.49	61.54
A15a	65.60	71	21.89	62.88	126.57
A15b	32.40	76	19.20	45.89	84.76
A15c	63.10	78	31.53	71.21	128.41
A15d	25.80	60	1.84	11.22	30.36
A16	64.10	59	2.15	11.41	30.86
A17a	125.90	74	12.33	41.64	103.63
A17b	136.60	77	14.32	46.97	117.78

Table 11: Stormwater Model Results – Existing Conditions					
Sub-Catchment	Drainage Area (Acre)	Composite CN	Q2 (Cubic ft per sec) (P=2.7") ¹	Q10 (Cubic ft per sec) (P=4.1") ¹	Q100 (Cubic ft per sec) (P=5.9") ¹
A17c	187.10	75	18.94	61.68	159.22
A18a	161.10	77	12.45	39.42	98.37
A18b	80.50	77	11.59	39.75	99.43
A19	169.60	73	6.97	18.50	45.91
A20a	41.70	78	31.33	70.55	126.61
A20b	104.80	75	5.95	18.15	46.56
A21	248.00	77	9.63	31.70	76.10
A22a	355.50	78	11.50	34.79	84.88
A22b	136.80	76	5.60	16.17	38.81
A23a	76.00	76	4.02	11.79	29.51
A23b	146.30	70	6.42	20.97	50.23
A23c	224.80	78	7.92	22.00	54.05
A23d	58.10	78	33.78	76.72	138.12
A23e	89.70	75	4.51	13.30	33.51
A23f	12.20	75	8.06	19.77	37.00
A23g	56.30	78	25.19	57.28	103.21
A24	58.50	79	86.85	184.86	320.56
A25a	178.30	75	121.78	297.61	555.80
A25b	20.70	78	17.63	39.46	70.49
A25c	20.20	78	11.91	26.93	48.33
A26a	72.30	77	5.59	18.55	45.45
A26b	21.40	85	27.85	53.11	86.63
A27a	12.30	82	13.63	27.70	46.99
A27b	55.60	74	32.31	82.17	156.28
A27c	35.70	78	27.55	61.97	111.01
A27d	96.60	79	8.49	28.61	71.73
A28a	98.30	78	9.37	31.74	78.34
A28b	29.60	78	24.51	54.89	97.99
A28c	75.20	74	20.75	52.97	101.65
A29a	16.80	75	11.87	28.88	53.85
A29b	23.50	69	5.54	17.43	36.76

Table 11: Stormwater Model Results – Existing Conditions					
Sub-Catchment	Drainage Area (Acre)	Composite CN	Q2 (Cubic ft per sec) (P=2.7") ¹	Q10 (Cubic ft per sec) (P=4.1") ¹	Q100 (Cubic ft per sec) (P=5.9") ¹
A29c	16.40	82	22.24	44.86	75.65
A30a	66.40	78	27.71	62.94	113.66
A30b	101.70	73	6.86	20.50	49.30
A30c	44.50	82	60.35	121.71	205.27
A30d	53.60	73	18.02	47.70	92.97
A30e	43.80	75	18.82	46.47	87.55
A30f	38.80	78	18.58	42.18	76.02
A30g	30.10	76	24.97	58.84	108.07

¹P = Precipitation (inches of rain in 24 hours).

Table 12: Stormwater Model Results – Proposed Full Build Conditions					
Sub-Catchment	Drainage Area (Acre)	Composite CN	Q2 (Cubic ft per sec) (P=2.7") ¹	Q10 (Cubic ft per sec) (P=4.1") ¹	Q100 (Cubic ft per sec) (P=5.9") ¹
A1	160.70	78	7.88	37.25	69.24
A2	113.80	79	0.89	4.07	7.04
A3	46.40	54	0.75	2.51	19.38
A4a	40.90	78	6.95	24.91	70.57
A4b	59.70	80	2.46	10.62	34.43
A5	349.50	77	25.09	82.48	206.78
A5a	106.70	80	9.66	43.48	109.96
A5b	16.70	79	0.87	12.50	24.27
A5c	114.00	71	20.14	57.65	117.28
A6	329.90	76	26.95	87.38	217.51
A6a	108.80	88	8.36	29.18	83.92
A7	58.10	82	4.35	9.44	22.59
A8	163.70	90	10.35	33.52	88.62
A9	42.30	77	5.21	19.90	48.88
A10a	52.40	75	4.87	19.40	62.66
A10b	59.10	74	4.73	19.64	69.90
A10c	92.10	78	5.39	23.92	64.75
A10d	61.10	75	6.67	24.21	62.61
A11a	32.70	79	6.47	20.04	55.12
A11b	16.20	75	2.64	5.29	17.99
A11c	104.60	79	11.98	38.06	100.71
A13a	52.60	78	33.70	76.26	137.24
A13b	57.20	77	7.25	22.01	92.24
A13c	56.20	75	4.77	19.36	64.02
A14b	53.00	71	10.69	30.49	61.54
A15a	65.60	71	21.89	62.88	126.57
A15b	32.40	73	3.40	16.69	32.41
A15c	63.10	79	8.27	13.86	114.67
A15d	25.80	68	1.12	5.24	26.25
A16	64.10	59	2.15	11.41	30.86
A17a	125.90	77	6.63	32.42	85.08

Table 12: Stormwater Model Results – Proposed Full Build Conditions

Sub-Catchment	Drainage Area (Acre)	Composite CN	Q2 (Cubic ft per sec) (P=2.7")¹	Q10 (Cubic ft per sec) (P=4.1")¹	Q100 (Cubic ft per sec) (P=5.9")¹
A17b	136.60	82	8.88	37.31	100.17
A17c	323.70	78	10.15	40.53	143.82
A18a	161.10	78	7.60	35.35	96.16
A18b	80.50	77	11.59	39.75	99.43
A19	169.60	73	6.97	18.50	45.91
A20a	41.70	79	7.07	21.13	54.71
A20b	104.80	79	3.91	16.58	44.14
A21	248.00	77	9.63	31.70	76.10
A22a	355.50	78	11.50	34.79	84.88
A22b	175.30	78	3.99	16.81	36.95
A23a	76.00	76	4.02	11.79	29.51
A23b	146.30	78	4.66	19.89	49.25
A23c	224.80	78	5.19	17.65	50.45
A23d	58.10	81	10.37	34.21	111.34
A23e	89.70	77	4.05	12.07	33.26
A23f	12.20	75	0.04	1.16	8.60
A23g	56.30	79	7.42	21.53	62.26
A24	58.50	79	86.85	184.86	320.56
A25a	178.30	75	121.78	297.61	555.80
A25b	20.70	78	17.63	39.46	70.49
A25c	20.20	79	5.35	11.14	24.27
A26a	72.30	79	3.95	17.69	43.98
A26b	21.40	85	27.85	53.11	86.63
A27a	12.30	82	13.63	27.70	46.99
A27b	55.60	76	2.18	10.32	64.03
A27c	35.70	79	2.15	9.60	46.46
A27d	96.60	79	4.30	18.53	63.40
A28a	98.30	79	4.25	15.92	74.76
A28b	29.60	78	24.51	54.89	97.99
A28c	75.20	79	5.78	26.46	86.09
A29a	16.80	75	1.07	5.53	21.86

Table 12: Stormwater Model Results – Proposed Full Build Conditions					
Sub-Catchment	Drainage Area (Acre)	Composite CN	Q2 (Cubic ft per sec) (P=2.7") ¹	Q10 (Cubic ft per sec) (P=4.1") ¹	Q100 (Cubic ft per sec) (P=5.9") ¹
A29b	23.50	72	2.55	7.04	18.65
A29c	16.40	82	22.24	44.86	75.65
A30a	66.40	79	9.95	26.28	75.19
A30b	101.70	73	2.09	8.82	39.99
A30c	44.50	82	60.35	121.71	205.27
A30d	53.60	78	4.45	19.45	41.54
A30e	43.80	77	8.10	20.06	46.69
A30f	38.80	79	4.45	19.97	42.19
A30g	30.10	77	1.78	8.53	53.71

¹P = Precipitation (inches of rain in 24 hours).

As shown in the tables above, the regional ponding would reduce existing runoff discharge rates from the site and, as expected, the volume of water discharging from the site would increase after development. However, these numbers do not reflect pond infiltration or evaporation, nor any infiltration or LID techniques implemented within the study area.

The ponds have been designed and sized to the standards of the City's SWMP, which meet the NPDES requirements (e.g., dead-pool storage, 10 ft bench, etc.). As additional information becomes available (e.g., more detailed topographic information) it may become evident that local treatment ponds are necessary for treatment of isolated runoff. Any localized development ponds that are sized for the site will be required to meet the standards of the City's SWMP. The City of Montrose will require a long-term maintenance plan for storm water retention ponds to be in place before giving final plan approval to developers. The City charges each resident a storm water utility fee each month, and these funds are used to operate and maintain the storm water retention ponds. As development occurs, the City of Montrose will discuss a process to fund, acquire, and develop regional ponds.

Storm water runoff from the AUAR area travels in three general directions: north, south and east. Major receiving waters include Malardi Lake, Mud Lake, Fountain Lake, and many unnamed wetlands. The entire area is within the North Fork of the Crow River watershed, so the runoff from the area eventually drains to the North Fork of the Crow River.

Pre-development land use within the AUAR area is predominantly cultivated row cropland, which contributes higher amounts of phosphorus when compared to urban or undisturbed land uses. According to previous studies, agricultural runoff is usually considered a more important cause of phosphorus loading and lake eutrophication than is urban runoff.

Because a large portion of the soils in the AUAR area have rapid to moderate infiltration rates, infiltration will be encouraged (where appropriate) to reduce stormwater volumes and recharge groundwater. Infiltration may be implemented in the form of raingardens and infiltration “shelves” in regional wet sedimentation ponds. This means that, above the normal water level of the ponds, the soil will be permeable so that any water above the normal water level will be infiltrated.

According to the MPCA, an Unnamed Creek/Unnamed Ditch (Assessment Unit ID 07010204-667), which runs from Mud Lake (Woodland WMA) to the North Fork Crow River on the eastern side of the AUAR area, is listed as impaired and a Total Maximum Daily Load (TMDL) limit is needed for dissolved oxygen and nutrients. This channel also has an approved TMDL for E. coli. The North Fork of the Crow River (Assessment Unit ID 07010204-503) to the northeast but not inside of the AUAR area, was delisted in 2016 for a previous dissolved oxygen impairment.

Activities to develop a TMDL typically result in Waste Load Allocations (WLA) or limitations that are imparted onto current MPCA permitted authorities, including Wastewater Treatment Plant permits, Industrial permits, Construction Stormwater Permits and Municipally Separate Storm Sewer System (MS4) permits. The City of Montrose can be indirectly affected by current and future waste load allocations through construction storm water permits and its share in the wastewater treatment plant. In addition, industries within the City of Montrose that are required to submit Industry specific permits, may also be included in potential future waste load allocations. These will all be addressed as they are implemented.

The current population in Montrose is insufficient for MPCA to require a city-wide Municipally Separate Storm Sewer System (MS4) permit. If an MS4 permit is required of Montrose in the future, the City will most likely need to implement appropriate ordinances and other controls to meet TMDL and waste load allocations. If or when this occurs, the City will comply with future requirements as set forth by the DNR, MPCA, and any other state and federal agencies resulting from impairments and associated TMDL studies of the downstream receiving waters.

3. Water Quality: Wastewater

A comprehensive sanitary sewer study was completed for the City of Montrose by Bolton & Menk, Inc., and is a part of the City's Comprehensive Plan. The comprehensive sanitary sewer study was based upon the land use plan as shown in *Figure 6, "Ultimate Land Use."* The plan was developed with the two-phase approach of Interim and Full Build areas as described in *Chapter 2.II, "Project Magnitude Data."* *Figure 29 of the 2018 AUAR Update* shows the proposed lift station service areas. *Figures 30 and 31 of the 2018 AUAR Update* show the existing sewer conditions. *Figures 32 through 35 of the 2018 AUAR Update* show the proposed sanitary sewer collection system improvements for the interim area and *Figures 36 through 39 of the 2018 AUAR Update* show the same for the full build area.

Design Criteria:

Calculation of wastewater flows from development of the AUAR area were based upon residential densities as outlined in *Chapter 2.II, "Project Magnitude Data."* The design criteria used were based on the Recommended Standards for Wastewater Facilities (2004 Edition) prepared by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (Ten States Standards) and as adopted by the State of Minnesota. Projected sewer flow rates were calculated using the following criteria:

Per capita flow rate:	100 gallons/day
Residents per household:	2.5
Peaking Factor Residential:	3.0 (Population based)
Low Density Residential:	3 units /acre
Medium Density Residential:	8 units/acre
Peaking Factor Commercial/Industrial:	3.0
Commercial:	1500 gal/acre/day
Industrial:	2500 gal/acre/day

Table 13: Summary of Total Wastewater Flows within AUAR Study Boundary (Includes Flows from Existing Developed Areas and AUAR Study Exclusion Areas)

Land Use	Developable Acres	Households Per Acre	Total Households	Population	Flow Calculation	Total Avg. Daily Flow (MGD)
Low Density Residential	3,438	3	10,314	25,785	100 gal/person/day	2.58
Medium Density Residential	421	8	3,368	8,420	100 gal/person/day	0.84
High Density Residential	30	12	360	900	100 gal/person/day	0.09
Commercial	342	-	-	-	1500 gal/acre/day	0.51
Industrial	420	-	-	-	2500 gal/acre/day	1.05

Total average daily flow from AUAR Full Build Area = 5.07 mgd

The collection system has been sized to accommodate development from both the Interim and Full Build areas. Layout of the collection system has been designed such that construction of any portion of the system outside of the Interim Build area will not be necessary to serve the Interim Build area. Based upon the design criteria listed above, total anticipated wastewater flows from the Full Build AUAR area are a total average daily flow of 5.07 MGD and a peak flow of 15.22 MGD (3.0 Peaking Factor) resulting from the Full Build scenario. The total flow includes existing and future flows from the study area exceptions within the AUAR study boundary as shown in *Figure 2, "Environmental Study Area - USGS,"* and *Figure 3, "Environmental Study Area - Aerial."*

The majority of the recommended collection system improvements will be implemented as development occurs. In other words, it is intended to construct the necessary trunk sewer lines and lift stations as part of each individual development. There is a possibility that specific cases will require service before a trunk main is in place to serve the area. Each of those cases will be evaluated at that time.

Wastewater from Montrose and Waverly are treated at the Montrose Regional Wastewater Treatment Facility. The receiving water for the discharge from Montrose's wastewater treatment facility is to an unnamed wetland (Woodland WMA) and then to an unnamed creek. The treatment facility operates under a NPDES permit and can treat an average wet weather flow of 0.781 mgd, a peak hourly wet weather flow of 1.380 mgd, 740 lbs/day of carbonaceous biological oxygen demand (CBOD5) and 822 lb/day of total suspended solids (TSS). The monthly average NPDES treatment limits are: 25 mg/l CBOD5, 45 mg/l TSS, 200 organisms per 100/ml fecal coliform, pH range of 6.0 to 9.0 standard units and 1 mg/l phosphorous. The treatment facility is meeting all current permit limits.

The City of Montrose is currently undergoing the permit renewal process for their NPDES/SDS Permit, their last permit was issued on February 1, 2018. The permit expired on January 31, 2023. Due to expected growth in the cities of Montrose and Waverly, as well as more stringent limits on receiving waters, discharge limits for the Montrose Wastewater Treatment Facility might become more stringent. The BOD limit might change from 25 mg/L to 15 mg/L and the TSS limit might change from 45 mg/L to 30 mg/L for the monthly average. The phosphorus limit might change from a monthly average of 1 mg/L to a mass-loading limit based on the current NPDES permit. Based on the current treatment facility AWW flow of 0.781 mgd, the phosphorous monthly limit is 1.3 kg/day average. The Minnesota Pollution Control Agency (MPCA) must yet determine the final NPDES permit limits for future upgrades to the wastewater treatment facility.

The farmsteads in the AUAR area have septic systems. The farmsteads will be connected to City sanitary sewer as the development reaches them and they are annexed into the City. At that time their septic systems will be properly abandoned. This will improve the quality of groundwater in areas that currently have septic systems.

The sanitary wastewater will discharge to the publicly owned, Montrose Regional Wastewater Treatment Facility. The existing facility has an average wet weather treatment capacity of 0.781 mgd and will require expansion to handle the proposed wastewater flows and loadings. The City is currently finalizing a wastewater treatment facility plan to address the future demanded increase in flows and loadings as development occurs and will continue to complete additional expansions as needed.

The estimated future flow to the Montrose Regional Wastewater Treatment Facility is 5.86 MGD average daily flow, shown in *Table 14, "Summary of Total Wastewater Flows to Montrose Regional Wastewater Facility."* Flows from the mobile home park are included in the Montrose subtotal flows.

