



Jackson Township Development Area

ALTERNATIVE URBAN AREAWIDE REVIEW (AUAR)

February 2020

Prepared For:
City of Shakopee



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Introduction

This Alternative Urban Areawide Review (AUAR) was completed for the City of Shakopee to provide environmental planning and documentation for the development of the City's southwestern orderly annexation area within Jackson Township. As provided for in Minnesota Rules Chapter 4410.6310, subpart 1, this AUAR substitutes for the preparation of an Environmental Assessment Worksheet or Environmental Impact Statement for future developments in the study area, provided they are consistent with the assumptions of the AUAR. The land uses described within this scenario are consistent with those designated by the City of Shakopee and Scott County 2030 Comprehensive Plans and with the City's proposed 2040 Comprehensive Plan Update. The AUAR also includes a Mitigation Plan (Attachment J) that identifies measures to be taken to avoid/minimize/mitigate environmental impacts from the proposed development.

This environmental review was performed in accordance with the Minnesota Environmental Quality Board (EQB) environmental review program, Minnesota rules 4410.3610, and the EQB Memorandum, "recommended content and format alternative urban areawide review documents,". In accordance with this guidance, the standard EAW form has been used to complete this review. For each item discussed below, a note has been included in italics indicating either the EQB's recommendation of information needed for the AUAR (where it differs from that needed for the EAW) or that the EAW item is not applicable to the AUAR.

1. Project Title:

Jackson Township Annexation Area

2. Proposer:

City of Shakopee

Contact Person: Mark Noble

Title: Senior Planner, Planning and Development

Address:

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3. Responsible Government Unit (RGU):

City of Shakopee

Contact Person: Mark Noble

Title: Senior Planner, Planning and Development

Address:

485 Gorman St.

Shakopee MN 55379

Phone: 952-233-9348

Email: mnoble@shakopeemn.gov

4. Reason for EAW Preparation:

Not applicable to AUAR.

5. Project Location:

County: Scott

City: Shakopee

Sections 2, 3, 9, 10, 11, 13, 14, 15, 23 and 24, Township 23, Range 115

Watershed: Lower Minnesota River Watershed, Scott WMO

GPS Coordinates: 44° 44' 36.55" N, 93° 33' 30.16" W (Central Point)

Tax Parcel Number: Multiple

The required maps are included in Attachment A:

- Figure 1 – AUAR Study Area
- Figure 2 – State Location Map
- Figure 3 – USGS Project Location
- Figure 4 – Project Area Subdistricts
- Figure 5 – Existing Land Use – Scott County 2040 Comprehensive Plan
- Figure 6 – Existing Land Use – City of Shakopee 2030 Comprehensive Plan
- Figure 7 – Proposed Land Use (2040 Draft City Comprehensive Plan)
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6. Project Description:

The Shakopee AUAR was prepared to provide a complete understanding of the cumulative impacts of planned development in seven growth areas that are either currently part of the City of Shakopee or are planned to be in the future as part of the City's orderly annexation agreement with Jackson Township. The AUAR Study area is divided into seven Subdistricts, A through G, that correspond with the areas defined in the orderly annexation agreement and an area of Shakopee poised for new growth. They are contiguous and are generally located to the southwest of current Shakopee city boundaries.

Two development scenarios will be reviewed within the AUAR, in compliance with the AUAR process. The first scenario utilizes the scenarios laid out within the adopted 2030 Comprehensive Plans for Scott County (Areas A through F) and the City of Shakopee (Area G). The second scenario includes a full build scenario of the future land uses proposed within Shakopee's 2040 Comprehensive Plan update. For the purposes of the AUAR, the analysis assumed the full build of each development scenario. Therefore, the resulting socio-economic totals utilized within the AUAR are higher than those assumed within the 2030 and 2040 Comprehensive Plans.

No Build (Shakopee 2030 Comprehensive Plan and Scott County 2030 Comprehensive Plan) Scenario

The Scott County 2030 Comprehensive plan establishes future land use plans for within the subareas A through F of the study area for a 20-year period. The plan acknowledges the farming and low-density

character of the area, establishing thresholds of very low density for much of the study area. The plan includes policies that:

- Promote collaboration across municipality and township governments on land use and development issues
- Broadens participation and coordination with residents and other county stakeholders
- Establishes parts of the county for urban and rural uses
- Preserves natural resources
- Promotes flexibility in development within rural areas
- Long term plans for maintaining and improving the recreation and transportation systems of the County.

The No Build scenario for subarea G includes the developed land use proposed within the City of Shakopee's 2030 Comprehensive Plan. There are two land uses identified within the study area, Commercial and Single Family Residential. The residential designation is consistent with the current use of the parcels, identifying no future change in use. The northern portion of area G is identified for future commercial use, allowing for the development of a range of retail sales, service and office uses within the area.

Build (Shakopee 2040 Plan) Scenario

Shakopee's 2040 Comprehensive Plan defines an updated plan for guiding development decisions within the study area over the next 20 years. The plan is oriented towards growth and revitalization, with an acknowledgement that a diversity of housing options including townhomes, mixed use development, and single-family detached housing all have places in the future of Shakopee. The plan's land use map is included in Figure 7.

Anticipated Types and Intensity of Development

Land Use	Description
Mixed Use Employment Center	This land use allows for businesses with heights from 1 to 3 stories, with a floor area ratio of 0.25 to 2.0. Primary uses include light/advanced manufacturing, warehousing and distribution, office, and higher education. Secondary uses include business support services, multi-family residential, public and private open spaces, and day care centers. Residential uses are required to be at a density of 16 to 30 units per acre.
Suburban Residential	Suburban residential land uses include 1 to 3 story traditional residential buildings with setbacks of at least 25 feet and a density of 3 to 6 units per acre. The floor area ratio is guided to be 0.2 to 0.5. The only primary use is single-family residential. Secondary uses include attached single-family, neighborhood parks and open space, institutional uses like schools and places of worship, day care centers, and small-scale senior living centers.
Mixed Use Residential	Mixed residential land use includes 1 to 4 stories of varied types of primary residential uses, including attached single-family dwellings, town houses and multifamily anywhere from 6 to 30 units per acre. Smaller scale neighborhood retail is also allowed as a secondary use in addition to senior care facilities and parks and open space.

Land Use	Description
Mixed Use Commercial Center	This land use guides heights to be from 1 to 5 stories with residential density of 30 to 60 units per acre. Floor area ratios are guided to be 0.2 to 1.5. Primary uses include commercial and office. Secondary uses include multi-family residential, public and quasi-public gathering spaces, parking, and transit-oriented uses.
Suburban Edge Residential	Suburban edge residential also includes 1 to 3 story developments with exclusively single-family with residential density set at 0.25 to 3 units per acre and a floor area ratio of 0.05 to 0.2. Secondary uses for this land use include parks and open space, and institutional uses like schools or places of worship.
Utilities	Utility land use guides heights up to 4 stories and guides setbacks from 0 to 200 feet. There is no density or floor area guidance.
Parks	The Parks land use allows for up to 2 story buildings. Primary land uses include parks, recreation, and trails. The secondary use on park lands is parking.
Open Space	Open Space land use allows for up to 2 story buildings. The primary use is open space, and secondary uses include trails and stormwater management infrastructure.

Development Staging

The timing of the proposed development for each scenario will be driven, primarily, by the market and developer/property owner interest. The 2040 Comprehensive Plan defines a staging plan for portions of the study area to achieve its population, household and employment projections by 2040. This staging information is not included as part of the analysis of this AUAR, as development is not assumed within the entire study area. It is anticipated that a full build-out of the study area will be experienced post-2040.

Infrastructure

Existing infrastructure and proposed infrastructure improvements are defined within the AUAR study area. The conditions are considered to be in place and are not included in the analysis of the AUAR.

Water Infrastructure

A majority of the study area is currently provided potable water through individual wells.

The Shakopee Public Utility Commission (SPUC) water system includes seven storage tanks, 18 groundwater supply wells and four pumping stations that service the entire community. The system utilizes four pressure zones: Normal Zone, First High Zone, East Zone, and the Second High Zone. The study area is within portions of the Normal, First High, and Second High pressure zones (see Figure 11). A booster station was recently constructed within the Second High Pressure Zone to service both the First High and Second High zones. The City's Comprehensive Water System Plan was updated to analyze the future needs of the water system in response to the assumption of this AUAR. To serve the city's future growth, including the study area and other growth areas, additional wells and infrastructure will be constructed to service these growth areas. This includes the construction of Wells 23 and 24 and an elevated storage tank within the study area.

Sanitary Sewer Infrastructure

Similar to water infrastructure, portions of the study area are not connected to municipal sanitary sewer service. The regional MUSA boundary does not currently extend into the study area. Future extension of the sanitary infrastructure is needed to service the area.

Existing Sanitary sewer service falls into three sewer sheds in the area. The West Louisville/Jackson Sewer Shed is served by two trunk sewers extending from the MCES interceptor – a 24-inch main in Lusitano Street and an 18 – 27 inch main in the Windemere subdivision.

Stormwater Improvements

One stormwater project is currently identified within the City's 2020-2024 Capital Improvement Program (CIP). The West End Regional Pond & Trunk Oversizing (STORM-21-001) includes the oversizing of ponds and pipes in Subdistrict C to aid in rate control, flood protection and water quality. It is intended that this effort will be coordinated with development.

As development proposals are received, the City's existing stormwater policy will be used to review development proposals and mitigate impacts. There are various areas throughout the study area that experience drainage issues during storm and rain events. Known issue areas identified within the study area are discussed later in the AUAR.

Electrical Infrastructure Improvements

According to Shakopee's Long-Range Electric System Plan, three of six of the Jackson Township areas forecasted to be annexed by the City are already serviced by Shakopee Public Utilities (SPU) for electrical service. There is a projected growth in electrical load provided by the city to the currently un-serviced areas in the City's annexation plan of 23.2 mega-volt amperes.

Transportation Infrastructure Improvements

The study area is currently supported by a network of State, County and local roadways serving the study area. There are planned improvements to this network within and outside of the scope of the study area development. Prior to the start of the Jackson Township AUAR, MnDOT and Scott County began the process of studying and completing final design for a grade separated interchange of US 169 and TH 41/CSAH 78. This interchange is currently under construction and is assumed to be completed for the analysis within the AUAR. Additionally, an extension of CSAH 16 has been planned within the study area, providing connectivity to Subdistricts A and B. The general alignment of the planned roadway network is shown in Figure 12. This extension, along with other future roadways will be considered as part of the development scenario being analyzed within the AUAR.

The traffic analysis completed for this AUAR represents planning level estimates and should be further refined as development occurs and other regional roadway and intersection improvements are pursued.

Future Considerations

In 2007, area stakeholders analyzed the construction of a new TH 41 river crossing between the cities of Shakopee and Chaska. The new crossing was studied to explore opportunities that serve regional traffic, reduce traffic congestion, and protect the floodplain. Multiple corridors were studied through an Environmental Impact Statement (EIS), which studied the project impacts on social, economic, and environmental resources in the area. As a result, The C-2 alignment was selected as the preferred alternative through the EIS process. The C-2 alignment is in close proximity to the existing TH 41 alignment within this AUAR study area.