Table 14: Summary of Total Wastewater Flows to Montrose Regional Wastewater Facility				
Location	Number of Connections	Population	Flow Calculation	Total Avg. Daily Flow (MGD)
Existing Waverly Flow Total	860	1,921	54 gal/person/day	0.103
Future Flows from Waverly LS #1 (TH 12)	551	1,378	100 gal/person/day	0.138
Future Flows from Waverly LS #2 (Carrigan Meadows)	953	2,383	100 gal/person/day	0.238
Future Flows from Waverly Future LS (NE Waverly)	1,248	3,120	100 gal/person/day	0.312
<i>SUBTOTAL WAVERLY FLOWS</i>	<i>3,272</i>	<i>8,180</i>		<i>0.792</i>
<i>SUBTOTAL MONTROSE FLOWS</i>				<i>5.07</i>
TOTAL FLOW TO MONTROSE REGIONAL WWTF				5.862

An estimated timeline for treatment plant expansion has been created using population milestones. Since the timeline for treatment plant expansions will rely solely on how quickly development occurs, accurate dates for treatment plant expansions cannot be estimated. An estimate of 100 gallons/person/day has been used in *Table 15, "Estimated Timeline for Expansion of Montrose Regional Wastewater Facility."* At the present time, flows from commercial and industrial land uses within Montrose and Waverly are minimal. The area's trends have shown that residents in Montrose and Waverly typically use less than 80 gallons/person/day. Therefore, the 100 gallons/person/day would allow for some flow from commercial and industrial uses. If large industrial wastewater developments occur, the below table would need to be adjusted accordingly.

Table 15: Estimated Timeline for Expansion of Montrose Regional Wastewater Facility

Facility Expansion	WWTP Capacity	Estimated Maximum Population WWTP Will Service (Combined Montrose & Waverly)
Current	0.78	7,800
Expansion #1	1.0	10,000
Expansion #2	1.5	15,000
Expansion #3	3.0	30,000
Expansion #4	6.0	60,000

Alternatives for expansion of the treatment facility will include expanding to an activated sludge treatment process. The activated sludge process, particularly extended aeration facilities, has commonly been designed for cities, which must provide both industrial and municipal wastewater treatment. Activated sludge systems have the ability to treat shock or inconsistent loadings, the flexibility and reliability to produce an effluent to meet the discharge limits, and to provide low operation and maintenance costs.

The following is a description of the proposed individual treatment components:

Screenings

A mechanical bar screen would provide removal of sticks, rags and the other large materials. These are removed to protect subsequent process equipment. The existing screen will be used at the new facility and the existing manual screen will be replaced with a new mechanical screen identical to the existing mechanical screen. The dewatered screenings would be loaded into trash containers and hauled away.

Grit Removal

Following screening, flow would pass through the grit removal facilities, which removes sand, grit and other materials from the influent wastewater. Removing grit minimizes deposition of grit in downstream processes and premature wear of downstream process equipment. A vortex grit removal system is proposed for removing grit and would be housed in a new building and sized for future flows. In addition, a grit pump and grit classifier would be included as part of the grit removal

process.

Activated Sludge Process (Extended Aeration)

Extended aeration plants are characterized by the following: introduction of raw wastewater directly to the aeration basin; long-term aeration; high mixed liquor suspended solids concentration (MLSS); high return activated sludge (RAS) rate; and low sludge wastage. The particular advantage of using a long retention time (usually 18 to 24 hours in the aeration basin) is that the design permits the plant to operate effectively even though flow and strength vary widely and allow biological organisms to consume the organic matter and nitrify the ammonia.

Since activated sludge undergoes aerobic digestion in the aeration basin, more oxygen is required in the basin than is required in conventional single stage systems. To avoid excessively high MLSS and effluent solid losses, periodic solids wasting is required. The accumulation of inert solids actually controls the rate of sludge wasting. The extended aeration basin will be designed with a maximum solids retention time (SRT) of 25 days, organic loading of 15 lb/day/1000 cubic feet of basin volume, a food to mass (F/M) ration between 0.08-0.1 lbs CBOD₅/lbs MLVSS/D, MLSS between 2,500-3,500 mg/l and 1.5 lbs O₂/lbs of peak hourly CBOD₅.

An anoxic and anaerobic basin for biological phosphorous removal would be provided prior to the aeration basin and allow for partial removal of influent phosphorous. A chemical feed system will continue to be utilized to ensure effluent phosphorous limits are met.

Final Clarifier

Activated sludge final clarifier must be designed to meet thickening as well as solid separation requirements. Since the rate of recirculation of return sludge from the final clarifier to the aeration basin is quite high, the surface settling rate and weir overflow rates should not exceed 900 gallons per day per square foot (gpd/ft²) and 30,000 gallons per day per lineal foot, respectively. Using these surface settling rates and weir overflow rates, problems with sludge loading density currents, inlet hydraulic turbulence and occasional poor sludge settleability will be minimized. Solid loading rates are also maintained at a 35 lb/day/ft² maximum. Scum collection and removal facility will be provided as well as sludge suction withdrawal in order to minimize effects of nitrification in the final clarifier. Two new final clarifiers, similar to the existing clarifiers, will be provided to augment the existing clarifiers. Due to heat loss in an extended aeration system, covers for the final clarifiers are provided in order to avoid freeze-up of the scum collection mechanism. As previously discussed, chemical feed facilities will also be provided for additional phosphorous removal if the biological process is not sufficient.

Tertiary Treatment

As previously discussed, tertiary treatment is required to meet the stringent effluent phosphorous requirements. Tertiary treatment processes consist of filtering the wastewater prior to discharging into the receiving stream. Tertiary filters are used to remove biological particulate, suspended solids, and residual insolubilized phosphorous that may be carried through a secondary treatment process. Tertiary treatment systems can be classified as granular media filtration systems and

membrane filtration systems. Due to the stringent requirements and the growth potential, membrane filters are the recommended treatment alternative.

Membrane filters consist of microfiltration (0.1 microns) and ultrafiltration (< 0.1 microns) and are pressure driven to remove very fine particles from the wastewater. Membrane filters contain hollow fibers and the filtration takes place from the outer surface of the fiber to the hollow inner core. Feed liquid passes through the porous wall of the fibers while the solids in the feed stream are retained on the outside fiber wall. The difference in pressure between the outside and the inside of the fibers is known as the transmembrane pressure (TMP). The TMP is the pressure that drives the liquid through the porous walls of the membrane, filtering the liquid in the process. Feed and filtrate pressures are measured by pressure transmitters and the TMP is calculated. As particles build up on the membrane surface during filtration, an increase in TMP is required to maintain a constant flow rate. To restore performance, these particles must be removed periodically by backwashing. Backwashing typically consists of air scouring, chemical scouring and liquid backwashing. Backwash is sent to a backwash tank and eventually pumped to the head of the facility for treatment. Since membrane filters have very small pore sizes, a 1mm punch screen is recommended in front of the filters to provide protection of the filters.

Benefits of membrane technology are the modular nature of membrane filters allows for increasing filter capacity by adding additional modules and the newer technology results in better effluent quality than conventional media filtration.

Disinfection

Ultraviolet (UV) light is a physical rather than a chemical disinfecting agent as compared to chlorine. UV radiations penetrate the cell wall of the microorganisms and are absorbed by nucleic acids, which either prevent replication or cause the death of the cell. The effectiveness of UV disinfection depends on UV intensity and exposure time. An open-channel single train disinfection system, using low-pressure high-intensity UV lamps, would be provided for disinfection of the water before discharging. The existing UV disinfection system will be expanded to disinfect the increased flows. Additional banks of lamps will be provided to increase the capacity of the existing system.

Biosolids Treatment & Storage

Wastewater biosolids, or sludge, consists of solids removed from raw wastewater and biosolids generated in the treatment process. The proper handling and disposal of biosolids is an important aspect of wastewater treatment. A method that is economical and acceptable from health, environmental and aesthetic points of view must be selected.

From 2004 to 2016, Montrose stored their biosolids in an on-site storage tank. In 2016, Montrose made a policy decision to not apply biosolids to the land but rather dispose of stored biosolids at another processing facility. The City of Montrose recognized the many significant benefits to the environment by making this policy decision to not land apply biosolids. In 2020, Montrose pumped all the biosolids into bio-bags and hauled them to a landfill in 2022. It is intended that after facility improvements biosolids will be dewatered and sent to a landfill or another processing

facility moving forward as the AUAR area continues to be developed.

The treatment facility expansion will occur at the site of the exiting wastewater treatment facility and no additional land is required. The proposed treatment improvements will be located in one of the existing polishing ponds, and therefore no additional land is required to expand the wastewater treatment facility.

As an alternative the City is also considering regionalization. This alternative would require forcemain and main lift station improvements. The existing ponds would be converted to equalization basins and the main lift station would be designed for the average daily flow. The remaining ponds and processes would be decommissioned, and the city property could be used for additional purposes.

D. Contamination/Hazardous Materials/Wastes

The MPCA's "What's in My Neighborhood" mapper identified 24 potentially contaminated sites located within the AUAR boundary; these sites are listed in *Table 16, "Potentially Contaminated Sites Located Within AUAR Boundary."* Additionally, the MPCA "What's in My Neighborhood" mapper identified 19 potentially contaminated sites located within Study Area Exception areas (existing developed areas and areas in the process of being developed within the AUAR boundary); these sites are listed in *Table 17, "Potentially Contaminated Sites Located Within Study Area Exception Areas."* All MPCA "What's in My Neighborhood Sites" located within the AUAR boundary are shown on *Figure 8, "Potentially Contaminated Sites."*

For more information on potential impacts and associated mitigation measures related to the generation and treatment of solid wastes, toxic wastes, hazardous materials, and storage tanks, please refer to the 2018 AUAR Update.

Table 16: Potentially Contaminated Sites Located Within AUAR Boundary		
Site ID #	Site Name	Site or Permit Type
1193	Montrose WWTP	Water Quality
1197	Technical Ordnance - Montrose	Water Quality
1330	Montrose Investments - 12 Hi Estates	Water Quality
11699	Chucks Auto Body Shop	Hazardous Waste Generator
14640	Waste Management of MN	Hazardous Waste Generator
16609	Montrose Family Chiropractic - 185	Hazardous Waste Generator
16610	Montrose Family Dental Center	Hazardous Waste Generator
16614	Moon Motor Sales Inc - Hwy 25	Hazardous Waste Generator
40715	Mdnr Fisheries	Hazardous Waste Generator
107532	Varner Farms Inc	Investigation and Cleanup; Tanks
110908	Dnr Fisheries Hq	Investigation and Cleanup; Tanks
116108	PCM Of MN Inc	Tanks
131644	NSP - Montrose Service Center	Hazardous Waste Generator
147677	Old Gas Station/Mpca-Montrose Ust Site	Tanks
148271	Waste Management Of Mn	Tanks
148784	Emerys Truck & Trailer Repair Inc	Hazardous Waste Generator
152112	Dollar General 16105	Hazardous Waste Generator
185467	Rasset Property	Investigation and Cleanup

Table 16: Potentially Contaminated Sites Located Within AUAR Boundary		
Site ID #	Site Name	Site or Permit Type
189320	FitzSimmons Service Co Inc	Hazardous Waste Generator; Investigation and Cleanup
189512	Mn-dot Parcel 78	Investigation and Cleanup
191784	Former Twister Restaurant	Investigation and Cleanup
199276	Hayes & Sons Inc	SSTS
199357	RC Grading & Excavating Inc	SSTS
206228	Ouverson Excavating	SSTS

Table 17: Potentially Contaminated Sites Located Within Study Area Exception Areas		
Site ID #	Site Name	Site or Permit Type
15452	Marketons Body Shop Inc	Hazardous Waste Generator
16858	Jeff-Ex Inc	Hazardous Waste Generator
16859	210 Motor Sales	Hazardous Waste Generator
27868	Eden Electronics Inc	Hazardous Waste Generator
27869	Eden Electronics Woodcraft	Hazardous Waste Generator
106249	Montrose city of	Investigation and Cleanup; Tanks
107530	Formerly Johns Bait Shop	Investigation and Cleanup; Tanks
112869	Casey's General Store #1881	Investigation and Cleanup; Tanks
113920	Montrose Elementary School	Tanks
114226	Casey's General Store #3601	Investigation and Cleanup; Tanks
123231	Montrose Family Chiropractic	Hazardous Waste Generator
137146	Metalex Corp	Hazardous Waste Generator
138043	Montrose US Post Office	Tanks
186557	Adult Learning Center	Investigation and Cleanup
189478	US Highway 12 Reconstruction	Investigation and Cleanup
191528	Rasset Construction Services	Investigation and Cleanup
199922	Mobil Station	Investigation and Cleanup
221035	Montrose Compost Facility	Solid Waste
230981	Craft Pattern and Mold Inc	Air Quality; Hazardous Waste Generator; Stormwater

E. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

As part of early agency coordination efforts for this 2023 AUAR Update, a request for project review was submitted to the Minnesota Department of Natural Resources (MnDNR) Division of Ecological & Water Resources for Natural Heritage Information System (NHIS) on November 15, 2022. NHIS review determined that the Proposed Project would not negatively affect any known occurrences of State-listed threatened or endangered species. For more information, please refer to the Natural Heritage Letter and Project Report (MCE #2022-00784; received on November 15, 2022), which are included in *Appendix C, "Agency Coordination."*

Additionally, the United States Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool identified one Federally-listed endangered species (Northern Long-Eared Bat), one candidate species (Monarch Butterfly), and 12 migratory birds (Bald Eagle, Black Tern, Bobolink, Canada Warbler, Cerulean Warbler, Chimney Swift, Golden-Winged Warbler, Henslow's Sparrow, Lesser Yellowlegs, Red-Headed Woodpecker, Rusty Blackbird, and Short-Billed Dowitcher) that may be located within the Study Area. The USFWS IPaC Official Species List (generated on November 18, 2022) is included in *Appendix C, "Agency Coordination."*

The MnDNR maintains a list of townships within Minnesota that contain documented Northern Long-Eared Bat (NLEB) maternity roost trees and/or hibernacula. As of June 7, 2021, there are no identified NLEB trees or hibernacula located within Wright County. Although no NLEB trees or hibernacula have been documented within Wright County, there is potential for the species to be found throughout Minnesota. NLEBs hibernate in caves or mines during the winter (November to March) and roost in forest and woodland habitats during the active season (April to October). 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 potential impacts, MnDNR recommends that tree removal be avoided during the months of June and July.

The AUAR area also includes both the Malardi Wildlife Management Area (WMA) and the Woodland WMA. Neither of these areas will be negatively impacted by the development within the AUAR. The wetlands and woodlands provide habitat and cover for many species commonly found in the upper Midwest such as woodcock, thrushes, woodpeckers, amphibians, and birds of prey. For more information related to the WMAs located within the AUAR area, please refer to the 2018 AUAR Update.

F. Historic Properties

As part of early agency coordination efforts for this 2023 AUAR Update, a request for project review was submitted to the Minnesota State Historic Preservation Office (SHPO) on November 17, 2022. A response to this request was received from SHPO on December 16, 2022, concluding that there is one historic property that is listed in the National Register of Historic Places within the AUAR study area, the Hawkins Clinic, Hospital, and House, which is located at 210-230 Buffalo Avenue South. Additionally, SHPO concluded that Phase I Archaeological investigations should be conducted for individual projects as development occurs within the AUAR area. For more information, please refer to the SHPO Determination Letter, which is included in *Appendix C, "Agency Coordination."*

As new projects are conducted in the AUAR area, the potential for historical and archaeological resources will be further assessed in Cultural Resources Reviews done for individual projects as development occurs. The City will require developers to submit this information as part of the platting process. The preliminary assessments will include background research at the SHPO, review of historical maps and aerial photos, and a visual reconnaissance of the project area. The Phase I investigations will include using systematic pedestrian survey and shovel testing.

Chapter 4: Summary of Mitigation Measures

In summary, most of the impacts and mitigation measures outlined in the original 2008 AUAR document and 2018 AUAR Update remain valid. The topics requiring updated analysis for this 2023 AUAR Update are: Cover Types; Permit and Approvals; Water Resources; Contamination/Hazardous Materials/Wastes; Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features); and Historic Properties.

Table 18, “Summary of Mitigation Measures,” provides a summary of the original mitigation measures associated with these topics from the 2018 AUAR Update, plus any new mitigation measures identified within this 2023 AUAR Update. The rest of the document and mitigation plan remains unchanged from the 2018 AUAR Update.