While the preferred alignment was selected, the new crossing is not planned or programmed within MnDOT's near term projects, and the new alignment was not considered in the traffic analysis for this AUAR. However, the City recognizes the alignment and the findings of the FEIS and will monitor the alignment and future right-of-way needs.

Project Magnitude Data

The data provided here represents the anticipated residential, mixed use, and commercial development throughout the AUAR sub areas based upon the development scenarios that have been described above. The developable land in the AUAR study area includes all land unconstrained by wetlands as defined by Level 1 wetland delineation, floodways, and right-of-way removal.

The assumptions used to arrive at net developable land area include:

- Developable Area includes the total area of each land use with undevelopable areas (e.g. wetlands, steep slope) removed.
- Developable Area less right-of-way removes 20% of the total area to account for future roadway and utility right-of-way. In areas where the roadway network exists, no reduction was taken.
- Percent Residential and Percent Commercial totals for each area were provided by City Staff.
- Residential Acreage and Commercial Acreage provide the breakdown of acres between the two development types.
- Residential Density for each land use and area was provided by City Staff in units/acre.
- Residential Units calculates the total capacity or number of units within each land use category by multiplying the residential acreage by the residential density.
- Developable Commercial Acreage removes an additional 10% of the total area to account for regional stormwater BMPs or other public infrastructure.
- The Percent of Development identifies the percentage of the Developable Commercial Acreage for the five development types.
- The Employment Area Acres calculates the total acreage that is identified for each development type.
- The Building Area is calculated in acres and square feet using a general floor area ratio (FAR) for each development type based on the comprehensive plan FAR ranges per land use type.

The following tables provide the assumed development magnitude of the 2030 Comprehensive Plan and AUAR Development Scenarios. Table 1 provides the proposed number of residential housing units and square feet of commercial and industrial development per Subdistrict of the 2030 Comprehensive Plan development. Table 2 provides the same information for the AUAR development scenario (2040 Comprehensive Plan). A detailed breakdown of the assumptions by land use category are included in Attachment B.

Table 1: Project Magnitude Data – 2030 Comprehensive Plan

Sub-Area	Developable Acres	Units	Office SF	Manufacturing SF	Warehouse SF	Retail SF
A	217	19	26,006	14,860	14,860	20,443
B	368	13	156,661	80,520	80,520	96,182
C	484	77	--	--	--	--
D	795	7	125,239	78,005	78,005	134,567
E	82	13	--	--	--	--
F	61	--	--	--	--	--
G	20	9	--	--	--	122,000
Total	2,027	138	307,906	173,385	173,385	373,192

Table 2: Project Magnitude Data – AUAR Development Scenario

Sub-Area	Developable Acres	Units	Office SF	Manufacturing SF	Warehouse SF	Neighborhood Retail SF	Highway Retail SF
A	152	334	243,331	90,994	90,994	81,991	636,351
B	305	442	1,437,778	765,719	765,719	219,195	1,042,324
C	484	450	--	--	--	83,486	--
D	338	230	1,427,441	1,082,695	1,082,695	--	736,468
E	65	113	--	--	--	15,007	--
F	0	--	--	--	--	--	--
G	20	184	--	--	--	--	112,122
Total	1,364	1,753	3,108,550	1,939,408	1,939,408	399,679	2,527,265

Tables 1 and 2 identify the proposed changes in development assumptions between the 2030 and 2040 Comprehensive Plan development scenarios. The 2040 Comprehensive Plan, or AUAR Development Scenario, assumes the transition of the study area from rural uses and development styles to urbanized uses. This transition results in a large increase in the magnitude of the development scenario.

7. Cover Types:

AUAR Guidance: The following information should be provided: a. Cover type map, at least at the scale of USGS topographic map, depicting:

- *Wetlands – identified by type (Circular 39)*
- *Watercourses – rivers, streams, creeks, ditches*
- *Lakes – identify public waters status and shoreland management classification iv. Woodlands – breakdown by classes were possible*
- *Grassland – identify native and old field*
- *Cropland*
- *Current development*

An “overlay” map showing anticipated development in relation to the cover types; this map should also depict any “protection areas,” existing or proposed, that will preserve sensitive cover types. Separate maps for each major development scenario should generally be provided.

The study area includes a variety of cover types throughout the Subdistricts, ranging from grassland and crop land to lakes and wetlands. Figure 13 illustrates the various land uses within the study area prior to and development of the study area. Existing development currently within the study area is included in this analysis. The anticipated development is overlaid onto the existing cover types in Figure 14. The specific building siting, parking layouts and internal street network are not yet determined within the study area. Therefore, this figure identifies the general overlay of development areas compared to conservation areas.

8. Permits and Approvals Required:

AUAR Guidance: A listing of major approvals (including any comprehensive plan amendments and zoning amendments) and public financial assistance and infrastructure likely to be required by the anticipated types of development projects should be given for each major development scenario. This list will help orient reviewers to framework that will protect environmental resources. The list can also serve as a starting point for the development of the implementation aspects of the mitigation plan to be developed as part of the AUAR.

Table 3 lists the anticipated major approvals and permits likely to be required by future development projects.

Table 3: Permits and Approvals

Unit of Government	Type of Application
Federal	
U.S. Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act
State	
Minnesota Department of Natural Resources (MnDNR)	State Endangered Species Review
MnDNR	Temporary Water Appropriation Permit
MnDNR	Amendment to Shoreland Ordinance to include the two Natural Environment Lakes within the Study Area
MnDNR	Amendment to DNR Water Appropriation Permit 1980-6205 for increased water use
Minnesota Pollution Control Agency (MPCA)	Section 401 Certification
MPCA	Sanitary Sewer Extension Permit
MPCA	National Pollutant Discharge Elimination System (NPDES) Permit
Metropolitan Council Environmental Services	Sanitary Sewer Plan Approval
Metropolitan Council	Comprehensive Plan Amendment
Minnesota Department of Health (MDH)	Water Main Plan Approval
Minnesota State Historic Preservation Office (SHPO)	Cultural Resource Coordination
Minnesota Office of Administrative Hearings	Municipal Boundary Adjustment
Minnesota Environmental Quality Board (EQB)	Environmental Assessments (AUAR)
County*	
Scott County	Access permits to County Roadways
Scott County	Grading Permit*

Unit of Government	Type of Application
Scott County	Subdivision Approval*
Scott County	Rezoning*
Scott County	Building Permits*
Local	
City of Shakopee	Grading Permit
City of Shakopee	Subdivision Approval
City of Shakopee	Rezoning
City of Shakopee	Building Permits
*Permitting with Scott County for grading, subdivisions, rezoning and building permits will be required if development is pursued prior to annexation into the City of Shakopee.	

9. Land Use:

AUAR Guidance: Water-related land use management districts should be delineated on appropriate maps and the land use restrictions applicable in those districts should be described. If any variances or deviations from these restrictions within the AUAR area are envisioned, this should be discussed.

AUAR Guidance: Designated parks, recreation areas, or trails. If development of the AUAR will interfere or change the use of any existing such resource, this should be described in the AUAR. The RGU may also want to discuss under this item any proposed parks, recreation areas, or trails to be developed in conjunction with development of the AUAR area. The AUAR must include a statement of certification from the RGU that its comprehensive plan complies with the requirements set out at 4410.3610, subpart 1. The AUAR document should discuss the proposed AUAR area development in the context of the comprehensive plan. If this has not been done as part of the responses to items 6, 9, 18, 21, and others, it must be addressed here; a brief synopsis should be presented here if the material has been presented in detail under other items. Necessary amendments to comprehensive plan elements to allow for any of the development scenarios should be noted. If there are any management plans of any other local, state, or federal agencies applicable to the AUAR area, the document must discuss the compatibility of the plan with the various development scenarios studied, with emphasis on any incompatible elements.

The AUAR study area is approximately 2,889 acres in size located to the west and south of the existing City of Shakopee limits (see Figures 1 and 4). The AUAR study area currently includes a range of existing uses, from undeveloped opens space and recreational areas to commercial development. The area is currently located within Jackson Township/Scott County jurisdiction and is not serviced by municipal water or wastewater services. The transportation network within the study area is well established with arterial roadways to service this area. Future alignments of the local transportation network have not yet been established. As the local network is established, the city's design requirements will be used to define the design standards and right-of-way requirements. Local roadways must be dedicated with at least 60 feet of right-of-way.

Land uses that currently exist within the study area include: Commercial/Industrial, Commercial Reserve, Urban Expansion, Public Lands, Open Space, and Single Family. The project area includes current commercial and industrial uses, manufactured home parks, row-crop uses, wetlands, and park space. Table 4 breaks down acreage of existing land use in the project study area by Subdistrict.

Table 4: Existing Study Area Land Uses

Subdistrict	Land Use	Developable Area
A	Commercial/Industrial	4
	Commercial Reserve	106
	Public Lands	0
	Urban Expansion	107
	Total	217
B	Commercial/Industrial	51
	Commercial Reserve	266
	Public Lands	0
	Urban Expansion	51
	Total	368
C	Commercial/Industrial	0
	Commercial Reserve	0
	Public Lands	0
	Urban Expansion	484
	Total	484
D	Commercial/Industrial*	156
	Commercial Reserve	353
	Public Lands	443
	Urban Expansion	0
	Total	952
E	Commercial/Industrial	0
	Commercial Reserve	0
	Public Lands	0
	Urban Expansion	82
	Total	82
F	Commercial/Industrial	0
	Commercial Reserve	0
	Public Lands	61
	Urban Expansion	0
	Total	61
G	Commercial/Industrial	0
	Commercial	10
	Public Lands	0
	Suburban Residential	10
	Total	20
Total		2,184

**Subdistrict D includes two Natural Environment Lakes that are regulated by the City's Shoreland Ordinance. Industrial land uses are prohibited within 1,000 feet of the shoreline of these lakes.*

The proposed land uses are compatible with adjacent land uses. The primary use of parcels adjacent to the study area includes urbanized residential and commercial uses to the north and east within the City of Shakopee. The proposed uses are consistent with those currently located in this area. The existing land uses to the south of the study area include a combination of rural residential and farmland uses and include some retail and industrial development. These areas will continue to be under the jurisdiction of Scott County and the respective townships. Efforts to reduce potential conflict and protect environmentally sensitive areas were made during the land use planning efforts. For example, the bluff area located in Subdistrict A has been identified as park and open space, limiting future development potential in the area. The following land uses are proposed for each of the Subdistricts per the AUAR Development Scenario:

- **Subdistrict A:** Shakopee 2040 proposed land use shows Mixed Use Employment Center and Mixed Use Center in the north, Open Space in the middle, and Mixed Residential and Suburban Residential in the south.
- **Subdistrict B:** Shakopee 2040 land use designates the subdistrict mostly as Mixed-Use Employment Center, except for the south east and south west corners. The south west corner of the subdistrict is designated as Mixed-Use Center. The southeast corner of the subdistrict is designated Open Space and Mixed Residential.
- **Subdistrict C:** Proposed land use guides the subdistrict as Suburban Edge Residential in the south, and Suburban Residential and Mixed Residential in the middle and north.
- **Subdistrict D:** The Shakopee 2040 proposed land use maintains Open Space to the north. The middle and south of the subdistrict is changed to Mixed Use Employment Center and Mixed-Use Center. The district's 2040 guidance finally includes a suburban residential Land Use where the Bonnevista Terrace Mobile Home Court is located.
- **Subdistrict E:** The 2040 proposed land use calls for a mixture of Suburban Residential, Mixed Residential and Suburban Edge Residential. A majority of the subdistrict is designated for Suburban Residential, with an area of Mixed Residential in the Northwest quadrant and an area of Suburban Edge Residential in the Southeast quadrant.
- **Subdistrict F:** The proposed Shakopee 2040 land use designation for subdistrict F is Parks, maintaining the existing Jackson Township park.
- **Subdistrict G:** The proposed 2040 land use includes Mixed Use Center for the northern portion of the site and Suburban Residential for the southern portion of the site.