Table 18: Summary of Mitigation Measures		
Areas of Potential Impact Identified in the AUAR Update	Mitigation Measures from the 2018 AUAR Update	New Mitigation Measures identified in the 2023 AUAR Update
Cover Types	<ul style="list-style-type: none"> None Identified. 	<ul style="list-style-type: none"> No Changes.
Permits and Approvals Required	<ul style="list-style-type: none"> None Identified. 	<ul style="list-style-type: none"> No Changes.
Water Resources: <i>Water Use</i>	<ul style="list-style-type: none"> Wet Sedimentation Basins shall be designed to Walker Design Standards. 	<ul style="list-style-type: none"> Wet Sedimentation Basins shall be designed to MPCA NPDES Construction Stormwater Permit standards.
Water Resources: <i>Water Quality - Surface Water Runoff</i>	<ul style="list-style-type: none"> There are a total of 109 wells within the AUAR boundary listed on the County Well Index. The City has four existing wells: unique well numbers 00235853 (Well #2), 00149692 (Well #3), 00700302 (Well #4), and 0700301 (Well #5). The wells have a total pumping capacity of 1,100 gpm. Therefore, additional pumping of the drinking water aquifer should not affect the surface waters, such as wetlands. Also, the City will be installing a continuous aquifer monitoring system in their primary two wells. Currently, the City of Montrose has one 250,000-gallon elevated water tower. The City will be constructing an additional 500,000-gallon tower in the near future. This will bring the total storage capacity to 750,000 gallons. One additional 750,000-gallon water tower will be constructed within the Interim Build area towards the north boundary line. Another 500,000- 	<ul style="list-style-type: none"> There are numerous existing wells within the AUAR boundary listed on the County Well Index The City has three existing wells: unique well numbers 700302 (Well #4), 700301 (Well #5), and 843402 (Well #6). The wells have a total pumping capacity of 1,300 gpm. The City is currently developing a wellhead protection plan to identify and manage potential sources of contamination in areas that supply water to the City’s wells. Also, the City converted well 3 to an environmental monitoring well, this increased their monitoring wells to three total. Currently, the City of Montrose has one 250,000-gallon elevated water tower and one 50,000-gallon elevated water tower. The City’s 5 year capital improvement plan includes plans to construct a new 250,000-gallon water

	gallon and 1,000,000-gallon water tower will be constructed as part of the full build area.	tower to replace the existing 50,000 gallon water tower. This will bring the total storage capacity to 500,000 gallons. One additional 750,000-gallon water tower will be constructed within the Interim Build area towards the north boundary line and one 500,000 gallon tower would be constructed towards the south boundary line as shown in Figure 12. Another 500,000-gallon and 1,000,000-gallon water tower will be constructed as part of the full build area.
Water Resources: <i>Water Quality - Wastewater</i>	<ul style="list-style-type: none"> • The City of Montrose is currently operating under the NPDES/SDS Permit issued on June 4, 2007. The permit had an original expiration date of May 31, 2012 but has been extended by the MPCA until the MPCA issues an updated permit. • Based on the current treatment facility AWW flow of 0.781 mgd, the phosphorous monthly limit is 6.51 lbs/day. • Since the Montrose Regional Wastewater Treatment Facility expansion in 2002 ... The MPCA is planning to remove the monitoring requirements on Woodland WMA during the next permit update. • The City will complete a wastewater treatment facility plan to address the future demanded increase in flows and loadings as development occurs. • Table 18-3 • In 2016, Montrose made a policy decision to not apply biosolids to the land but rather dispose of stored biosolids at the City of Buffalo's Biosolids Processing Plant. At this plant, biosolids are dried and incinerated. The City of Montrose recognized the many significant benefits to the environment by making this policy decision to not land apply biosolids. It is intended that biosolids will continue to be disposed of at the Buffalo Biosolids Facility moving forward as the AUAR area continues to be developed. 	<ul style="list-style-type: none"> • The City of Montrose is currently undergoing the permit renewal process for their NPDES/SDS Permit, their last permit was issued on February 1, 2018. The permit expired on January 31, 2023. • Based on the current treatment facility AWW flow of 0.781 mgd, the phosphorous monthly limit is 1.3 kg/day average. • Deleted: "Since the Montrose Regional Wastewater Treatment Facility expansion in 2002 ... The MPCA is planning to remove the monitoring requirements on Woodland WMA during the next permit update" • The City is currently finalizing a wastewater treatment facility plan to address the future demanded increase in flows and loadings as development occurs and will continue to complete additional expansions as needed. • Inserted a row in-between existing rows 3 and 4: WWTP Capacity = 1.0, Estimated Maximum Population WWTP Will Service (Combined Montrose & Waverly) = 10,000 • In 2016, Montrose made a policy decision to not apply biosolids to the land but rather dispose of stored biosolids at another processing facility. The City of Montrose recognized the many significant

		<p>benefits to the environment by making this policy decision to not land apply biosolids. In 2020, Montrose pumped all the biosolids into bio-bags and hauled them to a landfill in 2022. It is intended that after facility improvements biosolids will be dewatered and sent to a landfill or another processing facility moving forward as the AUAR area continues to be developed.</p> <ul style="list-style-type: none"> Added the following under the Biosolids Treatment & Storage section: As an alternative the City is also considering regionalization. This alternative would require forcemain and main lift station improvements. The existing ponds would be converted to equalization basins and the main lift station would be designed for the average daily flow. The remaining ponds and processes would be decommissioned, and the city property could be used for additional purposes.
Contamination / Hazardous Materials / Wastes	<ul style="list-style-type: none"> During construction, the contractor will dispose of wastes generated at the site in an approved method or facility. The contractor will be encouraged to recycle construction waste that can be recycled. All brush and tree waste generated by construction will be chipped or otherwise recycled by the contractor and will not be burned on-site. The City has a brush, tree and yard waste compost site for homeowners' use. After construction, typical residential and commercial/retail/office solid waste and hazardous wastes will be generated. All solid wastes will be handled by a City of Montrose licensed solid waste hauler. Household hazardous waste generated from individual homes in this development can be disposed of at the Household Hazardous Waste Facility in the City of Buffalo. The waste haulers in Montrose have municipal waste recycling programs. There is also a drop off in the City of Buffalo for Wright County residents' recycled materials 	<ul style="list-style-type: none"> No Changes.

	<p>and household hazardous waste. The residents and business owners will be encouraged to recycle all municipal solid wastes that can be recycled. The remainder of the municipal solid waste will be disposed of at an approved municipal waste landfill. Residential waste will be collected by a waste hauler hired by the City. Commercial businesses are responsible for properly disposing of the waste they generate.</p> <ul style="list-style-type: none"> • Toxic or hazardous materials such as fuel for construction equipment and materials used in the construction of homes (paint, adhesives, stains, contaminated rags, acids, bases, herbicides, and pesticides) will likely be used during site preparation and building construction. Spills of these materials are not anticipated, but could require notification of the Minnesota Duty Officers if a large or dangerous spill occurs. Builders/contractors are responsible for proper management and disposal of any wastes generated during construction and homeowners are responsible for management and disposal thereafter. Any toxic or hazardous materials used on site will be properly used, properly stored in between uses, and properly disposed of when finished. • As development occurs on properties with existing unused storage tanks, and if any additional storage tanks are identified during the development process, unused tanks will be removed and properly disposed of or recycled in accordance with MPCA regulations. • Refueling of construction equipment will take place from tanker trucks, and will occur in areas that are not environmentally sensitive. There is the potential for new underground storage tanks for petroleum products to be installed in areas designated for commercial or light industrial use. A gas station/convenience store will likely be built in the commercial area in the central-western portion of the AUAR area. In the event that storage tank installation is necessary for one or more of the anticipated commercial or industrial facilities, these tanks will be installed 	
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	according to applicable local, state, and federal regulations.	
Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)	<ul style="list-style-type: none"> The City currently has a Tree Preservation ordinance (1020-6). Prior to the issuance of building permits for all new and/or expanded single or multiple-family residential, commercial, industrial and institutional uses, a tree preservation plan shall be submitted to the City Engineer and Zoning Administrator. The plan shall be in accordance with requirements outlined in Subdivision Ordinances, including the size, species, tag numbers, and location of all significant trees proposed to be saved and removed on the area of development, and the measures to protect the significant trees to be saved. Subdividers are encouraged to preserve all healthy trees of significant value even if the trees are less than six inches in diameter. Developers and/or home builders shall be required to replace significant trees which were indicated on the tree preservation plan to be saved but ultimately were destroyed or damaged. Each significant tree destroyed or damaged shall be replaced with trees totaling two (2) caliper inches for every one (1) caliper inch of tree loss. The ordinance requires that a minimum of 50% of trees be preserved. In addition the City requires that a minimum of two trees be planted in every front yard of every home. The combination of these two requirements allows forested tracts to be preserved and replaces trees that are lost through development. There is a need to prevent the further spread of aquatic invasive species, especially Eurasian watermilfoil (<i>Myriophyllum spicatum</i>), Curly-leaf pondweed (<i>Potamogeton crispus</i>) and the zebra mussel (<i>Dreissena polymorpha</i>). No lake in the AUAR area is known to currently be infested with Eurasian watermilfoil, Curly-leaf pondweed or zebra mussels, but the potential for their introduction increases with boats entering the lakes. All boaters need to increase their efforts to prevent the introduction of Eurasian watermilfoil, Curly-leaf pondweed, zebra mussels and other invasive aquatic species into these lakes and other uninfested lakes 	<ul style="list-style-type: none"> In November 2022, the City published an updated Tree Preservation and Replacement ordinance (Ordinance No. 2022-08). All requirements in the updated Tree Preservation and Replacement ordinance will be followed throughout the development of the AUAR Study Area.

	<p>in Minnesota; therefore, highly visible signs describing the threat from Eurasian watermilfoil, Curly-leaf pondweed and zebra mussels will be appropriately placed and information about Eurasian watermilfoil, Curly-leaf pondweed and zebra mussels will be made available to boaters through DNR educational resources.</p>	
<p>Historic Properties</p>	<ul style="list-style-type: none"> As new projects are conducted in the AUAR area, the potential for historical and archaeological resources will be further assessed in Cultural Resources Reviews done for individual projects as development occurs. The City will require developers to submit this information as part of the platting process. The preliminary assessments will include background research at the SHPO, review of historical maps and aerial photos, and a visual reconnaissance of the project area. The Phase I investigations will include using systematic pedestrian survey and shovel testing. Within the AUAR boundary, there is one historic property listed on the National Register of Historic Places (NRHP), the Hawkins Clinic, Hospital, and House. Special consideration will be given for future development on adjacent properties to ensure that the integrity of this property is not affected. 	<ul style="list-style-type: none"> No Changes.

Chapter 5: RGU Certification

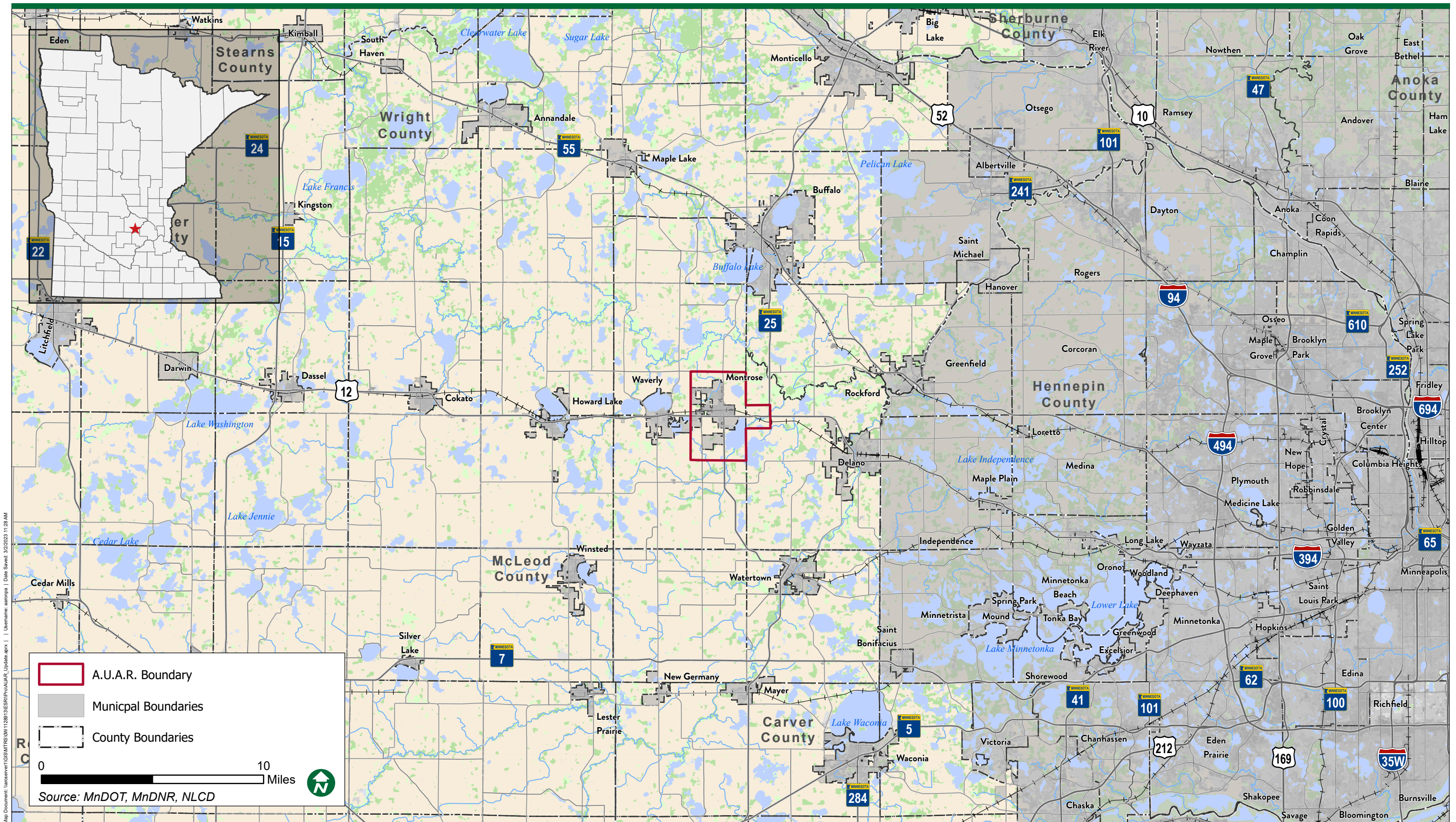
I hereby certify that:

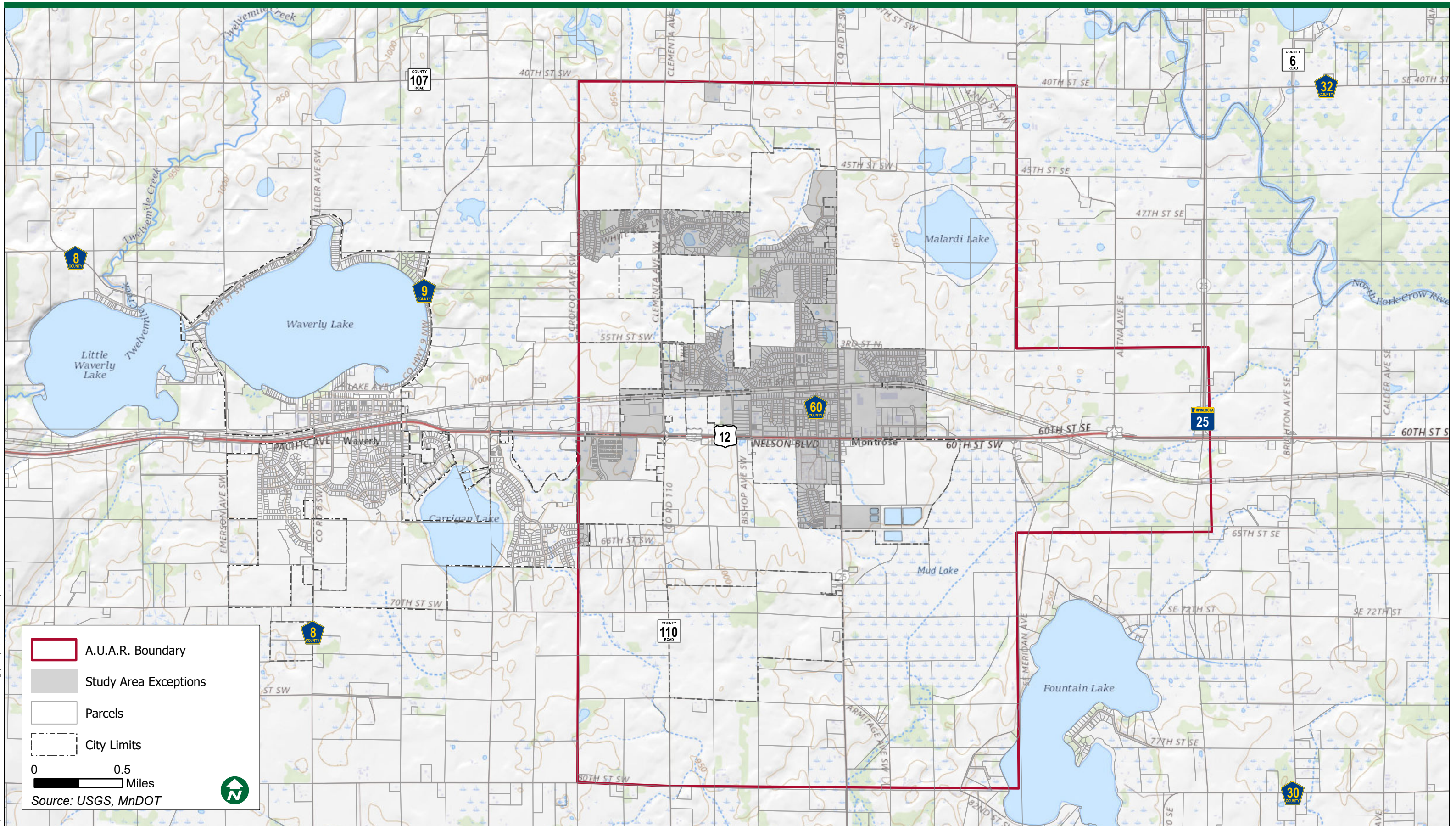
- The information contained in this document is accurate and complete to the best of my knowledge.
- The AUAR describes the complete projects; there are no other projects, stages, or components other than those described in this document, which are related to the project as connected actions or phased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