Study Area Zoning

The study area currently contains four Scott County-designated zoning categories. These are Urban Expansion Reserve (UER), Rural Industrial District (I-1), Urban Business Reserve (UBR), and General Commercial District (C-1). The Rural Industrial zoning is located primarily along the Union Pacific Railroad line. The Urban Business Reserve and General Commercial zones surround Highway 169 and County Road 69. Urban Expansion zones are along the Minnesota River in the north of the study area, as well as parcels to the south east of the study area.

Subdistrict A has two zoning designations: Urban Business Reserve (UBR) in the north and Urban Expansion Reserve (UER) in the south. Subdistrict B has four zoning designations; the northern portion of the subdistrict is primarily UBR zoning, the southwest is C-1 and I-1 zoning, and the southeast is zoned is UER. Subdistrict C contains exclusively UER zoning. Subdistrict D contains UER zoning in the north, and C-

1/I-1 zoning to the south and east. Subdistrict E contains exclusively UER zoning. Subdistrict F is zoned Public Land.

Scott County zoning provides minimum setback standards from water bodies for structures and individual sewage treatment systems. Structures and treatment systems must be at least 150 feet back from the high-water level of a Natural Environment Lake (this would include Nyssens/Strunks and Gifford Lakes) in subdistrict D.

Future Considerations

As development is pursued within the study area, annexation into city limits and zone changes will be required. This process requires review by city staff and a public hearing at the city level, and approval and recoding from the Minnesota Office of Administrative Hearings. The review and approval at the local level will ensure that proposed development applications align with the future land use plan, reduce land use conflicts and reduce and mitigate environmental impacts.

Prime or Unique Farmlands

Prime farmland and farmland of statewide importance are located within the study area based on soils data published by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). Figure 15, Attachment A illustrates areas classified as prime farmland and farmland of statewide importance.

Designated Parks, Recreation Areas, or Trails

Existing parks and trails within the AUAR study area include the Minnesota Valley State Recreation Area and Jackson Township Park. State and local trails are also located within the AUAR study area. Figure 16, Attachment A illustrates park and trail facilities within and in the vicinity of the AUAR study area.

The Minnesota Valley State Recreational Area is a protected natural area open to the public and managed by the Minnesota DNR. It is comprised of a series of units connected by the river corridor. The length of the system is approximately 72 miles from Fort Snelling in the Minneapolis-St. Paul metropolitan area to the City of LeSueur. The Minnesota Valley State Recreational Area encompasses approximately 5,490 acres of state land and is adjacent to other federal and state lands including the Minnesota Valley National Wildlife Refuge and State scientific and natural areas.

The Minnesota Valley State Recreation Area includes significant native plant communities and wildlife habitat. As noted in Section 13 of this study, several rare species have been documented within the Minnesota Valley State Recreation Area.

The Minnesota Valley State Trail traverses the Minnesota Valley State Recreational Area within the study area. The trail generally runs parallel with the river corridor. This multi-use trail provides opportunities for hiking, biking, horseback riding, and snowmobiling.

Given the unique nature of the Minnesota Valley State Recreation Area, it is anticipated that future development within the AUAR study area will avoid impacts to this State park land. The 2040 land use scenario proposes to develop a system of trail greenways which will enhance access to bluff areas.¹ Per

¹ City of Shakopee. *Envision Shakopee*. Section III: Built Environment. Dated August 30, 2018. Page 200.

the *Envision Shakopee 2040 Comprehensive Plan*, the City intends to establish permanent greenways and preserve woodlands and connecting habitat.²

10. Geology, Soils and Topography/Landforms:

The existing bedrock, geologic hazards, soil conditions, and potentially contaminated properties were studied using various state resources identified in the following sections. Figure 17 provides a soil map for the study area.

Bedrock

According to the Minnesota Geological Survey (MGS) *Geologic Atlas of Scott County*³, the uppermost bedrock underlying the study area is Franconia Formation near the Minnesota River and Prairie du Chien Group in the southeastern portion of the study area. Portions of the underlying bedrock within the study area also include Jordan Sandstone and St. Lawrence Formation. Throughout the Site, the depth from land surface to bedrock ranges widely from 0 to 150 feet in the majority of the study area to greater than 200 feet near the Minnesota River.⁴

Geologic Hazards

According to information available from the Minnesota Department of Natural Resources (DNR), the project is located within a karst-prone region.⁵ Based on the DNR's inventory of karst features, no known karst features (sinkholes, springs and stream sinks) are within the project corridor. Figure 18, Attachment A illustrate the locations of karst-prone areas.

Soil Conditions

Table 5 lists the soils types within the study area based on the Natural Resources Conservation Service (NRCS) Soil Survey for Scott County and Carver County. Figure 19, Attachment A illustrates the locations of highly erodible land (HEL) and potentially highly erodible land (PHEL).

According to the NRCS, HEL and PHEL are areas of land that have a high potential for erosion. Highly erodible land, when disturbed through construction activities or vegetation removal, has the likelihood of creating unstable conditions that lead to erosion and sedimentation. These classifications are based on soil type and steep slope characteristics. Figure 19, Attachment A identifies HEL and PHEL areas within the study area.

² City of Shakopee. *Envision Shakopee*. Section III: Built Environment. Dated August 30, 2018. Page 198

³ Runkel, A.C. and J.H. Mossler. Minnesota Geological Survey, 2006, Atlas C-17, Bedrock Geology, *Geologic Atlas for Scott County*.

⁴ Runkel, A.C. and R.G. Tipping. Minnesota Geological Survey, 2006, Atlas C-17, Bedrock Topography, Depth to Bedrock, and Bedrock Geology Models, *Geologic Atlas for Scott County*.

⁵ Minnesota Department of Natural Resources. Ecological and Water Resources Division. 2016. *Minnesota Regions Prone to Surface Karst Feature Development* available at: http://files.dnr.state.mn.us/waters/groundwater_section/mapping/gw/gw01_report.pdf

Table 5: Study Area Soil Types

Soil Symbol	Soil Name	Percent Slope	Erodibility [1]	Percent within the Study Area
AaA	Alluvial land	0 to 2 percent slopes	NHEL	4.70%
AaB	Alluvial land	2 to 6 percent slopes	NHEL	0.50%
Ab	Alluvial land, frequent overflow	0 to 6 percent slopes	NHEL	5.50%
CdA	Copaston silt loam	0 to 2 percent slopes	NHEL	1.10%
CdB	Copaston silt loam	2 to 6 percent slopes	NHEL	0.40%
DbA	Dickman sandy loam	0 to 2 percent slopes	NHEL	1.30%
DbB	Dickman sandy loam	2 to 6 percent slopes	NHEL	2.50%
DbC2	Dickman sandy loam, moderately eroded	6 to 12 percent slopes	PHEL	0.00%
Dd	Dorchester silty clay loam		NHEL	7.10%
EaA	Estherville loam and sandy loam	0 to 2 percent slopes	NHEL	2.20%
EaB2	Estherville loam and sandy loam, moderately eroded	2 to 6 percent slopes	NHEL	0.80%
EaB	Estherville sandy loam	2 to 6 percent slopes	NHEL	2.00%
EaC2	Estherville loam and sandy loam, moderately eroded	6 to 12 percent slopes	PHEL	0.10%
EbB	Salida gravelly sandy loam	0 to 6 percent slopes	NHEL	0.20%
EbB2	Salida gravelly sandy loam, moderately eroded	0 to 6 percent slopes	NHEL	0.10%
EbC2	Salida gravelly sandy loam, moderately eroded	6 to 12 percent slopes	NHEL	0.30%
Ga	Glencoe silty clay loam	0 to 1 percent slopes	NHEL	0.60%
Gp	Pits, gravel	N/A	N/A	0.00%
HaB	Hayden loam	2 to 6 percent slopes	NHEL	2.00%
HaC	Hayden loam	6 to 10 percent slopes	PHEL	2.00%
HaC2	Hayden loam, moderately eroded	6 to 10 percent slopes	PHEL	5.40%
HaD	Hayden loam	10 to 22 percent slopes	HEL	1.90%
HaD2	Hayden loam, moderately eroded	10 to 22 percent slopes	HEL	1.30%
HaE2	Hayden loam	18 to 25 percent slopes	HEL	1.90%
HaF2	Hayden loam	22 to 40 percent slopes	HEL	0.90%
HbC2	Hayden sandy loam, moderately eroded	6 to 12 percent slopes	NHEL	0.10%
HbD2	Hayden sandy loam, moderately eroded	12 to 18 percent slopes	NHEL	0.10%

Soil Symbol	Soil Name	Percent Slope	Erodibility [1]	Percent within the Study Area
HbD3	Hayden sandy clay loam, severely eroded	12 to 18 percent slopes	HEL	0.60%
HbE2	Hayden sandy loam	18 to 25 percent slopes	HEL	1.00%
HcD3	Hayden soils, severely eroded	12 to 18 percent slopes	HEL	0.80%
HcE3	Hayden soils	18 to 25 percent slopes	HEL	0.50%
HdA	Sparta fine sand	0 to 2 percent slopes	NHEL	2.10%
HdB	Sparta fine sand	2 to 6 percent slopes	NHEL	2.70%
HeA	Sparta loamy fine sand	0 to 2 percent slopes	NHEL	1.60%
HeB	Sparta loamy fine sand	2 to 6 percent slopes	NHEL	2.90%
HeB2	Sparta loamy fine sand	2 to 6 percent slopes	NHEL	0.60%
HeC	Sparta loamy fine sand	6 to 12 percent slopes	NHEL	0.40%
HeC2	Sparta loamy fine sand	6 to 12 percent slopes	NHEL	0.20%
INT	Water, intermittent	N/A	N/A	0.10%
LbB2	Estherville-Burnsville complex, moderately eroded	2 to 6 percent slopes	NHEL	0.10%
LbC2	Estherville-Burnsville complex, moderately eroded	6 to 12 percent slopes	PHEL	0.10%
LbD	Estherville-Burnsville complex	12 to 50 percent slopes	HEL	0.50%
LcB	Lester loam	2 to 6 percent slopes	NHEL	1.90%
LcB2	Lester loam, moderately eroded	2 to 6 percent slopes	NHEL	3.80%
LcC	Lester loam	6 to 10 percent slopes	PHEL	2.20%
LcC2	Lester loam, moderately eroded	6 to 10 percent slopes	PHEL	2.00%
LcD2	Lester loam, moderately eroded	10 to 16 percent slopes	HEL	0.10%
Lf	Le Sueur-Lester complex	1 to 6 percent slopes	NHEL	0.10%
Ma	Marsh	N/A	NHEL	2.30%
Oa	Oshawa silty clay loam	N/A	NHEL	3.20%
PaA	Klossner muck	0 to 1 percent slopes	NHEL	0.10%
PbA	Houghton muck	0 to 1 percent slopes	NHEL	0.10%
Ra	Oshawa silty clay loam	N/A	NHEL	0.80%
Sc	Stony land	N/A	NHEL	2.40%
Ta	Terrace escarpments	N/A	HEL	5.60%
TbC	Terril loam	6 to 12 percent slopes	NHEL	0.90%
TbD	Terril loam	12 to 18 percent slopes	HEL	0.20%
TbE	Terril loam	18 to 25 percent slopes	HEL	0.00%

Soil Symbol	Soil Name	Percent Slope	Erodibility [1]	Percent within the Study Area
TcA	Terril loam	0 to 2 percent slopes	NHEL	1.80%
TcB	Terril loam	2 to 6 percent slopes	NHEL	2.20%
TcC	Terril loam	6 to 12 percent slopes	NHEL	0.60%
TcD	Terril loam	12 to 18 percent slopes	HEL	0.20%
W	Water	N/A	N/A	4.80%
WaA	Waukegan silt loam	0 to 2 percent slopes	NHEL	0.60%
WaB	Waukegan silt loam	2 to 6 percent slopes	NHEL	2.00%
Wb	Webster-Glencoe silty clay loams	N/A	NHEL	2.70%

Source: U.S. Department of Agriculture (USDA). Natural Resources Conservation Service (NRCS). Soil Survey for Scott County and Carver County, Minnesota. [1] HEL = highly erodible land. PHEL = Potentially highly erodible land. NHEL = Not highly erodible land.