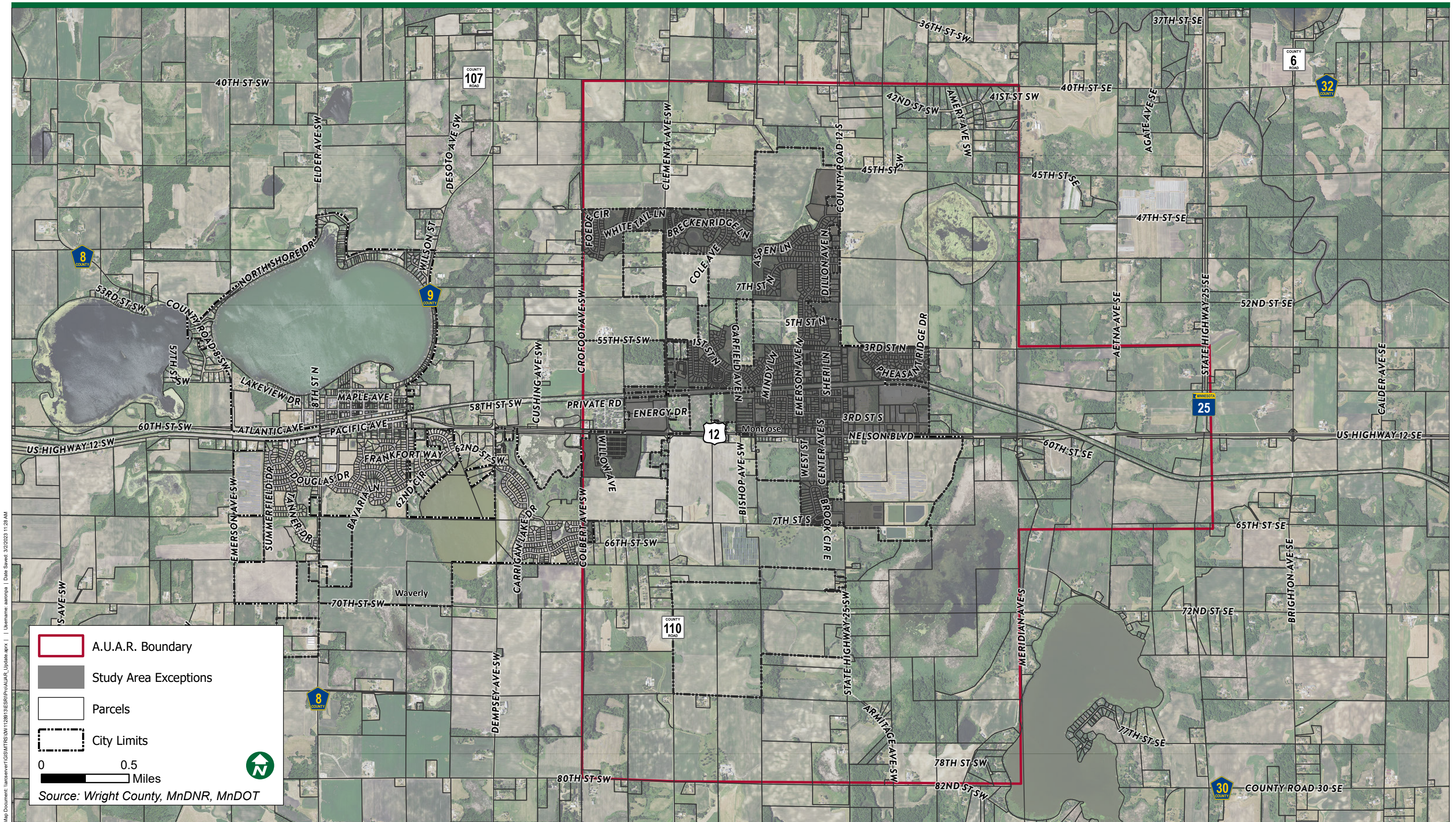
Signature: Jessica Bonniwell Date: April 18, 2023

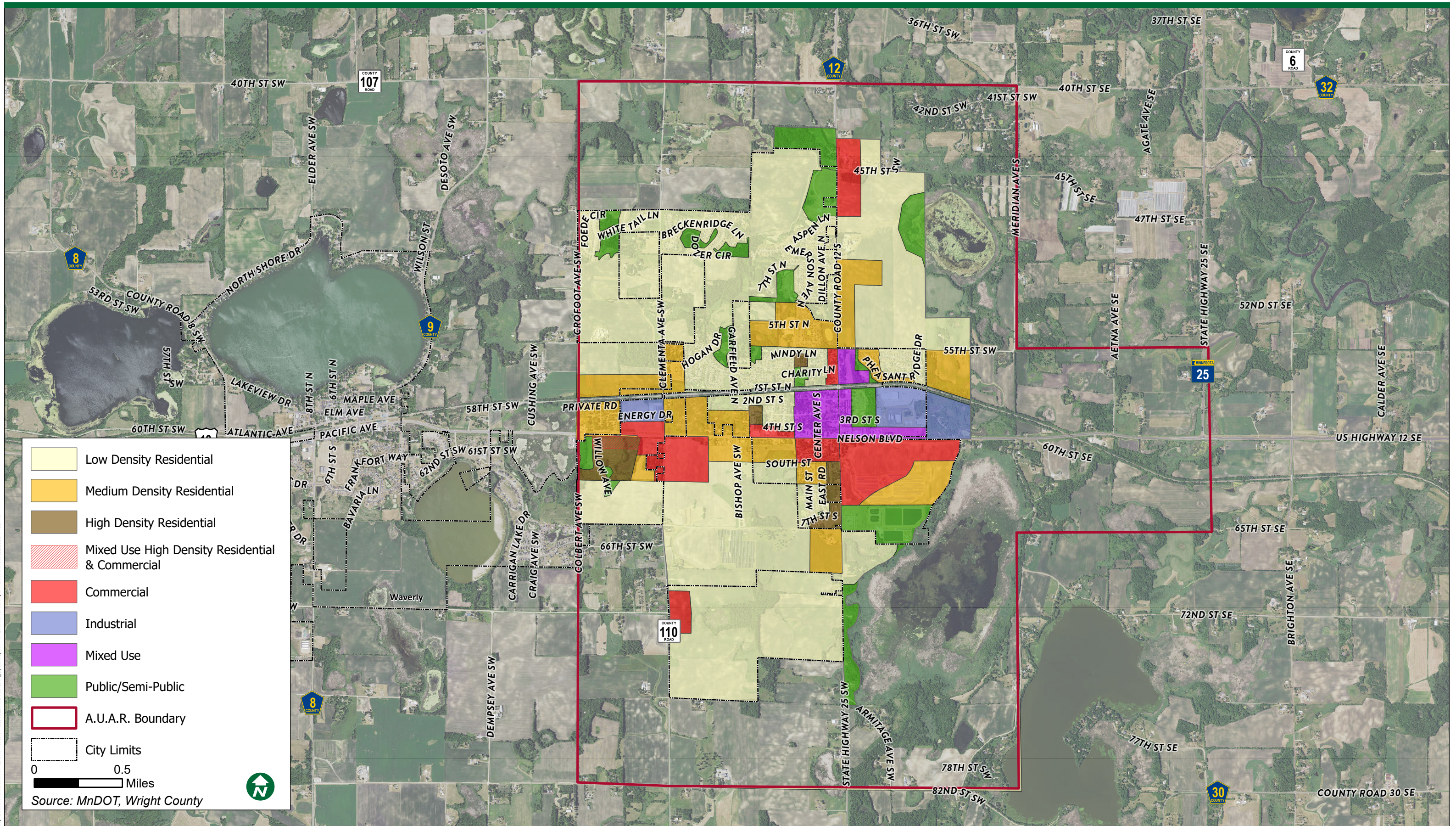
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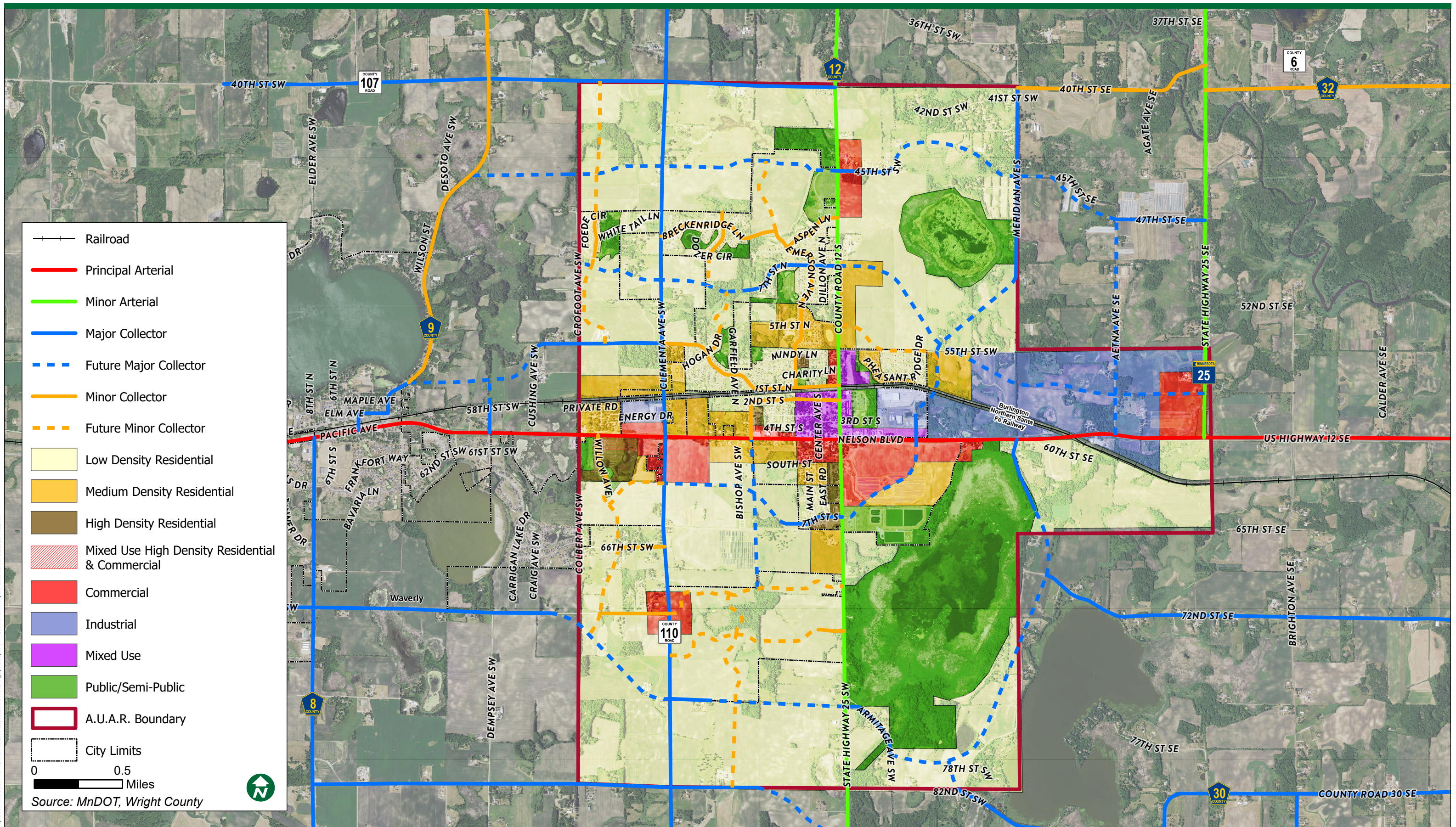
Appendix A: Figures

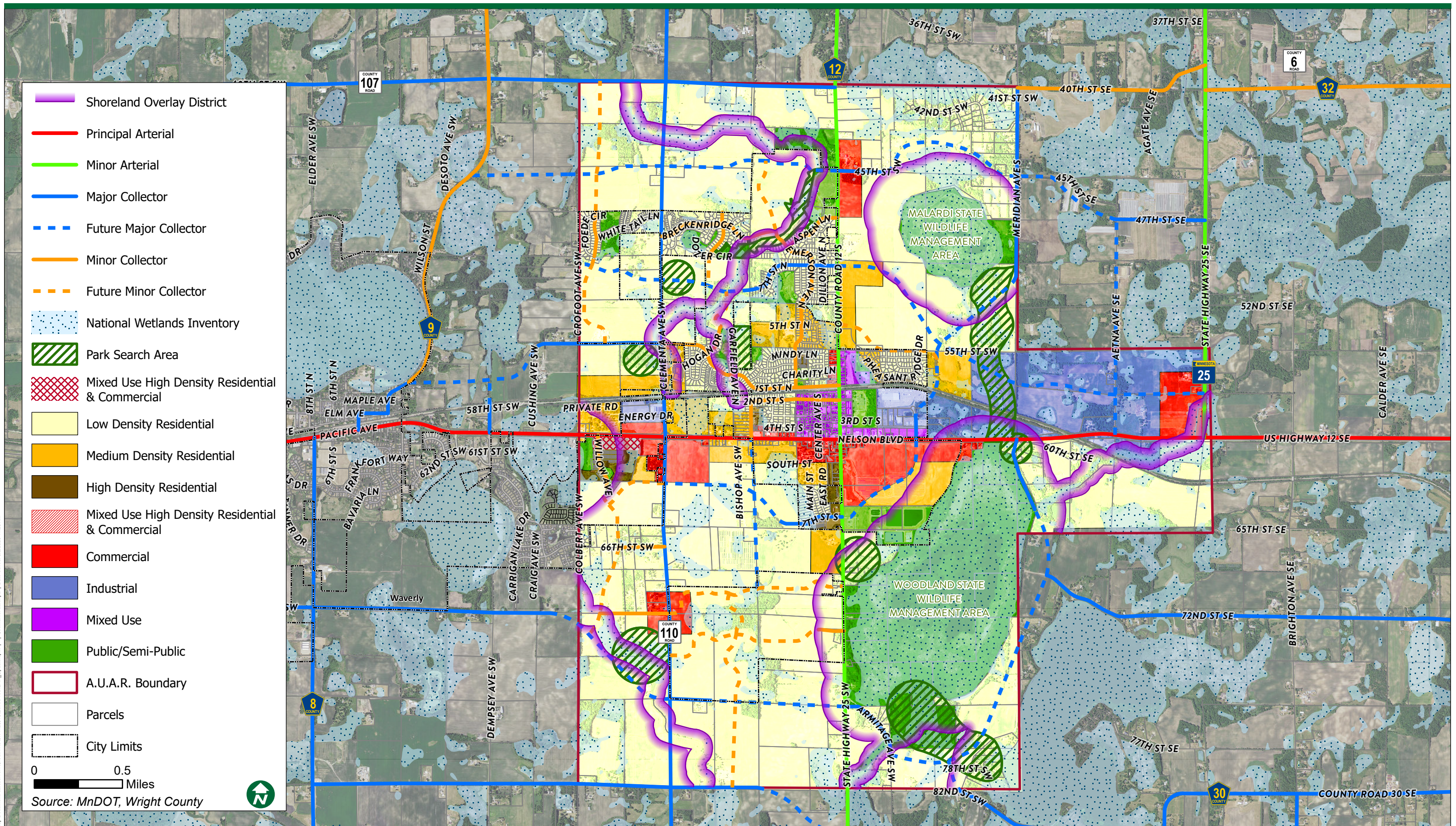


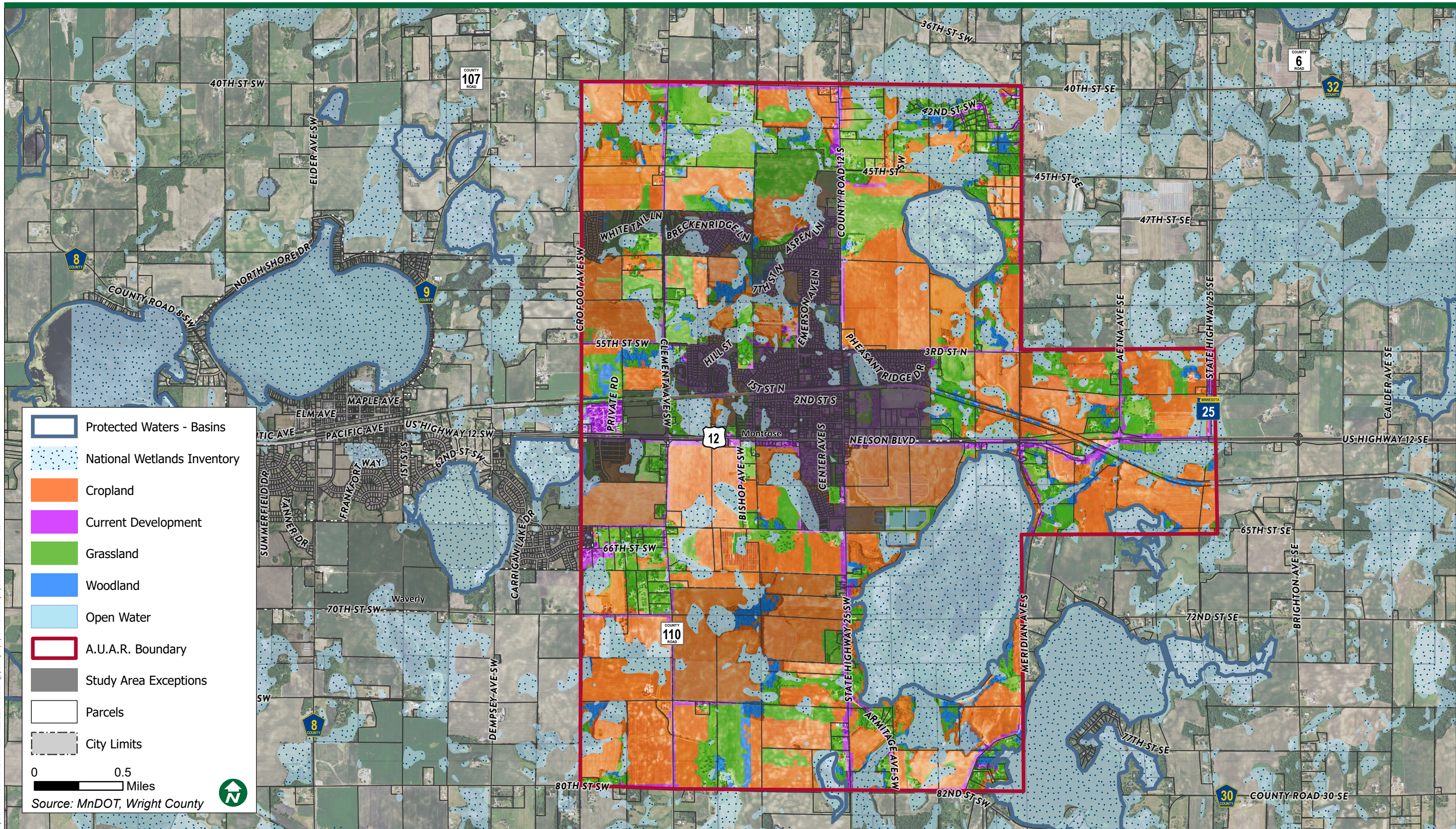












Appendix B: Mitigation Plan

Montrose Alternative Urban Areawide Review

FINAL MITIGATION PLAN

City of Montrose, Minnesota

2023 AUAR Update Note: The Montrose AUAR study area has not been fully developed since the publication of the previous AUAR Update in 2018. The analysis that was completed for the 2018 AUAR Update and associated mitigation measures remain valid for most of the document. All updates to mitigation measures are listed in the 2023 AUAR Update, Chapter 4, "Summary of Mitigation Measures."

October, 2008



BOLTON & MENK, INC.
Consulting Engineers & Surveyors

2017 AUAR Revision Note: As stated in the body of the 2017 AUAR Revision, the City of Montrose has not experienced sustained growth at the pace implied in 2008. Therefore, this appendix to the AUAR Revision is the same as the 2008 document. Additional text boxes with comments are included within to clarify status for selected impact categories.

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PURPOSE OF THE AUAR PROCESS

The Alternative Urban Areawide Review (AUAR) is an alternative review process adopted by the Environmental Quality Board (EQB) that can be used by local units of government to review anticipated residential and commercial projects. The AUAR substitutes for the preparation of an Environmental Assessment Worksheet (EAW) or Environmental Impact Statement (EIS) required for specific projects within the area of review, provided the projects are consistent with the assumptions made in the review and the mitigation measures identified in the review are implemented.

EXECUTIVE SUMMARY

a. Introduction

This Executive Summary/Mitigation Plan has been prepared to summarize major features of the development scenario proposed for evaluation in the Montrose AUAR Area. Additionally, mitigation steps are included for each topic that specifies the City controls, procedures and/or other steps that will be utilized to avoid or minimize environmental impacts of potential future development within the AUAR area. The Mitigation Plan is designed to identify the required actions, and to describe how the actions will be implemented in order to protect the environment from impacts related to development that is consistent with, or less intense than, the scenario evaluated in the AUAR.

Several landowners surrounding the City of Montrose municipal limits have properties under an orderly annexation order and are considering the sale of their land for development purposes. Developers have expressed interest in these properties and will likely be requesting approvals to allow for eventual urban development in this area. Wright County and Marysville, Woodland and Franklin Townships have given RGU authority to the City of Montrose.

The City has used one scenario to review potential environmental impacts for the Montrose AUAR area, which was broken into Interim and Full Build stages. The AUAR process of evaluating the cumulative potential impacts of property development is the most appropriate form of environmental assessment for a large geographic area with multiple owners in advance of a development concept. Furthermore, the AUAR process allows for the identification of mitigative measures for anticipated impacts, the specification of institutional requirements to implement these measures, and an understanding of financial implications of mitigation activities before development proceeds.

The City of Montrose desires an evaluation of the environmental impacts associated with urban development of the aforementioned properties before consideration of development requests. It is anticipated that the City of Montrose will adopt the Final AUAR and Mitigation Plan before development approvals in the area are requested.

It is recognized that this AUAR does not substitute for any other governmental unit's regulatory program or authority.

b. Summary of Issues and Mitigation

The key issues of this AUAR are cover type conversion, loss of wildlife habitat, wetland impacts, steep slopes and erosion, shoreland impacts, storm water management, and traffic. Land cover will be converted from primarily agricultural uses to primarily urban uses. Wetland and shoreland impacts from the change in land use will be minimized and mitigated. Development on steep slopes will be avoided as much as possible, and erosion will be prevented by the use of Best Management Practices. Storm water will be managed by a system of storm water basins. Improving the existing streets and building new ones will mitigate traffic impacts. These issues are analyzed in greater depth in the AUAR document. It is based upon existing information that may require updating as development occurs in the AUAR area. The discussion of the following items corresponds to the numbered items of the AUAR form as developed by the EQB.

MITIGATION PLAN

6. General Project Description: Infrastructure

Responsible Parties:	City of Montrose, Developers
Agencies Involved:	City of Montrose, Wright County, Buffalo/Montrose/Hanover School District
Regulatory Program:	Montrose Municipal Ordinance (Building and Land Use Regulations), City of Montrose Comprehensive Plan (2007)
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

Development of the AUAR study area will require the provision of urban levels of municipal services and facilities. All of the facilities for sanitary sewer, public water, and storm water are to be staged in accordance with the development phases of properties within the AUAR study area. Utilities will be built concurrent with the streets. It should be noted that certain improvements are also required to accommodate other development occurring in the City of Montrose and to improve existing municipal facilities as discussed in the AUAR. The construction of roadway improvements is planned with development phasing as discussed later in this section. Expected staging is shown on Figures 4 and 5 of the AUAR.

Sanitary Sewer

Urban levels of development will require the extension and provision of sanitary sewer facilities to the AUAR area. The sanitary sewer extensions and facilities will be staged according to development phasing described under Item 6 of the AUAR. Existing sanitary sewer lines will need extension to serve properties in the AUAR area. Eight additional lift stations will be required to serve the AUAR area as well as expansions and upgrades to two other lift stations. Multiple trunk lines and force mains will be required as well. Expansions and process changes will be required to the existing Montrose Regional Wastewater Treatment Facility to treat the additional sanitary sewer flows. Permits to allow for the new facilities will be required from the Minnesota Pollution Control Agency (MPCA).

Municipal Water

Urban levels of development will require the extension and provision of municipal water facilities to the AUAR area. The anticipated water demand of development within the AUAR area is higher than the current facilities can accommodate; therefore additional facilities are required. Mitigation of the increased water demand within the AUAR area, demands of other developing portions of the City, and

improvements to the existing water supply system will require an expansion of the municipal water system. Improvements to the system will include:

- A series of 12-inch, 10-inch and 8-inch water supply pipes will be constructed to provide water supply to the area.
- Three additional water towers totaling 2.25 million gallons in addition to a planned 500,000-gallon water tower to be constructed in the near future will provide adequate water storage to serve the AUAR area. 2017 Revision: Water tower improvements are partially complete. See AUAR Section 13.
- Additional wells will be constructed to provide water supply for the area.

Permits to allow for the new facilities will be required from the Minnesota Department of Natural Resources (MNDNR) and the Minnesota Department of Health (MDH). The City has adopted water conservation measures through public education and outreach measures that will apply to the AUAR area to encourage the reduction of water use and the improvement of water efficiency.

Storm Water Management

Increased storm water runoff will result from development within the AUAR area. The City's *Surface Water Management Plan* identifies the mitigation methods that are required as a result of development to provide adequate ponding and other facilities to protect water resources and improve water quality. Because the SWMP did not cover the entire AUAR area, the Comprehensive Plan was updated to include the AUAR study area. Development within the AUAR area will need to comply with the requirements of the aforementioned City plans as well as MNDNR and MPCA requirements.

Mitigation of increased runoff from development within the AUAR area will necessitate the construction of local and regional ponds and other drainage facilities prior to discharge from the AUAR area. The ponds will be sized to accommodate runoff from increased impervious surfaces and to attain water quality standards established in the City plans that meet State and Federal requirements.

Based on the specific features of the site, low impact development (LID) techniques may be considered during the concept plan review process and strategies could include, but not be limited to: impervious area minimization, natural vegetation retention, infiltration or filtration techniques (when soils permit) to aid in the reduction of discharge volumes, and storm sewer reduction (i.e. more overland flow through grass/vegetated swales to increase infiltration).

Storm water mitigation is described in more detail under Item 17.

10. Cover Types

Responsible Parties:	City of Montrose, Developers
Agencies Involved:	City of Montrose
Regulatory Program:	Montrose Municipal Ordinance Section 1090 (PUD), Montrose Municipal Subdivision Ordinance Section 1107.05 (Conservation Subdivision Design), Montrose Municipal Subdivision Ordinance Section 1107.14 (Tree Inventory, Preservation and Replacement)
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

The AUAR contains an overlay map showing anticipated development in relation to existing land cover types (Figures 8 and 9).

The City currently has a Conservation Subdivision Design Ordinance (Section 1107.05). The purpose of this ordinance is to compatibly integrate development with the natural features of the site to accomplish the following objectives:

- The perpetual preservation of natural habitat areas and land forms unique to Montrose, including but not limited to wetlands, slopes, trees, etc.
- The creation of open spaces for passive and active recreational uses.
- The creation of well designed neighborhoods that feature common open space.
- The establishment of a unified landscape amenity for the enjoyment of City residents.

There are three open space classification designations: Natural Habitat, Neighborhood Recreation, and Trail Corridors. The open space is either owned by a homeowners' association, a land trust, non-profit organization or the City, depending on the open space classification designation.

Design of residential lots in a Conservation Subdivision must take tree preservation, the view shed and streetscape into account. By following this ordinance, land can be developed while still preserving open space that can provide habitat for wildlife. Natural areas will be accentuated by future design to give the suburban development a more natural feeling and to give residents a sense of place. This process will protect selected elements of the scenic beauty that citizens can view from their residences and from roadways, at the same time retaining habitat for mammals, birds and vegetation. The City will encourage Conservation Subdivision design where applicable.

The City currently has a Tree Preservation Plan Ordinance (Section 1107.14). Prior to the issuance of building permits for all new and/or expanded single and multiple-family residential, commercial, industrial and institutional uses, a tree preservation plan shall be submitted to the City Engineer and Zoning Administrator. The plan shall include the size, species, tag numbers, and location of all significant trees proposed to be saved and removed on the area of development, and the measures to protect the significant trees to be saved. Subdividers are encouraged to preserve all healthy trees of significant value even if the trees are less than six inches in diameter. Developers and/or home builders shall be required to replace significant trees which were indicated on the tree preservation plan to be saved but ultimately were destroyed or damaged. Each significant tree destroyed or damaged shall be replaced with trees totaling two (2) caliper inches for every one (1) caliper inch of tree loss.

11. Fish, Wildlife and Ecological Resources

Responsible Parties:	City of Montrose, Developers, Construction Contractors
Agencies Involved:	City of Montrose, Minnesota Department of Natural Resources
Regulatory Program:	Not applicable
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

Development is expected to have the greatest effect on populations of wildlife that currently utilize the agricultural and grassland areas. Impacts on woodland wildlife species are also anticipated. Development will likely result in the displacement of wildlife that depend upon upland habitat. Impacts will occur in the short-term, during grading and construction activities, and in the long-term, when deer and small mammals are expected to leave the area due to competition for limited habitat and the inability to adapt to urban conditions. Although some woodland will be preserved, development will increase habitat fragmentation, decrease natural area connectivity, and result in more barriers to wildlife movement. The City will strive to minimize local impacts through appropriate conservation design measures.

Preservation of trees, as discussed in Items 10 and 11, combined with wetland preservation and mitigation (see Item 12), will mitigate adverse effects on wildlife to some degree. The City's Conservation Subdivision Ordinance (see Item 10) will encourage open space preservation, which can provide habitat for wildlife. The City would encourage developers to employ "better site design" techniques to minimize impervious surface and to utilize native landscaping where practicable.

The City of Montrose has a tree preservation ordinance. The ordinance requires that a minimum of 50% of trees be preserved. In addition the City requires that a minimum of two trees be planted in every front

yard of every home. The combination of these two requirements allows forested tracts to be preserved and replaces trees that are lost through development. The City currently has two greenway/habitat corridors included in their Park and Trail Plan. The first corridor follows a drainage way designated by the DNR as a tributary to the North Fork of the Crow River. The corridor will connect a 20 acre hardwood forest located southwest of Clementa Avenue and 55th Street N. to several large wetland complexes in the northern portion of the AUAR area. The second corridor connects Malardi State Wildlife Management Area and Woodland State Wildlife Management Area. The corridor follows a series of existing wetlands between the two management areas. The DNR was consulted in the location of this corridor to select the best possible corridor for movement of wildlife between the two management areas. The City will consider additional “greenway/habitat corridors” and the best use of park areas and regional stormwater ponding locations to assist in the creation of these corridors.

Mitigation for impacts to wetland habitat is covered under Item 12.

12. Physical Impacts on Water Resources

Responsible Parties:	City of Montrose, Developers
Agencies Involved:	Wright SWCD, U.S. Army Corps of Engineers, Minnesota Department of Natural Resources, Minnesota Board of Water and Soil Resources, Minnesota Pollution Control Agency
Regulatory Program:	Minnesota Wetland Conservation Act, Federal Clean Water Act, Montrose Municipal Subdivision Ordinance Section 1110.08 (Wetland Monuments), Montrose Municipal Land Use Ordinance Section 151.23 (Minimum Protection for Natural Wetlands); Montrose Municipal Land Use Ordinance Section 151.24 (Vegetative Buffer Protection for Rivers, Streams and Wetlands); Montrose Municipal Land Use Ordinance Section 151.25 (Additional Requirements)
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

The City of Montrose recognizes the value of wetlands of all sizes and is committed to avoidance of wetland impacts where practicable. All impacts to jurisdictional wetlands will need to follow the sequencing process of avoidance, minimization, rectification, and mitigation as outlined in the Minnesota Wetland Conservation Act (WCA). Wetland permit applications will also be submitted as required by the WCA and Section 404 of the Federal Clean Water Act prior to project construction.

Prior to development, wetland boundaries must be delineated and approved by the City of Montrose, which is the local governmental unit (LGU) administering the Minnesota *Wetland Conservation Act* (WCA). As stated in Part 8420.0225 Subp. D of the WCA, wetland delineation boundary confirmation by the LGU is valid for three years unless the Technical Evaluation Panel determines that natural or artificial changes to the hydrology, vegetation, or soils of the area have been sufficient to alter the wetland boundary or type. Therefore, wetlands that were delineated more than three years prior to the start of project construction may potentially require an updated delineation.

Individual developers within the AUAR area that propose alterations to jurisdictional wetlands will be required to follow the sequencing process of wetland avoidance, minimization, rectification, and mitigation as outlined in the Minnesota Wetland Conservation Act (WCA). Wetlands will need to be delineated and permit applications will need to be prepared and submitted to the City of Montrose and the U.S. Army Corps of Engineers to obtain authorization for wetland alterations under the WCA and Section 404 of the Federal Clean Water Act prior to project construction. Wetland applications and designs will undergo additional review and comment by the Minnesota DNR, the Minnesota Board of Water and Soil Resources, the Wright Soil and Water Conservation District, and the Minnesota Pollution Control

Agency. The City's ordinances list methods of protection for wetlands, including a minimum 30-ft vegetated buffer for wetlands.

Wetland impacts will be replaced in compliance with the Minnesota WCA and the Federal Clean Water Act. Under the WCA, a minimum of 2 to 1 wetland replacement is required to compensate for wetland alteration including filling and drainage. At least the first 1 to 1 wetland replacement must be in the form of New Wetland Credit to satisfy WCA requirements. Detailed wetland alteration and replacement plans have not been completed for developments within the AUAR area, therefore, the extent of mitigation is not known at this time. Wetland replacement will either be designed to expand upon existing on-site wetlands, created in conjunction with stormwater ponding, or credits will be purchased from a local wetland bank. On-site wetland replacement will be explored as the first alternative for compensatory mitigation.