11. Water Resources:

AUAR Guidance: Physical impacts on water resources. The information called for on the EAW form should be supplied for any of the infrastructure associated with the AUAR development scenarios, and for any development expected to physically impact any water resources. Where it is uncertain whether water resources will be impacted depending on the exact design of future development, the AUAR should cover the possible impacts through a “worst case scenario” or else prevent impacts through the provisions of the mitigation plan.

Surface Water

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

The Minnesota Rivers defines portions of the western and northern limits of the study area. While located within the study area, there are no specific development plans that propose a use of the Minnesota River. This includes the development of recreational or commercial use of the river for transportation or activity use. There are two nearby water related uses along the Minnesota River. These include a public boat launch within the City of Shakopee and passive water-based recreation opportunities within the Minnesota Valley National Wildlife Refuge.

Ground Water

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

Water Supply and Water Quality

Three aquifers provide the water source for the Shakopee public water supply – Prairie du Chien-Jordan Sandstone, Tunnel City-Wonewoc, and Mt. Simon/Hinckley bedrock. The Prairie du Chien-Jordan sandstone aquifer supplies the greatest quantity of water to the system and is expected to continue to provide the greatest supply in the future. Currently eight wells utilize water from the Prairie du Chien-Jordan sandstone aquifer.

The SPUC continues to monitor water quality, health and aesthetic concerns. While no wells near the study area were found to possess concerns at this time, continue efforts to monitor the system for compliance with national drinking water regulations will occur.

Wastewater

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

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

The study area is currently not serviced by the municipal sanitary system; however, the City has reviewed the estimated sewer needs for the AUAR study area as part of its Sanitary Sewer Master Plan. The current Metropolitan Urban Service Area (MUSA) limits align with the City's existing boundary and does not extend to any portions of the AUAR study area. Development within the study area is dependent on the expansion of municipal sewer to service Jackson Township. As the MUSA is expanded and development is pursued, the analysis of this section should be updated. The 10-year annual average per capital flow from Shakopee is 86 gallons per day (GPCD). The MCES peak flow factors for the regional system were used to inform the analysis for the City of Shakopee. The city has included development of the study area within the municipal sewer planning 2040 to inform wastewater flow projections. It is projected that the flow will increase by 1.75 MGD over the next 20 years (see Table 6).

Table 6: Average Annual Wastewater Flow Projections

Year	Projected Annual Wastewater Flow Projections (MGD)
2020	3.75
2025	4.09
2030	4.66
2035	5.17
2040	5.49

Future system improvements within the study area have been identified based on the projected flows identified within the city's Sanitary Sewer Master Plan and 2040 Comprehensive Plan and are defined by sanitary districts. There are three sanitary sewer districts that cover the AUAR study area (see Figure 20). Each district is currently comprised of primarily agricultural and open space uses with little existing sanitary sewer infrastructure. Two scenarios (Alternates 1 and 2) were analyzed for future infrastructure improvements within the sewer districts based on the timing of development. The general alignment of future forcemains and gravity mains is consistent, but the sizing of the pipe changes in relationship to the staging of development. Many of the improvements identified within Alternate 1 are in response to development first occurring in Subdistricts A and B, prior to development in Subdistrict D.

Per Minn. R. 4410.4300, subp. 18 A., the City understands that an EAW may be required for sewage collection system improvements that increase the design average daily flow by 1 million gallons or more. As improvements are designed within the study area, the City will assess the need for an EAW in coordination with the proposed projects.

The wastewater generated within the City is currently conveyed to the Metropolitan Council's Blue Lake Treatment Plant, which also serves the Cities of Chaska and Prior Lake. The Blue Lake Treatment Plant has the capacity to serve household and employment growth in the region through 2040. Continued collaboration with the Metropolitan Council will occur to monitor sanitary system capacity beyond the 2040 horizon.

South Louisville Jackson (SLJ)

All or portions of Subdistricts A, C, E, F, and G are included in the SLJ district.

Only a small portion of this district has been developed, with a mix of commercial and residential uses near US Highway 169 currently served by municipal sewer. The undeveloped part of the district is characterized by a mix of agricultural, rural residential, and open space uses with the rural residential areas utilizing individual sewer treatment systems. The district is served by two trunk sewer that extend from the MCES interceptor along US Highway 169: (1) A 24-inch main in Lusitano Street; and (2) An 18-inch to 27-inch main in the Windemere Subdivision.

An 18-inch gravity main has been identified through Subdistrict C and F, which either connects to a lift station to the south (Alternate 2) or ends in the southeast corner of Subdistrict C. Additional force mains are identified to the west of Subdistricts E and G (located outside of the AUAR study area). Under both scenarios, a new lift station would be warranted to the south of Subdistrict C.

West Jackson (WJ)

All or portions of Subdistricts A, B and C are included in the WJ district.

This district is undeveloped and is characterized by a mix of agricultural, rural residential and open space uses with the rural residential areas utilizing individual sewer treatment systems. There are no existing trunk sewers in the district.

Future identified improvements within the WJ district are consistent between both study alternates. An 18-inch gravity main is proposed to connect from the Windemere Subdivision to the southwest for extension beyond the AUAR study area.

West Louisville Jackson (WLJ)

All or portions of Subdistricts A, D and B are included in the WLJ district.

This district is largely undeveloped and is characterized by a mix of agricultural, rural residential and open space uses with the rural residential areas utilizing individual sewer treatment systems. There is some commercial usage along the US Highway 169 corridor. The MCES connection to Chaska passes through this district.

Similarly, to the SLJ District, the proposed future alignments within the WLJ District are consistent between the two alternates. Two lift stations are proposed within the district, of varying sizes. The alignments connect to infrastructure from other districts, extending to the southwest toward MN Highway 41. The two lines connect in this area and continue to the south to service other areas.

Stormwater

Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

The study area is located within two watershed districts, the Lower Minnesota River Watershed District (LMRWD) and the Scott Watershed Management Organization (Scott WMO). Subdistrict D of the study area is located within LMRWD, with the remaining Subdistricts located within the Scott WMO. Areas within the Scott WMO are divided among the Mill Pond and Louisville Subwatersheds. The Mill Pond Subwatershed flows to the northeast, toward existing city limits. The Louisville Subwatershed flows to the west, toward US 169 and the Minnesota River. Similarly, the areas within the LMRWD flow to the west toward the Minnesota River.

A Local Surface Water Management Plan was completed for the City of Shakopee in 2019 to evaluate existing surface water management needs and future considerations. This analysis includes a comprehensive assessment of surface water issues for the entire city, including water quality, stormwater and flooding rate control, and resource impacts. This analysis also provides detail of the considerations that should be included within the study area. The city will continue to address systemwide issues holistically, while mitigating potential impacts from development within the study area.

The City's existing stormwater system does not extend into a majority of the AUAR study area. The stormlines are currently constructed in the southern portion of Subdistrict G. Infrastructure will be extended into the study area as warranted to serve new development areas. In addition to the stormwater system infrastructure, ditches are used to manage stormwater. The City will continue to work with the MPCA to review stormwater management tools and required permitting (e.g. National Pollutant Discharge Elimination System (NPDES) and General Construction Stormwater permit (CSW)). The stormwater system will include methods to reduce the volume of stormwater discharge such as infiltration, reuse, and harvesting.

The Upper Valley Drainage Ditch is a regional facility located south and north of US 169 and east of Old Brick Yard Road. This facility does not have the capacity for increased drainage from future development.

The City of Shakopee will work with the watershed to evaluate the capacity and water quality improvements needed at the facility as development in the study area occurs.

As development occurs within the study area, stormwater management tools will be deployed in accordance with the city's Stormwater Management Plan requirements (§54.15). As development plans are refined, developer and City/watershed staff will work together to refine the stormwater management plan, including the sizing and location of ponds and the implementation of the proposed Best Management Practices.

The Minnesota River throughout the study area is impaired for turbidity and other construction-related impairments. The MPCA continues to monitor turbidity within the river and developed the Minnesota River Turbidity Total Maximum Daily Load in 2012. Best management practices will need to be deployed during construction for any areas that drain to the Minnesota River per the existing CSW Permit.

Water Appropriation

Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

A majority of the study area is not currently served by municipal water, and water supply is provided by individual wells. The southern portion of Subdistrict G is the only portion of the study area connected to the City of Shakopee's system. There are two existing city wells (Wells 20 and 21) located to the east of the study area that service the surrounding area. The extension of water utilities is needed to support development of the study area.

An analysis of the projected water use for the study area was completed using land use assumptions. These use assumptions align with those described in section 7 of this document and assumes a full build out of the study area. Results of the land use based water demand projections are presented in Table 7. The timing of development is strongly dependent on market forces; therefore, the yearly water use projects provide a reasonable estimate of planning period demand while the land use projections help to understand the total ultimate water system needs independent of time. The Comprehensive Water System Plan reviews the water projection needs based on the 2040 growth assumptions included within the Comprehensive Plan.

The land use growth assumptions were used to analyze the future water system needs for the full buildout of the AUAR study area. The hypothetical water needs for the AUAR subdistricts are outlined in Table 7. Based on drought year 2012, average day water demand with full buildout could reach a potential of 9.0 MGD, with a maximum day demand of approximately 25 MGD. The development of this parallel land use based water use project revealed estimated demands that are in line with the population based water use projections.