The City of Montrose will study the feasibility of creating a wetland bank within the AUAR area. If the feasibility study reveals that the creation of a wetland bank within the AUAR area is feasible and necessary, the City will employ necessary measures to develop a wetland bank.

13. Water Use

Responsible Parties:	City of Montrose, Developers, Construction Contractors
Agencies Involved:	City of Montrose, Minnesota Department of Natural Resources, Minnesota Department of Health
Regulatory Program:	Minnesota Statutes 103G.271 (Appropriation and Use of Waters), Minnesota Rules Chapter 6115 (Public Water Resources), Minnesota Rules Chapter 4725 (Wells and Borings), Montrose Municipal Subdivision Ordinance Section 1107.10 (Public Utilities), Montrose Municipal Subdivision Ordinance Section 1110.02 (Water Facilities), Montrose Municipal Subdivision Ordinance Section 1110.14 (Trunk Facilities)
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

There are a total of 109 wells within the AUAR boundary listed on the County Well Index Online from the Minnesota Department of Health (MDH). As properties that have wells are developed, these wells will be sealed and properly abandoned in accordance with MDH regulations. Other unregistered wells encountered during construction will be sealed and properly abandoned in compliance with MDH regulations prior to site development. The existing farmsteads will be connected to City water mains when development reaches them and they are annexed into the City.

Public water service is not presently available to the entire AUAR area. The City has four existing wells. The wells have a total pumping capacity of 1,100 gpm. Additional wells will be required to meet the development demands. Based upon an assumed average pumping capacity of 400 gpm for each well, it is anticipated that an additional 17 wells will need to be constructed to meet the demands of the Full Build area. Additional wells will be constructed as development within the areas progress and additional pumping capacity is warranted. The current Minnesota Department of Natural Resources (DNR) Water Appropriations Permit will need to be amended to provide for this water usage.

2017 Clarification: No new wells have been constructed since the 2008 AUAR.

Monitoring wells to monitor effects of the increase in appropriation will be drilled at each proposed well location prior to the construction of the well. Test pumping and aquifer data at the proposed well location will be gathered and submitted to the DNR for approval prior to the new well construction. Also, the City will be installing a continuous aquifer monitoring system in their primary two wells. The system will allow the aquifer to be monitored at existing well locations for aquifer levels including drawdowns, static water level, and provide a history of aquifer level data useful in analyzing aquifer sustainability.

The City's existing water supply currently meets all National Primary Drinking Water Regulations. The existing water supply does contain levels of manganese around 0.8 mg/L to 1.4 mg/L. These levels exceed the recommended secondary drinking water standard of 0.05 mg/L. Polyphosphate is currently added into the distribution system to help combat the higher levels of manganese by keeping the manganese particles in suspension. Iron and manganese levels will continue to be monitored as new wells are constructed.

Development within the AUAR area will require that the City of Montrose trunk water distribution system be extended to serve future development. The trunk water distribution system will be installed as development occurs, and will be funded by development charges.

Currently, the City of Montrose has one 250,000-gallon elevated water tower. The City will be constructing an additional 500,000-gallon water tower in the near future. This will bring the total storage capacity to 750,000 gallons. One additional 750,000-gallon water tower will be constructed within the Interim Build area towards the north boundary line. Another 500,000-gallon and 1,000,000-gallon water tower will be constructed as part of the full build area. All towers will be constructed as development progresses and storage needs warrant an additional water tower. Water flow and pressure will be adequate for service to the entire AUAR area with the proposed water towers and trunk line distribution system.

One or more temporary Minnesota DNR Water Appropriation Permits may be necessary to conduct construction dewatering. Dewatering may be necessary during construction to install sanitary sewer, municipal water, and storm sewer in some areas. Construction dewatering is usually conducted less than 15 feet under the ground. Contractors will carry out these activities on a case-by-case basis at the minimum duration and quantity necessary to construct utility service for the affected sites. A temporary DNR Water Appropriation Permit will be required if construction dewatering and pumping from development exceeds 10,000 gallons per day or 1,000,000 gallons per year. The DNR General Permit 97-0005 for Temporary Water Appropriations will apply if construction dewatering does not exceed 50 million gallons in total and duration of one year from the start of pumping. The quantity and duration of construction dewatering is not known at this time, but dewatering activities will be temporary. It is not anticipated that construction dewatering or pumping will be extensive or continue long enough to impact domestic or municipal wells. Groundwater appropriated for construction dewatering purposes will be discharged into temporary or permanent ponds located within the AUAR area.

14. Water-related Land Use Management District

Responsible Parties:	City of Montrose, Developers
Agencies Involved:	City of Montrose, Minnesota DNR
Regulatory Program:	Montrose Municipal Ordinance Section 1095 (Floodplain Overlay District), Montrose Municipal Ordinance Section 1096 (Shoreland Overlay District), Montrose Municipal Subdivision Ordinance Section 1107.05 (Conservation Subdivision Design), and Montrose Municipal Subdivision Ordinance Section 1107.12 (Flood Warning Signs in Flood-Prone Areas)
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

The AUAR area does contain areas within the FEMA-delineated 100-year floodplain, near Mud Lake in the Woodland WMA, Fountain Lake, and a small portion in the northeast corner of the AUAR area in Franklin Township. Flood warning signs will be posted in areas that have been or would be inundated by the 100-year storm, as provided in Section 1107.12 of the City's Subdivision Ordinance. Development of floodplain areas will comply with the requirements of the City's Floodplain Overlay District, provided in Chapter 1095 of the Zoning Ordinance.

The City of Montrose's Shoreland Overlay District ordinance is provided in Chapter 1096 of the Zoning Ordinance. Mud Lake and Malardi Lake are classified as Natural Environment Lakes. Malardi Lake is also in a Special Protection Shoreland District (S-1).

The AUAR area does include the shoreland overlay district of Mud Lake (aka Woodland WMA) (DNR Public Water 86-85P), Malardi Lake (PW 86-112P), Fountain Lake (PW 86-86P), an unnamed DNR Public Water (wetland) (86-372W), an unnamed DNR Public Water (wetland) (86-446W), and an unnamed tributary to the North Fork Crow River (Figure 8). The shoreland overlay districts extend 1,000 feet from the ordinary high water levels (OHWL) of these waterbodies. The OHWL of both Mud Lake and Fountain Lake is 932 feet. The OHWL of Malardi Lake is 935.1 feet. The OHWL of the unnamed wetlands will be determined by the DNR as development reaches these wetlands. The current Shoreland Overlay District Ordinance already includes Mud Lake, Malardi Lake, Fountain Lake, an unnamed DNR Public Water (wetland) (86-105P), and an unnamed tributary to the North Fork Crow River. Upon annexation, the City will revise their Shoreland Overlay District ordinance to include the three unnamed creeks (86025a, 86035a, 86032a, and 86032b) (Figures 9 and 10). The revised ordinance will be submitted to the Minnesota DNR for review at that time.

Under the current shoreland ordinance, the required suitable lot area per single home with City sewer service for non-riparian residential units within the shoreland of natural environment lakes is 20,000 square feet. This corresponds to the required area per unit for the underlying Low Density Residential zoning district. The required suitable lot area per single home for riparian residential units within the shoreland of natural environment lakes is 40,000 square feet. The required areas for riparian residential lots correspond to the larger lot area requirements set forth in the Minnesota DNR model shoreland ordinance. The higher development density allowed for non-riparian residential lots provides an added incentive for developers to dedicate the land adjacent to the OHWL for public use and natural vegetation.

Development within the Shoreland Overlay Districts will be compatible with the land use restrictions set forth in the City of Montrose Shoreland Overlay District ordinance. As concept plans for development are submitted, the City will ensure plans are consistent with the ordinance and evaluate whether certain areas such as steep slopes, wetlands, and woodlands, could be considered for preservation through means that may include planned unit design negotiations, park land dedication, public acquisition, or other means.

Subdivision Ordinance 1107.05, Conservation Subdivision Design, will help guide preservation of open space in subdivisions.

16. Erosion and Sedimentation Control

Responsible Parties:	City of Montrose, Project Developer, Construction Contractor
Agencies Involved:	City of Montrose, Wright SWCD, Minnesota Pollution Control Agency
Regulatory Program:	NPDES General Permit for Construction Activity, MPCA Phase II Stormwater Permit, Montrose Subdivision Ordinance Section 1107.09 (Erosion and Sediment Control)
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

Planned urbanization within the AUAR area will likely result in the potential for erosion and sedimentation. Mass and staged grading activities throughout the developable areas of the AUAR are anticipated for residential subdivisions, commercial and commercial/light industrial development areas, and the installation of streets and utilities.

Mitigation of erosion and sedimentation include administration and/or enforcement of the following:

- A. Pre-and post-development activities will minimize runoff and provide erosion control through Best Management Practices (BMPs) and other techniques such as the use of vegetation buffers, tree planting and mulching, and outfall stabilization. Appropriate erosion and sedimentation controls proposed will be in place prior to land-disturbing activity. With the implementation of BMPs, potential adverse effects from construction-related sediment and erosion on water quality will be minimized to the extent practicable. It is anticipated that potential adverse erosion and sedimentation impacts will be limited to short-term effects.
- B. Proper erosion and sedimentation control strategies in areas of highly erodible soils and steep slopes will be considered during the planning and plan approval phase. These measures will be implemented as needed during and after construction.
- C. Individual projects will submit detailed erosion and sediment control plans prior to project construction and will undergo review and approval by the City of Montrose. The plans must be in compliance with:
 - the City *Comprehensive Plan* policies;
 - the City's *Surface Water Management Plan* requirements;
 - the City's *Title XV, Land Usage, Ordinance 151, Stormwater Pollution: Performance* standards requiring storm water to be managed in accordance with the MPCA's NPDES/SDS permit guidelines and the MPCA's *Protecting Water Quality in Urban Areas*.
 - the National Pollutant Discharge Elimination System (NPDES) Phase II permit, which requires implementation of best management practices (BMPs) and the preparation of a Storm Water Pollution Prevention Plan (SWPPP) for activities disturbing a site over one acre. The SWPPP and the BMP implementation strategy must be prepared before submitting a Permit application; and
 - The Permit requires stabilization of any water conveyance within 200 lineal feet from the property edge or from the point of discharge to any surface water. Stabilization must occur within 24 hours of connecting to a surface water. Culvert outlets must have energy dissipation within 24 hours of connection to a surface water. All exposed soil areas with a continuous positive slope within 200 lineal feet of a surface water must have temporary erosion protection or permanent cover for the exposed soil areas, varying based on a table of slopes and time frames. The new property owner must submit a subdivision registration within seven days of assuming operational control of the site, commencing work on their portion of the site, or of the legal transfer, sale or closing on the property.
- D. The City of Montrose will require a long-term maintenance plan to be in place for storm water ponds before giving final plan approval. The City charges each resident a stormwater utility fee each month, and these funds are used to operate and maintain the storm water retention ponds.

17. Water Quality – Storm Water Runoff

Responsible Parties:	City of Montrose, Developers, Construction Contractors
Agencies Involved:	City of Montrose, Wright SWCD, U.S. Army Corps of Engineers, Minnesota Pollution Control Agency
Regulatory Program:	Montrose Municipal Ordinance Title XV, Land Usage, Ordinance 151 (Stormwater Pollution); Montrose General Regulations Ordinance Chapter 97 (Phosphorous Fertilizer); Montrose Municipal Subdivision Ordinance Section 1110.05 (Storm Sewer); Montrose Municipal Subdivision Ordinance Section 1110.14 (Trunk Facilities); City of

Implementation Timeframe: Start: 2007 End: Driven by Development Demands

The AUAR area is located within the North Fork of the Crow River watershed. Presently, there is no pretreatment of runoff into existing wetlands or drainageways due to the agricultural nature of the AUAR area. Development within the AUAR area will increase the rate and volume of runoff to ponding areas and drainageways, and introduce pollutants to ponding areas. Wetland impacts are discussed in Item 12.

Storm water retention and water quality treatment is required for development within the City as regulated by the City's *Zoning Ordinance*, *Surface Water Management Plan (June 2003)*, and *Comprehensive Plan*. Mitigation of impacts includes:

- A. City's *Title XV, Land Usage, Ordinance 151, Stormwater Pollution*: Performance standards requiring storm water to be managed in accordance with the MPCA's NPDES/SDS permit guidelines and the MPCA's *Protecting Water Quality in Urban Areas*.
- B. City's *General Regulations Ordinance Chapter 97, Phosphorus Fertilizer*: Restriction of use of phosphorus fertilizers.
- C. City's *Surface Water Management Plan* and City's *Comprehensive Plan*: This plan establishes the design criteria for storm water facilities to accommodate storage needs and reduce pollutant and nutrient loading with urban development. The ponding areas identified in the *Surface Water Management Plan* are designed to accommodate storm water resulting from the 2-, 10- and 100-year recurrence interval storms. The ultimate design of the ponding areas is based upon the Walker/NURP criteria.
- D. MPCA Requirements: The rules require that water quality standards be met including *Protecting Water Quality in Urban Areas*, NPDES Phase II permit specifications, and Storm Water Pollution Prevention Program (SWPPP) requirements. The ultimate TMDL requirements will be met by reserving space and funds to construct or retrofit the watershed with the necessary additional facilities to achieve those goals, once they have been finalized.

The primary technique for mitigation of the development effects will be through the construction of "wet" regional retention ponds, which will be designed to treat the runoff and maintain existing peak discharge rates for the design storms. Wet sedimentation ponds shall be designed to Walker design standards, which reduce phosphorus loading at the downgradient site boundary by 40-70 percent on an annual average removal basis. The ponds will be located within outlots, with the City of Montrose having ownership and being responsible for long-term maintenance. The regional ponds will not be built in wetlands. The regional ponds will be constructed as development occurs, and will be funded by development charges. These development charges will be determined on a "per acre" basis, based on the cost of land for the pond and pond construction costs. The developer would pay the City for the number of acres that drain to each regional pond, as applicable.

When soils permit, it is recommended that infiltration or filtration techniques be utilized to aid in the reduction of discharge volumes. Design of such techniques is outside the scope of this mitigation plan as it is desirable to see these methods on a localized scale. Based on the specific features of the site, low impact development (LID) techniques may be considered during the concept plan review process and strategies could include, but not be limited to: impervious area minimization, natural vegetation retention, infiltration or filtration techniques (when soils permit) to aid in the reduction of discharge volumes, and storm sewer reduction (i.e. more overland flow through grass/vegetated swales to increase infiltration).

Improvement in water quality of the unnamed creek that is a tributary to the North Fork of the Crow River is also anticipated because the agricultural and rural conditions that lead to fecal coliform pollution will be replaced by urban development.

When detailed grading plans are completed for each development area, plans and detailed calculations will be submitted for review and individual permit approval.

A final contributor to the reduction of phosphorus loading to local water bodies will come from compliance with Minnesota legislation (Chapter 179), effective January 1, 2005, that phosphorus cannot be included in fertilizer applied to lawns. The City has an ordinance that addresses use of phosphorus fertilizer.

According to the MPCA, an Unnamed Creek/Unnamed Ditch (Assessment Unit ID 07010204-527), which runs from Mud Lake (Woodland WMA) to the North Fork Crow River on the eastern side of the AUAR area, is impaired for oxygen. In addition, the North Fork of the Crow River (Assessment Unit ID 07010204-503), which is northeast but not inside of the AUAR area, is impaired for oxygen and turbidity. These reaches will be bundled into the same TMDL project, which is in the beginning stages of development. Activities to develop TMDL and load allocations will begin soon. Once the TMDL and load allocations have been decided, the City of Montrose will implement appropriate ordinances and other controls to meet the TMDL requirements. The City will comply with current and future requirements as set forth by the DNR, MPCA, and any other state and federal agencies resulting from the TMDL study of the Crow River watershed and the Mississippi River watershed.

18. Water Quality – Wastewater

Responsible Parties:	City of Montrose, Developers, Construction Contractors
Agencies Involved:	City of Montrose, MPCA
Regulatory Program:	Montrose Municipal Subdivision Ordinance Section 1107.10 (Public Utilities), Montrose Municipal Subdivision Ordinance Sections 1110.03 (Sanitary Sewer), Montrose Municipal Subdivision Ordinance Section 1110.14 (Trunk Facilities); MPCA NPDES/SDS General Permit
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

Planned urbanization within the AUAR area will require the extension of public facilities to serve the new land uses as required by the City's *Zoning Ordinance*. As described in Item 18 of the AUAR, mitigation requires the extension and provision of sanitary sewer trunk facilities to the AUAR area. The extension of trunk sanitary sewer will be constructed as development occurs, and will be funded by development charges.

Currently wastewater from Montrose and Waverly are treated at the Montrose Regional Wastewater Treatment Facility. The current receiving water for the discharge from Montrose's wastewater treatment facility is to an unnamed wetland (Woodland WMA) and then to an unnamed creek. The treatment facility is meeting all current permit limits.

2017 Revision: NPDES/SDS permit extended by MPCA. See AUAR Section 18.

The current NPDES/SDS Permit will expire on June 1, 2012. Due to expected growth in the cities of Montrose and Waverly, as well as more stringent limits on receiving waters, discharge limits for the Montrose Wastewater Treatment Facility might become more stringent. The BOD limit might change from 25 mg/L to 15 mg/L and the TSS limit might change from 45 mg/L to 30 mg/L for the monthly average. The phosphorus limit might change from a monthly average of 1 mg/L to a mass-loading limit based on the current NPDES permit. Based on the current treatment facility AWW flow of 0.781 mgd, the phosphorous monthly mass limit is 6.51 lbs/day. The Minnesota Pollution Control Agency (MPCA) must yet determine the final NPDES permit limits for future upgrades to the wastewater treatment facility.

Currently the farmsteads in the AUAR area have septic systems. The farmsteads will be connected to City sanitary sewer as the development reaches them and they are annexed into the City. Their septic systems will be properly abandoned at that time. This will improve the quality of groundwater in areas that currently have septic systems.

Development in the AUAR area is also expected to help improve water quality in the North Fork of the Crow River, as discussed in Item 17. The North Fork of the Crow River, just to the northeast of the AUAR area, was listed as an MPCA impaired water for low oxygen and turbidity. The unnamed creek that is a tributary to the North Fork of the Crow River was also listed for low oxygen.

Since the Montrose Regional Wastewater Treatment Facility expansion in 2002 the NPDES SDS permit has required that the City monitor the effects of increased wastewater discharge rates to the Woodland WMA. Specific items included in the monitoring are Chlorophyll, Dissolved Oxygen, pH, Phosphorus, specific conductance, temperature, and transparency. The permit also requires a plant community integrity study be completed to monitor any effects of the WWTP discharge on the plant community. Current monitoring shows no impacts on Woodland WMA. If it is determined that future loadings will have impacts, alternative discharge points or treatment methods will be investigated.

19. Geologic Hazards and Soil Conditions

Responsible Parties:	City of Montrose, Developers, Construction Contractors
Agencies Involved:	City of Montrose, Wright County, Minnesota Pollution Control Agency
Regulatory Program:	Minnesota Rules Chapters 7045 (Hazardous Waste)
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

Because development within the AUAR area will be typical of residential, commercial and light industrial land uses, no unusual wastes or chemicals are anticipated to be spread or spilled onto the soils that would cause significant groundwater contamination.

Mitigation of potential groundwater pollution includes:

- A. Policies and design standards are included in the City's *Surface Water Management Plan* to reduce the introduction of pollutants to wetlands, ponds and drainageways from surface water runoff resulting from development. The policies and standards are directed towards the creation of ponds to meet water quality design requirements and the construction of water quality devices such as skimmers, as appropriate.
- B. Any existing private wells that are found within the AUAR area will be capped according to MDH requirements, once municipal water is supplied to the area. Abandoned wells that are discovered as part of the site development will be capped according to MDH regulations.
- C. As development occurs, individual on-site sanitary treatment systems will be replaced with municipal services to reduce the potential for pollution from septic system sources.

21. Traffic

Responsible Parties:	City of Montrose, Developers
Agencies Involved:	City of Montrose, Wright County, Minnesota Department of Transportation
Regulatory Program:	Not applicable

Implementation Timeframe: Start: 2007 End: Driven by Development Demands

The mitigation needed to assure acceptable operations at each intersection was determined through the traffic analysis. The final proposed lanes and traffic control measures recommended for the roadways studied are included in Appendix A, Figures 19, 20, 24 and 25, and in Appendix A Sections 6.1.1 to 6.1.7. These lane and traffic control recommendations assure Level of Service D or better for all intersections, except where traffic volumes are extremely low or where delay and volume would not be expected to meet signal warrant requirements. The roadway improvements recommended should be built concurrent with any development of the area.

2017 Clarification: The transportation projects listed below have not been completed nor programmed since the 2008 AUAR.

Specific improvements to the roadway network include:

- US TH 12: Roadway widening to a 4-Lane Divided Highway and intersection control improvements at major intersections.
- TH 25 (East Leg): Roadway widening to a 4-Lane Divided Highway to CSAH 32, 3-Lane section north to the City of Buffalo and intersection control improvements at CSAH 32.
- TH 25 (West Leg)/CSAH 12: Roadway widening to a 3-Lane section south of TH 12 and to a 4-Lane Divided Highway north of TH 12. Intersection control improvements at major intersections.
- CR 110/Clementa Ave: Roadway widening to a 4-Lane Divided roadway near TH 12 and intersection improvements at 7th St. S. and 1st St. N/55th St. SW.
- Seventh Street North and Seventh Street South: Expanded roadways with east-west continuity through the City of Montrose to help alleviate TH 12.
- Railroad Crossings: Upgraded railroad crossings to maintain north-south continuity and safety.

Additional studies are recommended as development is added to the City. These include studies that analyze the:

- US TH 12 Corridor
- TH 25/CSAH 12 Corridor
- Clementa Avenue Railroad Crossing
- Zephyr Avenue Railroad Crossing
- Intersection Traffic Control Improvements
- Gravel Roadways
- Development Studies; to ensure consistency with the AUAR
- Develop a Funding Strategy to have development pay its proportionate fair share of roadway, infrastructure, and traffic control improvements

The full traffic impact study, conclusions, mitigation, and the full explanation of the additional recommended studies are included in Appendix A.

24. Odors, Noise and Dust

Responsible Parties: City of Montrose, Developers
Agencies Involved: City of Montrose, Minnesota Pollution Control Agency
Regulatory Program: Minnesota Rules Chapters 7030 (Noise Pollution Control) and 7009 (Ambient Air Quality Standards)
Implementation Timeframe: Start: 2007 End: Driven by Development Demands

No mitigation measures have been considered for odors. Consideration will be given to suppression of fugitive dust by applying water to grading areas and haul roads during dry, dusty construction conditions to minimize dust emissions. Additional dust control measures may include minimizing the area of open grading and phasing development of the AUAR area.

Although development of the AUAR area is expected to result in increased noise associated with site-generated traffic, the increased traffic noise is not expected to be substantial or interfere with outdoor activities. Proposed development shows that much of the land use along proposed major roadways is expected to be commercial or light industrial, medium to high density residential, and parkland. These land uses will help buffer the single-family residential areas from potential objectionable effects of increased traffic noise. Although vegetation is not as effective as topography or structural noise barriers in reducing noise levels, vegetation can create a visual barrier and a psychological buffer between noise receptors and noise sources.

Short-term increases in local noise levels are expected during project construction. Consideration will be given to limiting construction activities to the hours between 7:00 am and 7:00 pm. The limited hours of construction and the distance from most of the AUAR area to sensitive noise receptors is expected to mitigate adverse effects of construction noise.

The City will require, in the developer's contract, that as part of the developer's homeowner covenants with the new property owners, the developer will provide the new owners with information about possible issues of odor, dust, noise, and/or hours of operation that may arise from living and working near a farming operation. Informing nonfarm residents about life in agricultural areas is a tool that will be used to help lessen potential conflicts between nonfarm residents and agricultural land uses.

25. Sensitive Resources

Responsible Parties:	City of Montrose, Project Developer
Agencies Involved:	City of Montrose, Wright County, Minnesota Historical Society
Regulatory Program:	Minnesota Field Archaeology Act, Minnesota Private Cemeteries Act, Minnesota Historic Sites Act, Section 106 of the National Historic Preservation Act, Montrose Subdivision Ordinance 1107.05 (Conservation Subdivision Design), Montrose Subdivision Ordinance 1107.13 (Public Sites and Open Spaces [Park Land Dedication])
Implementation Timeframe:	Start: 2007 End: Driven by Development Demands

Archaeological, historical or architectural resources

A search for historic properties and archaeological sites in the database of the Minnesota State Historic Preservation Office (SHPO) yielded 14 sites under the "History/Architecture" heading and 4 sites under the "Archaeological" heading. In general, the known historical sites are associated with old town Montrose and the TH 12 alignment. The known archaeological sites are generally scattered on the east and southeast portions of the AUAR area. These sites are known because professional surveys were conducted tied to construction projects. As new projects are conducted in the AUAR area, the potential for historical and archaeological resources will be further assessed in Cultural Resources Reviews and Phase I surveys done for individual projects as development occurs. The City will require developers to submit this information as part of the platting process. The preliminary assessments will include background research at the SHPO, review of historical maps and aerial photos, and a visual reconnaissance of the project area. The Phase I investigations will include using systematic pedestrian survey and shovel testing.

If there is any public involvement in future development projects, there will also be compliance with the Minnesota Field Archaeology Act, the Minnesota Private Cemeteries Act, and the Minnesota Historic Sites Act, as appropriate. Additionally, the City of Montrose and Wright County will be consulted regarding their requirements and philosophy for cultural stewardship.

Prime or Unique Farmlands

Agricultural lands currently occupy much of the AUAR area. According to the *Prime and Other Important Farmlands of Wright County, Minnesota* (USDA NRCS, 2006), the site contains soil units classified as prime farmland, prime farmland when drained, farmland of statewide importance and prime farmland if protected from flooding. There are currently parcels within the AUAR area that are enrolled in the Agricultural Preserves Program (also known as the Farmland Preservation Property Tax Credit Program). These are shown on Figure 34. In the Agricultural Preserves Program, in return for a tax break landowners agree to not develop the enrolled land for seven years after filing papers for cancellation. Property owners in the Agricultural Preserves Program must also develop and implement a conservation compliance plan on land classified as highly erodible land.

A related topic is the "Green Acres" program. The Agricultural Property Tax Law is a Minnesota Statute that is commonly referred to as "Green Acres." With this law, bare farmland is valued for tax purposes on its agricultural value, rather than its future development potential or highest and best use value. These "Green Acres" are entitled to valuation and tax deferments. Otherwise, taxes on potential development land could get so high they would force farmers off the land prematurely.

Most agricultural land in the AUAR area is in Green Acres. Since Green Acres is a property tax incentive program renewed on a yearly basis, a property in Green Acres is not prevented from development for a certain number of years like land in the Agricultural Preserves Program. Therefore, the Green Acres helps farmers continue to farm on their property, but will not really affect their development timeline should they decide to sell or develop their land.

Because the project area is guided for development according to the City of Montrose's *Comprehensive Plan* (2007), no alternative to conversion of prime farmland or farmland of statewide importance is readily identifiable.

Designated Parks, Recreation and Trails

Increased areas of urban development and associated increases in the number of household units will place greater demand upon City and County recreational facilities. As part of development within the AUAR area, a neighborhood park and a trail system that connects to City and County trail corridors will be developed. As land is developed, the developer is required to either dedicate parkland or pay the City to set aside parkland elsewhere, as required in the City's Subdivision Ordinance Section 1107.13. Examination of a joint recreational facility, which may include a neighborhood park, should be pursued if a junior high school is proposed within the AUAR area. Placing regional stormwater ponds in parks, where possible, should also be considered.

Mitigation includes review of trail and park needs and requirements, including the determination of trails along all the major transportation corridors in the AUAR area at the time development approvals are reviewed by the City. At a minimum, mitigation will be regulated by compliance of development plans with the City's *Subdivision Ordinance*. The City will coordinate with Wright County in providing for regional trails.

Scenic Views and Vistas

Viewsheds will become more suburban and less agrarian in nature. Design of residential lots in a Conservation Subdivision must take tree preservation, the view shed and streetscape into account. By following this ordinance, land can be developed while still preserving the view shed to some extent. The City will encourage Conservation Subdivision design where applicable. Natural areas will be accentuated by future design to give the suburban development a more natural feeling and to give residents a sense of place. This process will protect selected elements of the scenic beauty that citizens can view from their residences and from roadways, at the same time retaining habitat for mammals, birds and vegetation.

Appendix C: Agency Coordination



Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Montrose AUAR Update

Project Proposer: City of Montrose

Project Type: Development, Mixed Use

Project Type Activities: Tree Removal;Groundwater Impacts (e.g., groundwater appropriation, change in recharge, contamination);Waterbody, watercourse, streambed impacts (e.g., discharge, runoff, sedimentation, fill, excavation);Wetland impacts (e.g., discharge, runoff, sedimentation, fill, excavation)

TRS: T118 R25 S5, T118 R25 S6, T118 R26 S1, T118 R26 S10, T118 R26 S11, T118 R26 S12, T118 R26 S13, T118 R26 S2, T118 R26 S3, T119 R25 S30, T119 R25 S31, T119 R25 S32 +

County(s): Wright

DNR Admin Region(s): Central

Reason Requested: Other

Project Description: The City of Montrose is proposing to complete an Alternative Urban Areawide Assessment (AUAR) Update for approximately 5,300 developable acres of future ...

Existing Land Uses: The majority of the existing land use in the AUAR area is agricultural related, including farmsteads, assorted agricultural accessory buildings, and agriculture ...

Landcover / Habitat Impacted: Vegetation within the AUAR boundary is predominantly agricultural (cropland), with some areas of grasslands and woodlands. Areas categorized as grassland ...

Waterbodies Affected: The digital DNR Public Waters Inventory (PWI) for Wright County indicates the AUAR area includes Mud Lake (aka Woodland WMA) (86-585P) along the eastern ...

Groundwater Resources Affected: No new private wells are anticipated in the environmental study area. New public wells will need to be built as development occurs. Municipal water will ...

Previous Natural Heritage Review: Yes, ERDB#: 20180092

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	No Comments	No Further Review Required
Ecologically Significant Area	Comments	Local Conservation Value - Comment Potential RNC - Will Require Consultation
State-Listed Endangered or Threatened Species	No Comments	No Further Review Required
State-Listed Species of Special Concern	Comments	Recommendations

Category	Results	Response By Category
Federally Listed Species	No Records	Visit IPaC For Federal Review



Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

November 15, 2022

Project ID: MCE #2022-00784

Lucas Bulger
Bolton & Menk, Inc.
111 S Washington Avenue, Suite 650
Minneapolis, MN 55401

RE: Automated Natural Heritage Review of the proposed Montrose AUAR Update
See Cover Page for location and project details.

Dear Lucas Bulger,

As requested, the above project has been reviewed for potential effects to rare features. Based on this review, the following rare features may be adversely affected by the proposed project:

Project Type and/or Project Type Activity Comments

- 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 below, all seven of Minnesota's bats, including the federally threatened northern long-eared bat ([*Myotis septentrionalis*](#)), can be found throughout Minnesota. 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 during the months of June and July.

Ecologically Significant Area

- The Minnesota Biological Survey (MBS) has identified one or more Sites of Biodiversity Significance within or adjacent to the project boundary. 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. Factors taken into account during the ranking process include the number of rare species documented within the site, the quality of the native plant communities in the site, the size of the site, and the context of the site within the landscape.

Areas with Potential Local Conservation Value - The proposed project may impact one or more areas that have local conservation value. These areas are ranked as Below in the MBS Sites of Biodiversity Significance layer, and are retained in the layer as negative data. These areas do not meet the minimum biodiversity threshold for statewide significance but 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.

- One or more DNR Native Plant Communities have been identified within or adjacent to the proposed project (for a list of all the native plant community types, please run a Conservation Planning Report; spatial data can be viewed on the Explore Page). DNR Native Plant Community types and subtypes are given a [Conservation Status Rank](#) that reflects the relative rarity and endangerment of the community type in Minnesota. Conservation Status Ranks range from S1 (critically imperiled) to S5 (secure, common, widespread, and abundant).

Rare Native Plant Communities - One or more rare native plant communities may be impacted by the proposed project. Native plant communities with a Conservation Status Rank of S1 to S3 are considered rare in the state, and the DNR recommends avoidance of these ecologically significant areas. In addition, please note that native plant communities with a conservation status rank of S1 to S3 may qualify as Rare Natural Communities under the Wetland Conservation Act (WCA). 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 Endangered or Threatened Species

No state-listed endangered or threatened species have been documented in the vicinity of the project.

State-Listed Species of Special Concern

Taxonomic Group	Common Name	Scientific Name	Water Regime	Habitat	Federal Status
Vascular Plant	American Ginseng	<i>Panax quinquefolius</i>	terrestrial	Mesic Hardwood Forest	
Vertebrate Animal	Trumpeter Swan	<i>Cygnus buccinator</i>		Littoral Zone of Lake, Marsh	

- The above table identifies state-listed species of special concern that have been documented in the vicinity of your project. If suitable habitat for any of these species occurs within your project footprint or activity impact area, the project may negatively impact those species. To avoid impacting state-listed species of special concern, the DNR recommends modifying the location of project activities to avoid suitable habitat or modifying the timing of project activities to avoid the presence of the species. 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. For further assistance, please contact the appropriate [DNR Regional Nongame Specialist](#) or [Regional Ecologist](#). Species-specific comments, if any, appear below.

Federally Listed Species

The Natural Heritage Information System does not contain any records for federally listed species within one mile of the proposed project. However, to ensure compliance with federal law, please conduct a federal regulatory review using the U.S. Fish and Wildlife Service's online [Information for Planning and Consultation \(IPaC\) tool](#).