Table 7: Study Area Future Water Supply Needs

Land Use	Existing Acres	Full Buildout Acres	Estimated 2012 AD Water Use (gpd/acre)	Estimate 212 AD Water use (MGD)	Projected Full Buildout AD Water Use (MGD)	Projected Full Buildout MD Water Use (MGD)
Existing City Limits						
Residential						
Low Density Residential	2,644	7,118	540	1.43	3.84	10.64
Medium Density Residential	517	621	2,000	1.03	1.24	3.44
High Density Residential	88	94	5,400	0.47	0.51	1.40
Non-Residential						
Business Park	108	129	675	0.07	0.09	0.24
Commercial	547	625	675	0.37	0.42	1.17
Entertainment	356	543	500	0.18	0.27	0.75
Industrial	1,136	1,541	675	0.77	1.04	2.88
Institutional	344	368	675	0.23	0.25	0.69
Mix Use	68	99	675	0.05	0.07	0.19
Open Space	124	1,700	0	0.00	0.00	0.00
Parks	222	483	100	0.02	0.05	0.13
Existing City Limits Total	6,153	13,322	--	4.65	7.8	21.5
AUAR Study Area (Jackson Township)						
Subdistrict A					0.118	0.33
Subdistrict B					0.269	0.74
Subdistrict C					0.124	0.34
Subdistrict D					0.219	0.61
Subdistrict E					0.031	0.09
Subdistrict F					0.000	0.00
Subdistrict G					0.053	0.15
Total AUAR Study Area					0.81	2.25
Additional Sections of Jackson Township					AD	MD
Subdistrict E					0.209	0.58
Subdistrict F					0.238	0.66
Total AUAR Study Area					0.45	1.24
Total Ultimate Water Use					9.0	25.0

A comprehensive analysis of Shakopee's water system was completed to identify future system needs to respond to the updated project need. This analysis, combined with the forecasted demand totals, provides insight on the additional system needs to service the AUAR study area. Additionally, it reviews the water supply and water quality concerns.

Study Area Improvements

The Water System Plan analyzed future system needs throughout the entire water system to continue to provide quality service. Improvements were identified within the AUAR study area to service future growth. Two wells (Well No. 23 and Well No. 24) were identified within the study area to reduce dependency on booster stations and support diverse redundant operation. Well No.23 and Well No.24, would be located in the Second High Zone (West) and would work in conjunction with a new water tower serving the Second High Zone. These wells would normally serve the Second High Zone, but due to their location in a higher pressure zone, they could also easily feed water to the lower pressure zones by gravity. Additionally, the construction of these wells near each other would allow for them to share a common pump house facility. Both Wells 23 and 24 are located in the Prairie du Chien-Jordan aquifer, which has the capacity to continue to provide adequate supply with increased development.

As wells are constructed, SPUC will work closely with the MnDNR to ensure the proper assessments and infrastructure needs are included. Two observation wells may be required with the construction of Well No. 24 to monitor the sustainable use of the Prairie du Chien-Jordan aquifer. Additionally, a Well Construction – Preliminary Assessment must be completed prior to the construction of the well.

The construction of additional water storage is also needed to support future development in and around the study area. There are currently no water storage systems located within the study area. A 750,000-gallon elevated storage tank with a future booster station is recommended at the future Well 24 site. Additionally, new 12" trunk watermain will need to be extended throughout the study area to provide service. Water supply to individual properties or developments will be extended from the trunk system and designed to support future development.

Surface Waters

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

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

The development scenarios discussed within item 6 of this AUAR discuss the development of acres of residential and commercial development within the study area. This development not only proposes the site development of these various uses, but the construction of roadway and utility infrastructure to service the growth areas, all of which require earth movement. While it is premature to determine the specific amount of earth movement required for the development proposed within the study area, typical earthwork recommendations are that the topsoil and soft alluvial soils within the study area be removed prior to construction. A detailed site grading plan shall be required for review by the City as specific developments are pursued within the study area. This review will identify additional actions, mitigation and permits specific to the earth movement of the specific site.

Best management practices (BMP) will be used to manage erosion and sedimentation throughout all phases of project development. Examples of BMPs that may be used include:

- Construction of detention ponds prior to site grading to reduce and contain construction related sediment/runoff.
- Installation of erosion control measures prior to start and use throughout construction activities.
- Paving or vegetation of all disturbed areas after construction to reduce exposed soil surfaces.
- Preservation of existing vegetation along existing water bodies to maintain existing buffer.

During the development and review of specific site grading plans, specific erosion control practices will be identified as required by the National Pollutant Discharge Elimination System (NPDES) permit for the City of Shakopee.

12. Contamination/Hazardous Materials/Wastes:

Contaminated Properties

Potential environmental hazards and agricultural chemical contamination sites were reviewed using the Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Agriculture's (MDA) *What's in My Neighborhood?* Interactive mapping tool. Tables 8 and 9 identify potentially contaminated sites identified within the study area based on information available from the MPCA and MDA databases, respectively. Figure 21, Attachment A depicts the locations of these sites. Upon review of the MPCA and MDA database results, a number of sites were identified as outside of the study area and possibly misidentified. These sites have been identified in the table below with an asterisk.

Table 8: MPCA Known or Potentially Contaminated Sites

Site Name	ID No.	Site Type	Active
Holiday Stationstore #246	LS0007887; LS0019058; TS0014398	Multiple Activities	Yes
MnDOT Theis Auto	VP17830	Brownfields, Voluntary Investigation and Cleanup	Yes
Park Place Storage Condominiums	C00049349	Construction Stormwater	Yes
Bryan Rock Products Inc Johnson Memorial	13900029; MND007797046	Multiple Activities	Yes

Site Name	ID No.	Site Type	Active
Bonnevista Terrace Manufactured Home Com	MN0051985	Wastewater, Municipal SDS Permit	Yes
Contech Engineered Solutions LLC	LS0014168; MND982221194; MNR0533G6; MNR05384X	Multiple Activities	Yes
Wheeler Lumber LLC*	MND985742295; MNR0536VR; MNR0538TY	Multiple Activities	Yes
Shakopee Mobile Home Park LLC	MN0057967	Multiple Activities	Yes
Diemold Tool Inc*	MND985687144	Hazardous Waste	No
Fritz Cabinetry & Furniture	MNR000019653	Hazardous Waste, Very small quantity generator	Yes
Jimmys CRC - Shakopee	MNR000057026	Hazardous Waste	No
Anderson Bus Co	MN0000692228	Hazardous Waste, Minimal quantity generator	Yes
Tbk Auto Body	MNR000024489	Hazardous Waste, Very small quantity generator	Yes
Former SuperAmerica #4439	LS0014045; LS0020854; MNR000019281; TS0019404	Multiple Activities	Yes
Appliance Service	MND082520461	Hazardous Waste, Very small quantity generator	Yes
Hardrives Inc	MND981201114	Hazardous Waste	No
Ditch Witch of Minnesota Inc - Shakopee	MNR000077263	Hazardous Waste, Very small quantity generator	Yes
Basset Cultured Marble & Granite LLC	13900111; MNS000102483	Multiple Activities	Yes
Master Motorworx	MNS000115725	Hazardous Waste, Minimal quantity generator	Yes
Pcocs Pero Locos Autobody	MNR000067026	Hazardous Waste, Minimal quantity generator	Yes
Quality Heating & Air Services Inc	MNS000166058	Hazardous Waste, Minimal quantity generator	Yes
Shakopee Veterinary Clinic	MNS000158618	Hazardous Waste, Very small quantity generator	Yes

Site Name	ID No.	Site Type	Active
Ron's Mechanical Inc	MNS000162172	Hazardous Waste, Minimal quantity generator	Yes
Urzua Auto Repair Inc	MNS000170456	Hazardous Waste, Very small quantity generator	Yes
Moms Landscaping & Design LLC	MNS000159657	Hazardous Waste, Minimal quantity generator	Yes
Johnny's Auto Sales & Repair	MNS000205765	Hazardous Waste, Very small quantity generator	Yes
Zeus Off Road	MNS000307712	Hazardous Waste	Yes
Ace Auto LLC	MNS000307856	Hazardous Waste, Very small quantity generator	Yes
Roger Plekkenpol Farm	139-104488	Feedlots	Yes
MN River Valley Industrial Park - Modspa	C00027966	Construction Stormwater	No
TH169 Crossovers	C00048755	Construction Stormwater	Yes
Dueco	TS0054629	Aboveground Tanks	Yes
Autumn Acres	C00006117	Construction Stormwater	No
SP 7005-57 (TH 101) Bypass	C00003313	Construction Stormwater	No
Cargo Van-Go Inc	MNR000067181	Hazardous Waste, Very small quantity generator	Yes
Ditch Witch Of Minnesota	TS0119741	Aboveground Tanks	Yes
Econo Used Cars	MN0000341271	Hazardous Waste, Very small quantity generator	Yes
Scott County Substation	C00038127	Construction Stormwater	Yes
Wheeler Consolidated Inc	LS0019945; TS0055200	Multiple Activities	Yes
Shakpoe Vet Clinic	C00053451	Construction Stormwater	Yes
Patriot Auto Sales	LS0015522	Petroleum Remediation, Leak Site	Yes
Ed Breeggeemann Farm	139-61019	Feedlots	Yes
Mobile Manor Drive	C00046323	Construction Stormwater	Yes
TH 169/TH 41/CSAH 78 DDI 147th St. Overpass	C00048331	Construction Stormwater	Yes
Midwest Recycling Solutions	PBR000957	Solid Waste, Permit by Rule	Yes

Site Name	ID No.	Site Type	Active
Allen Advertising Products	MNR000042820; MNRNE3586; MNRNE39JV	Multiple Activities	Yes
Westin Marine Shakopee	MNR000052795	Hazardous Waste, Very small quantity generator	Yes
SP 7005-107 (CP T169-03)	C00035820	Construction Stormwater	No
Countryside 2nd Addition	C00050923; SUB0052855; SUB0053389	Construction Stormwater	Yes
R&R Marine	C00052986	Construction Stormwater	Yes
MnDOT Residential Acquisition	LS0006551	Petroleum Remediation, Leak Site	Yes
2008 Airport Improve - Granit Falls*	C00026334	Construction Stormwater	No
Randy LaTour Farm	139-60863	Feedlots	Yes
DUECO - Shakopee	C00027546	Construction Stormwater	Yes

*Sites potentially located outside of the AUAR study area.

Source: Minnesota Pollution Control Agency. *What's in My Neighborhood* geospatial data. Accessed April 26, 2019.

Table 9: MDA Known and Potential Sources of Agricultural Contamination

Case File Name	Case File No.	Investigation Type	Contaminant	Status
Superior Minerals Co.	96-0253	Emergency	Fertilizer	Closed
MMCD	PLK101063294	Emergency	Pesticides	Closed
Unknown	PLK101000540	Emergency	Unknown	Closed

The potential for soil contamination from residential, retail and office/warehouse uses are considered relatively low. It is not expected that the storage or handling of hazardous materials or chemicals will be included as part of the study area that could then contaminate the ground water. For structures and uses that are found to house chemicals or hazardous materials, the property federal, state, and local laws regarding the handling of materials will need to be complied with.

Solid Waste

The various land uses proposed for development within the study area have varying generation rates for solid waste. As a nation, solid waste was being generated at an average rate of 4.48 pounds per day per capita in 2014. Residential developments generate individual municipal waste at different rates. Utilizing California Statewide Studies, the following daily waste generation rates can be applied to each land use type:

- Office/Industrial/Warehouse – 10.4 pounds per employee per day
- Retail – 9.8 – pounds per employee per day
- Households – 2.5 pounds per day per individual

The development densities discussed within item 6 defines an estimated number of employees and household population in the study area. Table 10 calculates the estimated municipal solid waste generation each day for the study area. Private contractors will haul municipal solid waste.

Table 10: Estimated Municipal Solid Waste Generation

Use	Waste Generation per Day	Estimated Employees/ People	Estimated Waste Generation per Day (lbs)	Estimated Waste Generation per Year (tons)
Industrial/Office/ Warehouse	10.4 lbs per employee	8,305	86,372	31,526
Retail	9.8 lbs per employee	1,594	15,621	5,702
Household	2.4 lbs per person	5,467	13,121	4,789

Estimates are also available for the generation of recyclable materials for both commercial/industrial uses and residential uses, as shown in Table 11. These estimates break down the different types of materials that are typically generated.

Table 11: Typical Recyclable Materials

Recyclable Materials	Industrial/Manufacturing/Retail		Residential	
	Percent of Waste Stream	Tons per Year by AUAR	Percent of Waste Stream	Tons per Year by AUAR
Mixed Paper	6.1%	2,271	6.4%	306
Ledger Paper	4.2%	1,564	1.5%	72
Corrugated Cardboard	10.2%	3,797	3.5%	168
Newspaper	2.6%	968	5.3%	254
Organic Compostable	29.5%	10,982	26.4%	1,264

During construction of the various areas within the study area, construction debris and recycling will be separated to the extent possible. Debris that cannot be recycled will be sent to a demolition/construction landfill. Materials that may be recycled include crates, cardboard, concrete, asphalt, metals, wood, drywall, and brick. Limited use of some hazardous materials is anticipated for the construction of the proposed development. The City will require that the contractor comply with applicable environmental regulations and requirements for use, storage, handling and disposal of any such materials.

13. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (rare features):

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

AUAR Guidance: The description of the wildlife and fish resources should be related to the habitat types depicted on the cover types maps (of item 7). Any differences in impacts between development scenarios should be highlighted in the discussion.

Two DNR public water wetlands (117W and 254W) and two DNR public water basins, Nyssen's Lake (116P) and Gifford Lake (118P) are located within the AUAR study area. Two DNR public watercourses, the Minnesota River and Chaska East Creek, are in close proximity to the AUAR study boundaries. Fish populations are present in these public waters. Figure 22, Attachment A illustrates these public waters.

The majority of the land in the south and east of Highway 169 (Subdistricts A, B, C, E, F, and G) has experienced previous disturbance (e.g., agricultural, rural residential development). However, the bluff area within subdistrict A is generally undisturbed by development. Long range planning efforts preserve this area from future disturbance. North and west of Highway 169 several industrial and commercial developments are located along the Highway 169 corridor and railroad line.

The Minnesota Valley State Recreation Area is located within the northern portion of the AUAR study area and is adjacent to the Minnesota River. The Minnesota Valley State Recreation Area is comprised of floodplain marshes, wet meadows, fens, and lakes that support wildlife including white-tail deer, red and grey fox, raccoons, mink, muskrat, wood duck, beavers, and other various species. The wetland, woodland and open water within the Minnesota Valley State Recreation Area provide the major natural habitat for fish and wildlife species in the AUAR study area.

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

State Listed Threatened and Endangered Species

According to the DNR's review of the Natural Heritage Information System (NHIS) database, rare features are located within a one-mile radius of the study area. Attachment C includes correspondence from the DNR (Correspondence # ERDB 20190293; dated April 24, 2019). Rare species within a one-mile radius of the study area include:

- Butternut (*Juglans cinerea*), state-listed endangered plant
- Little brown bat (*Myotis lucifugus*), state-listed species of special concern
- Big brown bat (*Eptesicus fuscus*), state-listed species of special concern
- Lark sparrow (*Chondestes grammacus*), state-listed species of special concern
- Purple martin (*Progne subis*), state-listed species of special concern

Butternut

Butternut (*Juglans cinerea*) was documented within the Silver Maple – Green Ash – Cottonwood Terrace Forest native plant community in the Minnesota Valley State Recreation Area in 1994. This species is very susceptible to a lethal fungal disease, butternut canker (*Sirococcus clavigignenti-juglandacearum*). Per the DNR's review of the study, tree removal must be avoided within the Silver Maple – Green Ash – Cottonwood Terrace Forest native plant community within Township 115N, Range 23W, Section 9. A rare species survey may be required for any future development impacting this native plant community.

Little Brown Bat and Big Brown Bat

Little brown bat (*Myotis lucifugus*) and big brown bat (*Eptesicus fuscus*) species have been recorded in the vicinity of the study area. These species typically hibernate in caves and mines during the winter and roost underneath bark, cavities, or crevices of trees and structures such as bridges and buildings during the active season (approximately April through October). Development activities that may impact these species include, but are not limited to, wind farm operation, any disturbance to hibernacula, and destruction and degradation to habitat. The DNR recommends tree removal is avoided during the pup rearing season (approximately June through July).

Lark Sparrow and Purple Martin

The lark sparrow (*Chondestes grammacus*) has been documented in the vicinity of the study area. Typically, this bird species is found in open, grass land areas with scattered trees and shrubs. Purple martins (*Progne subis*) have been reported in the vicinity of the study area. Purple martins nest in colonies typically near water. In urban areas, this species nest almost exclusively in nest boxes, whereas in rural areas they are found nesting in cavities, such as woodpecker holes. The DNR recommended that future development activities avoid disturbance to undisturbed grassland areas and tree and shrub removal from May 15th through August 15th to avoid impacting nesting birds.

Federally Listed Threatened and Endangered Species

The IPaC project planning tool provided by the U.S. Fish and Wildlife Service (USFWS) was used to identify federally-listed threatened and endangered species that may be within or near the study area.

Attachment C includes the results of this resource tool. Federally-listed species identified from the IPaC search include:

- Northern long-eared bat (*Myotis septentrionalis*), threatened
- Rusty Patched Bumble Bee (*Bombus affinis*), endangered

Northern Long-Eared Bat

The DNR maintains a list of all townships containing known northern long-eared bat roost trees and/or hibernacula. The most recent version of this list, dated April 1, 2019, indicates that the study area is within a township which contains roost trees (T115N R23W). Under Federal 4(d) Rule for conserving the northern long-eared bat, the USFWS may regulate tree removal or other activities if they are conducted:

- Within a ¼ mile of an entrance to a known northern long-eared bat hibernaculum.
- Within 150 feet of a known northern long-eared bat maternity roost tree.

Rusty Patched Bumble Bee

A small portion of the AUAR study area near the Minnesota River and Nyssen's Lake public water basin is identified as a high potential zone for the rusty-patched bumble bee. Additionally, the southeastern portion of the AUAR study area along CSAH 15 is within a high potential zone for the rusty-patched bumble bee.

AUAR Guidance: For an AUAR, prior consultation with the MDNR Division of Ecological Resources for information about reports of rare plant and animal species in the vicinity is required. Include the reference numbers called for on the EAW form in the AUAR and include the MDNR's response letter. If such consultation indicates the need, an on-site habitat survey for rare species in the appropriate portions of the AUAR area is required. Areas of on-site surveys should be depicted on a map, as should any "protection zones" established as a result.

Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Minnesota Biological Survey Sites of Biodiversity Significance

The northern portion of the AUAR study area primarily within the Minnesota Valley State Recreation Area is located within an area identified as a Central Region Regionally Ecological Significant Areas (CRRESA).

CRRESA sites represent ecologically significant terrestrial and wetland areas within the seven-county metropolitan area based on a landscape-scale assessment conducted by the DNR Central Region. CRRESA sites are ranked as moderate, high or outstanding ecological significance. The CRRESA site within the northern portion of the AUAR study area is considered to be of outstanding ecological significance. A second CRRESA site is located east of CSAH 69 (Old Brick Yard Road) and south of Highway 169. This CRRESA site is comprised of disturbed woodlands adjacent to cropland and rural residences.

Four Minnesota Biological Survey (MBS) sites are within the AUAR study area and are concentrated northwest of Highway 169 largely within the Minnesota Valley State Recreation Area. Three of these sites

are ranked as below minimum biodiversity significance thresholds and one of these sites is ranked as moderate biodiversity significance.

Based on a review of the study area by the DNR's Regional Environmental Assessment Ecologist (REAE), areas within and surrounding the Minnesota Valley State Recreation Area contain native plant communities and wetlands. Development within these areas would be of concern. Attachment C includes correspondence from the DNR REAE.

Per the DNR's Natural Heritage Information System (NHIS) review of the study area, the following measures are recommended to minimize potential impacts to biodiversity areas:

- Minimize vehicular disturbance in the area (allow only vehicles/equipment necessary for construction activities)
- Do not park equipment or stockpile supplies in the area
- Do not place spoil within MBS Sites or other sensitive areas
- If possible, conduct the work under frozen ground conditions
- Use effective erosion prevention and sediment control measures
- Inspect and clean all equipment prior to bringing it to the site to prevent the introduction and spread of invasive species
- As much as possible, operate within already-disturbed areas
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible
- Use only weed-free mulches, topsoils, and seed mixes. Of particular concern are birdsfoot trefoil (*Lotus corniculatus*) and crown vetch (*Coronilla varia*), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas.

Native Plant Communities

Several native plant communities are located within the northern portion of the AUAR study area primarily within the Minnesota Valley State Recreation Area consisting of bulrush marsh, red oak – sugar maple – basswood forest, sedge meadow, silver maple – green ash – cottonwood terrace forest, spikerush – bur reed marsh, and willow – dogwood shrub swamp.

Calcareous fens have been documented north of the study area in Carver County (ID# 14498, 20975, and 20977). These fens are separated from the study area by the Minnesota River. State-listed threatened plants have been documented within these fens included:

- Sterile sedge (*Carex sterilis*)
- Beaked spikerush (*Eleocharis rostellata*)
- Edible valerian (*Valeriana edulis* var. *ciliate*)
- Whorled nutrush (*Scleria verticillata*)
- Hair-like beak rush (*Rhynchospora capillacea*)
- Steam parsnip (*Berula erecta*)

Pursuant to the Wetlands Conservation Act, authorized by *Minnesota Statutes*, section 103G.223, calcareous fens may not be filled, drained, or otherwise degraded, wholly or partially, by any activity, except as provided for in a management plan approved by the DNR. Calcareous fens are dependent on groundwater hydrology and can, therefore, be affected by nearby activities or those several miles away.

Any development activities that might affect groundwater flows, including groundwater pumping or discharge may impact these calcareous fens. If future development may result in direct impacts or indirect impacts through the alteration of hydrological conditions, the DNR must be contacted before the project is initiated and a rare species survey would likely be required.

14. Historic Properties:

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

AUAR Guidance: For an AUAR, contact with the State Historic Preservation Office and State Archeologist is required to determine whether there are areas of potential impacts to these resources. If any exist, an appropriate site survey of high probability areas is needed to address the issue in more detail. The mitigation plan must include mitigation for any impacts identified.

An initial review request of the Minnesota Statewide Inventory Database was submitted to the Minnesota State Historic Preservation Office (SHPO). Tables 12 and 13 tabulate the results of the inventory request within the AUAR study area. Figure 23, Attachment A illustrates the approximate locations of historic and archaeological sites within the study area per the results of the inventory database search. As development proposals are defined, Phase 1 archeological surveys should be completed within the study area due to the location and results of the SHPO inventory review.