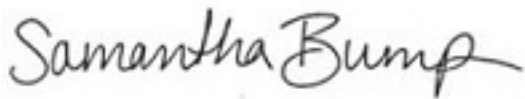
The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, 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 the project description provided on the cover page. If project details change or construction has not occurred within one year, please resubmit the project for review.

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 effects to these rare features. 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,

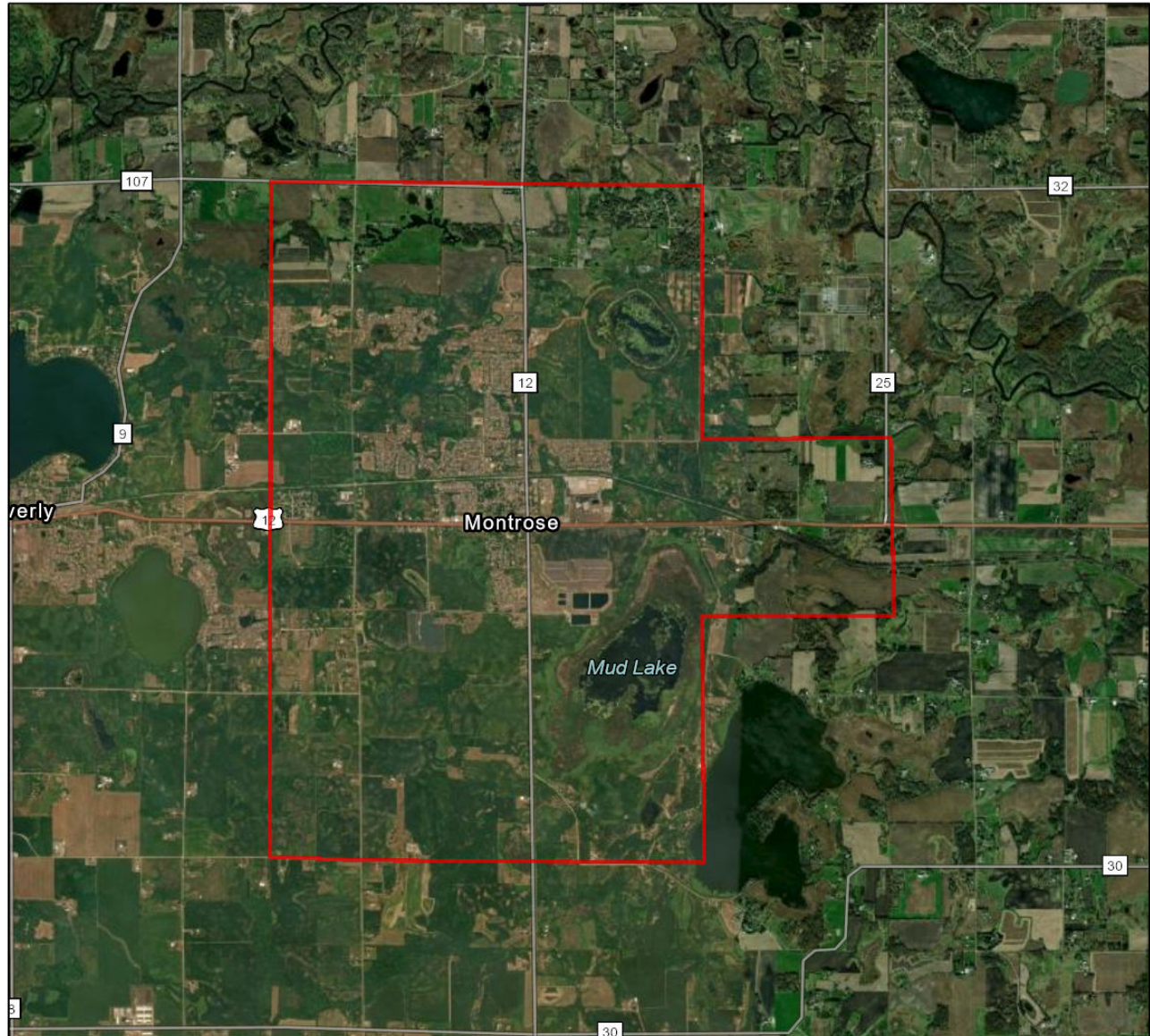
A handwritten signature in black ink that reads "Samantha Bump". The signature is written in a cursive, flowing style.

Samantha Bump
Natural Heritage Review Specialist
Samantha.Bump@state.mn.us

Links: USFWS Information for Planning and Consultation (IPaC) tool
[Information for Planning and Consultation \(IPaC\) tool](#)
DNR Regional Environmental Assessment Ecologist Contact Info
https://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html

Montrose AUAR Update

Aerial Imagery With Locator Map



0 0.38 0.75 1.5 2.25 3 Miles

 Project Boundary

Project Type: Development, Mixed Use

Project Size (acres): 7,090.35

County(s): Wright

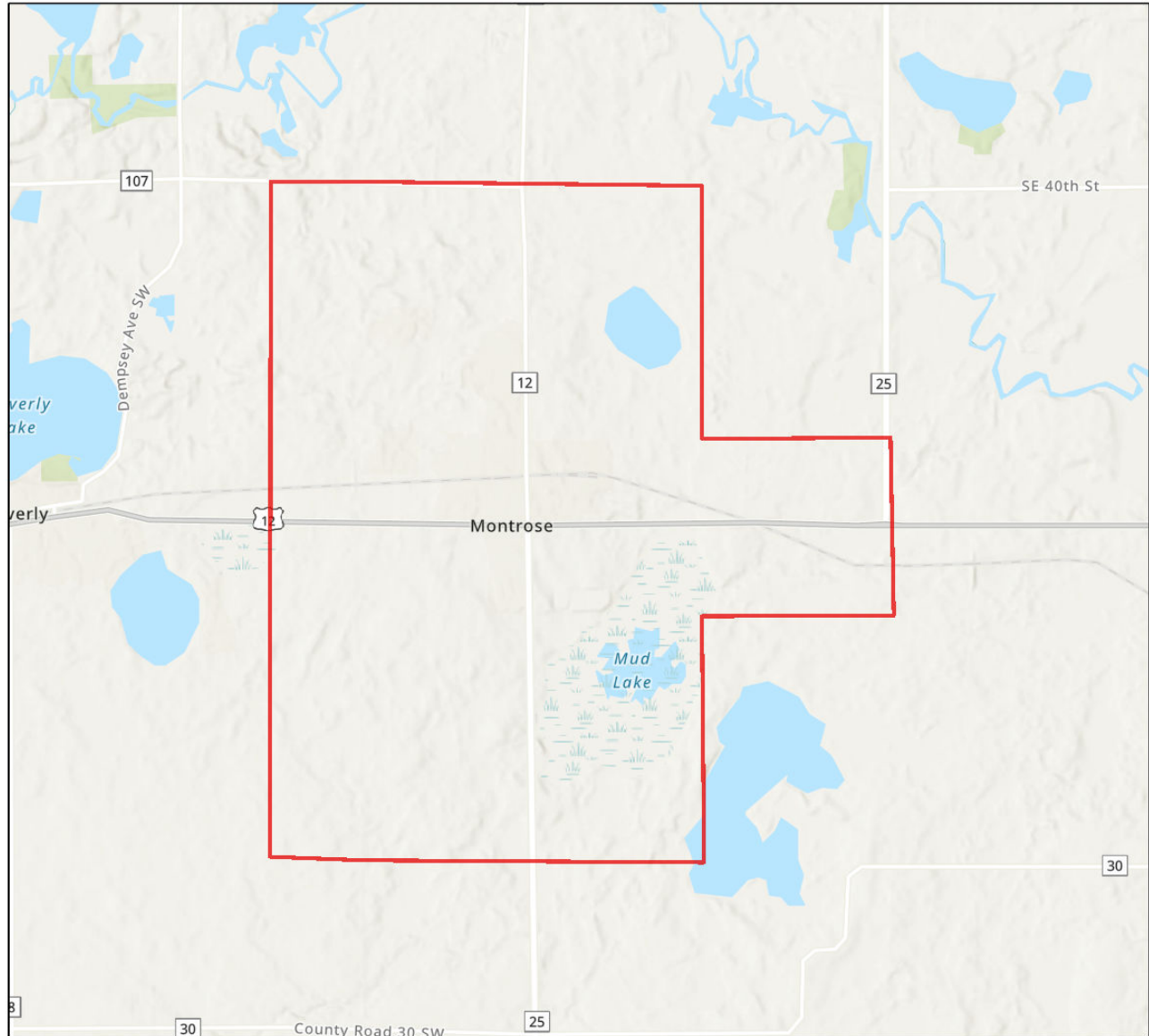
TRS: T118 R25 S5, T118 R25 S6, T118 R26 S1, T118 R26 S10, T118 R26 S11 +

Earthstar Geographics
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA
Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, HERE, Garmin,



Montrose AUAR Update

USA Topo Basemap With Locator Map



0 0.38 0.75 1.5 2.25 3 Miles

 Project Boundary

Project Type: Development, Mixed Use

Project Size (acres): 7,090.35

County(s): Wright

TRS: T118 R25 S5, T118 R25 S6, T118 R26 S1, T118 R26 S10, T118 R26 S11 +

Esri, NASA, NGA, USGS
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA
Metropolitan Council, MetroGIS, Three Rivers Park District, Esri, HERE, Garmin,





United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
4101 American Blvd E
Bloomington, MN 55425-1665
Phone: (952) 252-0092 Fax: (952) 646-2873



In Reply Refer To:
Project Code: 2023-0017270
Project Name: Montrose AUAR Update

November 18, 2022

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 ECOS 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 ECOS IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance

Please 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, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

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 stand of eastern red cedar 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, please use the northern long-eared bat determination key in IPaC. This tool streamlines consultation under the 2016 rangewide programmatic biological opinion for the 4(d) rule. The key helps to determine if prohibited take might occur and, if not, will generate an automated verification letter. No further review by us is necessary.

Please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the bat by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of northern long-eared bats after the new listing goes into effect this will first need to be addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

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
 - 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

4101 American Blvd E

Bloomington, MN 55425-1665

(952) 252-0092

Project Summary

Project Code: 2023-0017270

Project Name: Montrose AUAR Update

Project Type: Mixed-Use Construction

Project Description: The City of Montrose is proposing to complete an Alternative Urban Areawide Assessment (AUAR) Update for approximately 5,300 developable acres of future development surrounding the City of Montrose with study area boundaries located east at MN Highway 25, south at 40th Street SW/County Road 107, west at Montrose's boundary with Waverly, and north at 80th Street SW. The AUAR study area is proposed to include low, medium, and high density residential, industrial, and commercial development. The project includes construction of roads, homes, businesses, trails, parks, ponds, and utilities such as storm water, wastewater, and water supply piping. The AUAR also analyzes the impacts of approximately 1,700 acres of development that exists or is in a various stage of approval and 100 acres of railroad right-of-way, for a total analysis area of approximately 7,100 acres.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@45.0651852,-93.90480249381554,14z>



Counties: Wright County, Minnesota

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> 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.	Breeds Dec 1 to Aug 31
Black Tern <i>Chlidonias niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20

NAME	BREEDING SEASON
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler <i>Cardellina canadensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Cerulean Warbler <i>Dendroica cerulea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 22 to Jul 20
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Golden-winged Warbler <i>Vermivora chrysoptera</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8745	Breeds May 1 to Jul 20
Henslow's Sparrow <i>Ammodramus henslowii</i> 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
Lesser Yellowlegs <i>Tringa flavipes</i> 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
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> 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 and understand the

FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

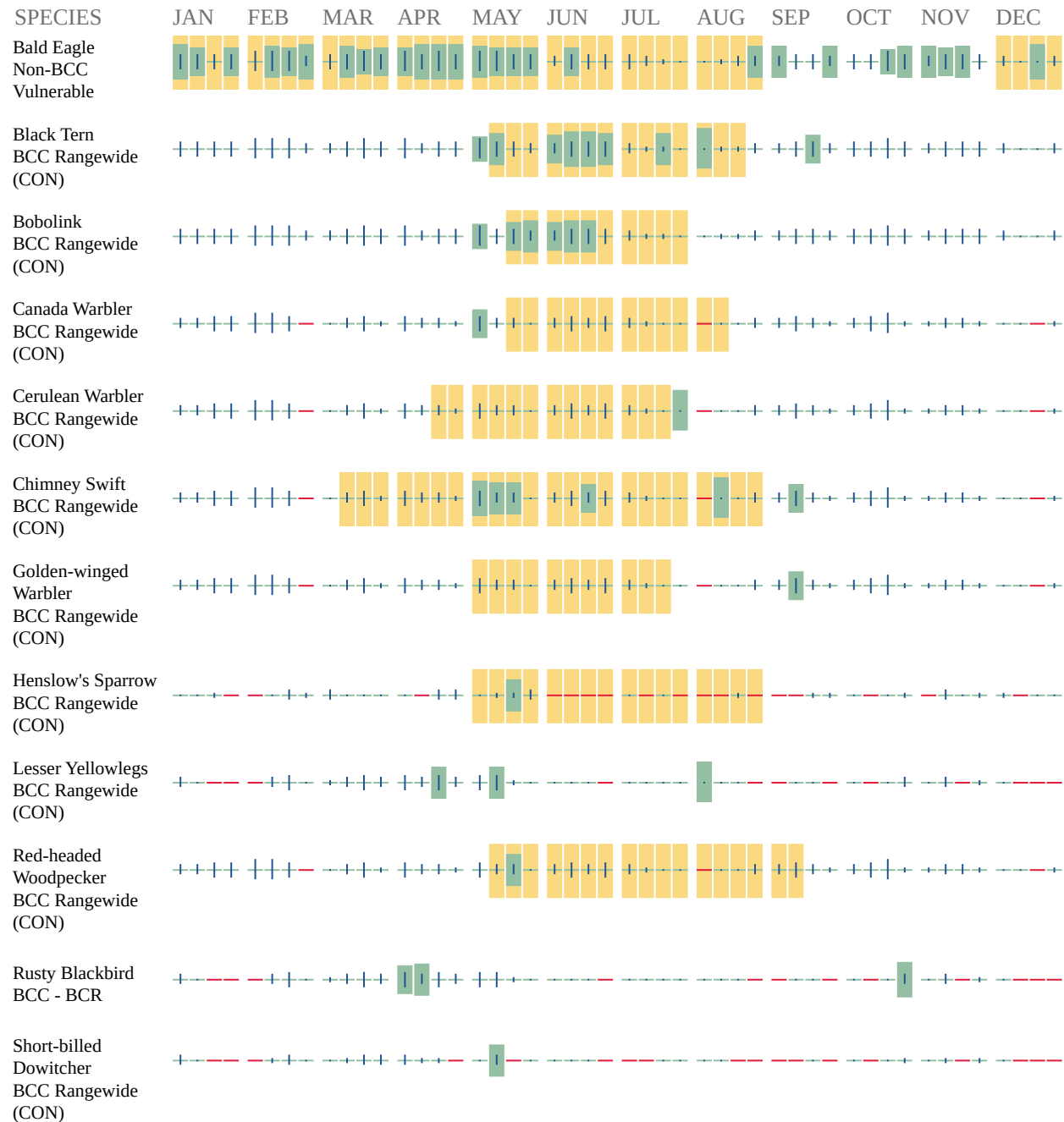
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- 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>

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point

within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no

data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPaC User Contact Information

Agency: Bolton & Menk, Inc.
Name: Lucas Bulger
Address: 111 Washington Avenue South
Address Line 2: Suite 650
City: Minneapolis
State: MN
Zip: 55401
Email: lucas.bulger@bolton-menk.com
Phone: 6122700928

December 16, 2022

Matthew Sitek
Bolton & Menk
12224 Nicollet Avenue
Burnsville, MN 55407

RE: City of Montrose Alternative Urban Areawide Assessment (AUAR)
Montrose, Wright County
SHPO Number: 2023-0463

Dear Matthew Sitek:

Thank you for consulting with our office during the preparation of an Alternative Urban Areawide Assessment Update for the City of Montrose. The AUAR Update is for approximately 5,300 developable acres for future development surrounding the City of Montrose. The area is proposed to include low, medium, and high density residential, industrial, and commercial development, roads, trails, parks, ponds, and related infrastructure.

We have reviewed the information included in your submission in regards to cultural resources and we agree with the recommendation that Phase I cultural resource investigations should be conducted for individual projects as development occurs. As stated in your submission, there is one historic property that is listed in the National Register of Historic Places within the AUAR boundary, the **Hawkins Clinic, Hospital, and House**, which is located at 210-230 Buffalo Avenue South. Any projects that are planned in this area should take into account any effects the projects may have on the historic property. There may be other properties located within the AUAR boundary that meet National Register criteria as well but have never been evaluated.

Given the presence of burial mounds in the project area, we recommend that you also consult with the Office of the State Archaeologist (OSA) and the Minnesota Indian Affairs Council (MIAC), per Sec. 307.08 of the Minnesota Private Cemeteries Act.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If any of the development projects are considered for federal financial assistance, or require a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office at this time may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

Please contact Kelly Gragg-Johnson, Environmental Review Program Specialist, at 651-201-3285 or kelly.graggjohnson@state.mn.us if you have any questions regarding our comments.

Sincerely,



Sarah J. Beimers
Environmental Review Program Manager