Table 12: MN SHPO Database Inventory Results – Historic Sites

Inventory No.	Site Name	TRS	Quarters	NRHP Status
SC-JAC-002	Strunk-Nyssen Brewery Complex Ruins	T115N, R23W, 11	NE-NW-NW	Considered eligible
SC-JAC-003	Strunk-Nyssen House	T115N, R23W, 11	SE-NW-NW	NRHP listed
SC-JAC-006	Jackson Town Hall	T115N, R23W, 14	SE-SE-SE	
SC-JAC-007	Stone House	T115N, R23W, 10	SW	
SC-JAC-008	Wellens Farmstead	T115N, R23W, 10		
SC-JAC-009	Macclister House	T115N, R23W, 10		
SC-JAC-010	ECSY Partnership House	T115N, R23W, 10		
SC-JAC-011	Ferrosso House	T115N, R23W, 15		
SC-JAC-012	Koesters House	T115N, R23W, 15		
SC-JAC-013	Weckman House	T115N, R23W, 15		
SC-JAC-014	farmstead	T115N, R23W, 15		
SC-JAC-015	Commercial Building	T115N, R23W, 15		
SC-JAC-016	Auto Depot	T115N, R23W, 15		
SC-JAC-016	Auto Depot	T115N, R23W, 15		
SC-JAC-017	Farmstead	T115N, R23W, 15		

Inventory No.	Site Name	TRS	Quarters	NRHP Status
SC-JAC-018	Farmstead	T115N, R23W, 15		
SC-JAC-004	Roehl-Lenzmeier House	T115N, R23W, 11	SE-NE-NW	Formerly listed, Removed 6/11/2003
SC-SPC-067	Lime Kiln Ruins (razed)	T115N, R23W, 2	SE-SW	
SC-SPC-070	Bridge No. 6684	T115N, R23W, 2	SW-NE-SE	
SC-SPC-089	Bridge 6884	T115N, R23W, 2	SE-SE	
SC-SPC-090	Bridge 6885	T115N, R23W, 2	SE-SE	

Table 13: MN SHPO Database Inventory Results – Archaeological Sites

Site No.	Report No.	Site Name	TRS	Quarters	Description
21SC0026	THY-73-01	Malkerson	T115N, R23W, 9	SE-SE	Earthwork
21SC0026	MULT-79-06	Malkerson	T115N, R23W, 9	SE-SE	Earthwork
21SC0026	MULT-93-01	Malkerson	T115N, R23W, 9	SE-SE	Earthwork
21SC0026	SC-00-01	Malkerson	T115N, R23W, 9	SE-SE	Earthwork
21SC0026	THY-80-01	Malkerson	T115N, R23W, 9	SE-SE	Earthwork
21SC0026	MULT-94-13	Malkerson	T115N, R23W, 9	SE-SE	Earthwork
21SC0026	MULT-79-06	Malkerson	T115N, R23W, 10	SW-SW	Earthwork
21SC0026	MULT-93-01	Malkerson	T115N, R23W, 10	SW-SW	Earthwork
21SC0026	MULT-94-13	Malkerson	T115N, R23W, 10	SW-SW	Earthwork
21SC0026	SC-00-01	Malkerson	T115N, R23W, 10	SW-SW	Earthwork
21SC0026	THY-73-01	Malkerson	T115N, R23W, 10	SW-SW	Earthwork
21SC0026	THY-80-01	Malkerson	T115N, R23W, 10	SW-SW	Earthwork
21SC0091		Highway 42 Trail	T115N, R23W, 10	W-NW-SW	Lithic scatter

A review of available SHPO files was completed to obtain additional details about potential historic sites within the AUAR study area. The following paragraphs describe historic and archaeological sites within the study area.

Strunk-Nyssen Brewery Complex Ruins (SC-JAC-002)

The brewery was built by Herman Strunk circa 1854 and commenced operations in either late 1856 or early 1857. The Strunks-Nyssen Brewery Complex ruins is located across the railway from the Strunk-Nyssen House. A stone barn/granary associated with the brewery ruins was likely constructed at the

same time as the brewery. Based on a 2013 survey, the brewery is experiencing fairly serious condition issues. The kiln appears to be the most well-preserved portion of the brewery and is fairly intact. Portions of the barn/granary ruins exhibits fairly intact mortar and plaster. The brewery ruins are considered to have potential significance and were recommended to be potentially eligible for listing under the National Register of Historic Places. Attachment E includes SHPO documentation of this site.

Strunk-Nyssen House

The Strunk-Nyssen House was constructed in two sections circa 1856 and 1880. The earliest (west section) consists of a two-story red brick structure. The two-story stone section (east section) is much larger compared to the original section. The house is in an excellent state of repair and has retained a significant degree of original design integrity. Other buildings on the property include a brick smokehouse and small frame outbuilding. The house is primarily significant for its long association with the brewing industry in Shakopee and the house is architecturally significant.

At this time, there are no development proposals within the study area that would result in a direct impact to the Strunk-Nyssen House. Future development impacts should minimize or avoid impacts to this site.

Malkerson (Site No. 21C0026)

Site No. 21C0026 was once a group of 69 burial mounds. Per Report No. (dated 1972), only 17 mounds remain visible.⁶

15. Visual:

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

AUAR Guidance: Any impacts on such resources present in the AUAR should be addressed. This would include both direct physical impacts and impacts on visual quality or integrity. If any non-routine visual impacts would occur from the anticipated development, this should be discussed here along with appropriate mitigation.

Per the City's 2040 Comprehensive Plan, *Envision Shakopee*, it is the intent of the City to explore opportunities to open up views, vistas and physical access to the river by working with partners, such as the DNR, to preserve riverfront lands and integrate into the larger river greenway system.⁷ Protection of the riverfront will be achieved through land use management practices and strategies that protect key areas including the Minnesota Valley State Recreation Area.

⁶ Nystuen, D.W. Minnesota Historical Society. *The Minnesota Trunk Highway Archaeological Reconnaissance Survey*. Annual Report for the Year 1972. Page 36.

⁷ City of Shakopee. *Envision Shakopee*. Section IV: Natural Environment. Dated August 30, 2018. Page 320.

16. Air:

Stationary Source Emissions

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

AUAR Guidance: This item is not applicable to an AUAR. Any stationary air emissions source large enough to merit environmental review requires individual review.

Vehicle Emissions

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

AUAR Guidance: Although the Pollution Control Agency no longer issues Indirect Source Permits, traffic-related air quality may still be an issue if the traffic analysis indicates that development would cause or worsen traffic congestion. The general guidance for item 22 in EAW Guidelines should still be followed. Questions about the details of air quality analysis should be directed to the MPCA staff.

An air quality analysis was preformed to predict carbon monoxide concentrations at those study intersections that operate at LOS D or worse under the Max Build Scenario. These include the intersections of MN 41 and Rail Frontage, CR 78 and Emery Way, CR 78 and CR 69, CR 78 and CR 15, CR 78 and CR 77, CR 78 and CR 79, CR 69 and 10th Avenue W, CR 69 and Vierling Drive, CR 69 and US 169 North Ramp, CR 69 and US 169 South Ramp, CR 69 and North Access, CR 69 and CR 16, and CR 15 and 128th Street W.

Motor vehicle air quality issues are most frequently associated with carbon monoxide (CO) emissions and the concentrations of those emissions. Concentrations of CO are generally highest at intersections with poor levels of service and, consequently, more idling vehicles. The air quality analysis incorporates projected a.m. and p.m. peak hour traffic volumes (including site-generated traffic) representing the max build conditions.

Dust and Odors

Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

AUAR Guidance: Dust, odors, and construction noise need not be addressed in an AUAR, unless there is some unusual reason to do so. The RGU might want to discuss as part of the mitigation plan, however, any dust control ordinances in effect.

Construction activities during development would likely result in noise and dust. Dust generated during construction will be minimized through standard dust control measures such as applying water to exposed soil and limiting the extent and duration of exposed soil conditions. Construction contractors would be required to control dust and other airborne particulates in accordance with applicable standard specifications. After construction is complete, dust levels are anticipated to be minimal because all soil surfaces would be revegetated or developed (i.e., pavement or lawn areas).

17. Noise:

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

AUAR Guidance: Construction noise need not be addressed in an AUAR, unless there is some unusual reason to do so. The RGU might want to discuss as part of the mitigation plan, however, any construction noise ordinances in effect. If the area will include or adjoin major noise sources a noise analysis is needed to determine if any noise levels in excess of standards would occur, and if so, to identify appropriate mitigation measures. With respect to traffic-generated noise, the noise analysis should be based on the traffic analysis of item 18.

Construction Noise

Construction activities during development would likely result in noise and dust. Construction activities associated with development would result in increased noise levels relative to existing conditions. Construction noise would be limited to daytime hours in accordance with the City's noise ordinance per City Code 130.45. Construction equipment would be fitted with mufflers that would be properly maintained during the construction process.

Traffic-Related Noise

The proposed development of the AUAR will increase traffic volumes throughout the study area. Increases in traffic can result in increased noise levels, which can be perceived as an annoyance to adjacent residents. The range of increase in traffic volumes range throughout the study area, particularly as the area transitions from a rural setting to urbanized development. The large study area and development conditions of the study area did not warrant a detailed analysis. It should also be noted that all county roads are exempt from State noise standards.

A sound increase of 3 dBA is barely noticeable by the human ear, a 5-dBA increase is clearly noticeable, and a 10 dBA increase is heard as twice as loud. For example, if the sound energy is doubled (i.e., the amount of traffic doubles), there is a 3 dBA increase in noise, which is just barely noticeable to most people. On the other hand, if traffic increase by a factor of 10, the resulting sound level will increase by about 10 dBA and be heard as twice as loud.

Traffic levels in some areas of the study area would see a general increase in traffic noise that could be noticeable, particularly near new roadway connections within the study area. Increases on existing County Roads represent an increase by a factor of 2 to 4, which could result in an increase of 3dBA or slightly greater. Considerations with future development should include buffering and setbacks for sensitive land use activities.

18. Transportation:

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

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

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

A traffic study was completed to assess the future traffic impacts resulting from the proposed development. The study includes an analysis of the existing and future conditions of the study area. The analysis also compares a full build out of the study area compared to the growth assumed by 2040 according to the City's Comprehensive Plan. The complete traffic analysis, dated September 4, 2019, is included in Attachment F, but pertinent information as outlined in the AUAR Guidelines is summarized in this section.

The traffic study forecasted future traffic volumes and examined the operational characteristics of existing and future conditions in terms of level of service (LOS). The LOS characteristic is an operational comparison of the ability of a road or intersection to accommodate traffic flow and remain uncongested. The LOS of an intersection is generally presented as an alphabetic rating from A to F, with A indicating minimal delays and F indicating significant delays. In the Twin Cities Metro, intersections with a LOS of D or better are considered adequate, requiring no additional roadway improvements.

Existing Roadway System

As shown in Figure 1, the AUAR study area is traversed by many State, County and local roadways providing access throughout the study area. US Highway 169 (US 169) and MN Highway 41 (MN 41) are the two principal arterials located within the study area. These roadways provide regional connectivity to and from the study area. At the time of the traffic analysis, the intersection of US 169 and MN 41 was under construction for the conversion to a Diverging Diamond Interchange. This improvement was considered complete for the traffic analysis. Additionally, Scott County Roads (CR 78, CR 15, CR 69, and CR 16) are located within the study area and serve as A Minor Arterials. Scott County has approved a change in functional classification to Principal Arterial for CR 78. The local roadway network is not well established in a majority of the area due to the rural nature. Some local and private roadways are established to provide access to existing development.

Existing Conditions

Traffic operations for existing a.m. and p.m. peak hour conditions were analyzed at the following existing or proposed intersections:

- MN 41 and Rail Frontage Road
- MN 41 and Dem Con Drive
- County Road 78 and Emery Way
- County Road 78 and County Road 69
- County Road 78 and County Road 15
- County Road 78 and County Road 77
- County Road 78 and County Road 79
- County Road 69 and 10th Ave W
- County Road 69 and Chaparral Ave
- County Road 69 and Vierling Dr
- County Road 69 and US 169 North Ramp
- County Road 69 and US 169 South Ramp
- Marystown Road and US 169 North Ramp
- Marystown Road and US 169 South Ramp
- County Road 15 and County Road 16
- County Road 15 and 128th St W

Traffic counts for each of the study intersections were gathered from field data collection in the spring of 2019 or were calculated using recent traffic studies completed for nearby developments. The existing traffic control for each intersection was used to analyze the existing LOS for each of the study intersections. The only signalized intersection is located at MN 41 and Dem Con Drive. The intersections of County Road 15/County Road 78 and County Road 79/County Road 78 are controlled with all way stops. The remaining intersections are all controlled with side-street stop control.

A traffic operations analysis based on current a.m. and p.m. peak hour turning movement counts was conducted for the a.m. and p.m. peak hours at each of the key intersections to determine how traffic currently operations within the study area. As shown in Table 14, all intersections operate at a LOS of B or better, overall. However, the Rail Frontage Road leg of the intersection with MN 41 operates at a LOS E for both a.m. and p.m. peak hours. The intersection overall operates at a LOS A.

Table 14: Existing Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
MN 41				
MN 41/Rail Frontage ⁽¹⁾	A/E	36 sec.	A/E	42 sec.
MN 41/Dem Con Drive	B	19 sec.	B	16 sec.
CR 78				
CR 78/Emery Way ⁽¹⁾	A/A	1 sec.	A/A	4 sec.
CR 78/CR 69 ⁽¹⁾	A/A	9 sec.	A/B	11 sec.
CR 78/CR 73 ⁽¹⁾	A/A	2 sec.	A/A	1 sec.
CR 78/CR 15 ⁽²⁾	A	10 sec.	B	11 sec.
CR 78/CR 77 ⁽¹⁾	A/A	4 sec.	A/A	6 sec.
CR 78/CR 79 ⁽²⁾	B	11 sec.	B	12 sec.
CR 69				
CR 69/10th Avenue W ⁽¹⁾	A/A	6 sec.	A/A	8 sec.
CR 69/Chaparral Avenue ⁽¹⁾	A/A	4 sec.	A/A	5 sec.
CR 69/Vierling Drive ⁽¹⁾	A/A	9 sec.	A/A	10 sec.
CR 69/US 169 North Ramp ⁽¹⁾	A/A	5 sec.	A/A	5 sec.
CR 69/US 169 South Ramp ⁽¹⁾	A/A	5 sec.	A/A	8 sec.
CR 69/Driveways ⁽¹⁾	A/A	4 sec.	A/A	5 sec.
Marystown Road/CR 15				
Marystown Road/US 169 North Ramp ⁽¹⁾	A/A	7 sec.	A/B	12 sec.
Marystown Road/US 169 South Ramp ⁽¹⁾	A/B	14 sec.	A/B	14 sec.
CR 15/CR 16 ⁽¹⁾	A/B	11 sec.	A/A	8 sec.
CR 15/128th Street W ⁽¹⁾	A/A	6 sec.	A/A	5 sec.

Bold LOS are considered unacceptable.

- (1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.
- (2) Indicates an all-way stop control intersection.

2040 Comprehensive Plan Analysis

Traffic forecasts from the 2040 Comprehensive Plan were used to compare traffic impacts to a full build scenario for the study area. The socio-economic data used to inform the forecast aligns with the data used in the City of Shakopee and Scott County 2040 traffic analysis. The Regional Travel Demand Model was used for this analysis. The growth assumed within this scenario aligns with the population, household and employment forecasts defined by the Metropolitan Council by 2040. A full build scenario of the study area is not assumed within this analysis.

Table 15 displays the results of the intersection analysis for the 2040 Comprehensive Plan scenario. Geometric and traffic control assumptions are detailed in Attachment F.

Table 15: 2040 Comprehensive Plan Scenario – Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
MN 41				
MN 41/Rail Frontage ⁽¹⁾	C/F	>3 min	F/F	>3 min
MN 41/Dem Con Drive	E	67 sec.	E	67 sec.
CR 78				
CR 78/Emery Way ⁽¹⁾	A/C	16 sec.	A/B	13 sec.
CR 78/CR 69 ⁽¹⁾	A/C	19 sec.	B/E	42 sec.
CR 78/CR 73 ⁽¹⁾	A/A	9 sec.	A/A	9 sec.
CR 78/CR 15 ⁽²⁾	C	17 sec.	F	63 sec.
CR 78/CR 77 ⁽¹⁾	A/A	8 sec.	A/A	8 sec.
CR 78/CR 79 ⁽²⁾	F	63 sec.	F	83 sec.
CR 69				
CR 69/10th Avenue W ⁽¹⁾	A/B	12 sec.	A/C	21 sec.
CR 69/Chaparral Avenue ⁽¹⁾	A/A	6 sec.	A/A	7 sec.
CR 69/Vierling Drive ⁽¹⁾	A/B	12 sec.	A/C	23 sec.
CR 69/US 169 North Ramp ⁽¹⁾	A/A	10 sec.	A/B	14 sec.
CR 69/US 169 South Ramp ⁽¹⁾	A/A	9 sec.	A/C	18 sec.
CR 69/Subdistrict A/B North Access ⁽¹⁾	A/A	9 sec.	A/A	8 sec.
CR 69/CR16/Subdistrict A/B South Access ⁽¹⁾	A/A	7 sec.	A/A	9 sec.
Marystown Road/CR 15				
Marystown Road/US 169 North Ramp ⁽¹⁾	C/F	51 sec.	F/F	>3 min
Marystown Road/US 169 South Ramp ⁽¹⁾	F/F	>3 min	F/F	>3 min
CR 15/CR 16 ⁽¹⁾	F/F	>3 min	E/F	~2.5 min
CR 15/128th Street W ⁽¹⁾	A/A	8 sec.	A/C	17 sec.

Bold LOS are considered unacceptable.

(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.

(2) Indicates an all-way stop control intersection.

Mitigation measures were defined for each of the intersections with an unacceptable LOS. An intersection capacity analysis was rerun assuming that these improvements were complete. The result found that all intersections were operating at an overall LOS D or better.

Future Max Build Scenario

Traffic forecasts were developed for max build conditions of the study area. The traffic analysis assumed that the study area would be fully developed per Shakopee's 2040 Comprehensive Plan. Additionally, the scenario assumes all mitigation measures from the Comprehensive Plan Scenario (see Table 16) were implemented. Development assumptions were used to develop the future household and employment totals for each of the subdistricts to inform traffic forecasts. No staging timeline has been defined for this development scenario.

Table 16 displays the results of the intersection analysis for the Max Build Scenario. Geometric and traffic control assumptions are detailed in Attachment F. It should be noted that the Max Build evaluation is meant to be a planning tool and the improvements identified in this section are to be considered potential improvements if current development plans and traffic volumes materialize.

Table 16: Max Build Scenario – Intersection Capacity Analysis

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
MN 41				
MN 41/Rail Frontage ⁽¹⁾	E/F	>3 min	F/F	>3 min
MN 41/Dem Con Drive	C	31 sec.	C	27 sec.
CR 78				
CR 78/Emery Way ⁽¹⁾	F/F	>3 min	F/F	> 3 min
CR 78/CR 69 ⁽¹⁾	F/F	>3 min	F/F	> 3 min
CR 78/CR 73 ⁽¹⁾	A/C	18 sec.	A/C	20 sec.
CR 78/CR 15 ⁽²⁾	F	64 sec.	F	~ 3 min
CR 78/CR 77 ⁽¹⁾	A/A	9 sec.	F/F ⁽⁴⁾	>3 min
CR 78/CR 79 ⁽²⁾	F	~2.5 min	F	>3 min
CR 69				
CR 69/10th Avenue W ⁽¹⁾	A/D	34 sec.	E/F	>3 min
CR 69/Chaparral Avenue ⁽¹⁾	A/B	11 sec.	A/D	26 sec.
CR 69/Vierling Drive ⁽¹⁾	B/E	39 sec.	F/F	>3 min
CR 69/US 169 North Ramp ⁽¹⁾	E/F	>3 min	E/F	~3 min
CR 69/US 169 South Ramp ⁽¹⁾	A/D	30 sec.	F/F	>3 min
CR 69/Subdistrict A/B North Access ⁽¹⁾	C/F	55 sec.	F/F	>3 min
CR 69/CR 16/Subdistrict AB South Access ⁽¹⁾	C/F	55 sec.	F/F ⁽⁴⁾	>3 min

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
Marystown Road/CR 15⁽³⁾				
Marystown Road/US 169 North Ramp ⁽³⁾	A	6 sec.	A	10 sec.
Marystown Road/US 169 South Ramp ⁽³⁾	A	9 sec.	A	10 sec.
CR 15/CR 16 ⁽³⁾	C	22 sec.	B	17 sec.
CR 15/128th Street W ⁽¹⁾	A/B	13 sec.	E/F ⁽⁴⁾	~2.5 min
Bold LOS are considered unacceptable.				
(1) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst side-street approach LOS. The delay shown represents the worst side-street approach delay.				
(2) Indicates an all-way stop control intersection.				
(3) Indicates an intersection with roundabout control and was analyzed using HCS 7.				
(4) Intersection operations are partially caused by adjacent intersection queueing.				

Mitigation measures were defined for each of the intersections with an unacceptable LOS. An intersection capacity analysis was rerun assuming that these improvements were complete. The result found that all intersections were operating at an overall LOS C or better.

Comparison of the 2040 Comprehensive Plan and Max Build Scenarios

A comparison of improvements recommended for the 2040 Comprehensive Plan and Max Build scenarios indicates the recommended improvements to support development of the AUAR study area. Improvements identified for the 2040 Comprehensive Plan Scenario should also be considered for the Max Build Scenario. This comparison ultimately defines the improvements warranted to support the city's growth assumptions within the study area by 2040 versus the improvements needed to support a full build out.

Table 17: Traffic Analysis Mitigation Measures

Intersection	2040 Comprehensive Plan Scenario Mitigation	Max Build Scenario Mitigation
MN 41/Rail Frontage	- Construct a 4-Lane Divided Roadway with turn lanes along MN Highway 41 - Construct left-turn lanes at the side-street approaches, with potential for future signalization - Monitor and consider signalization when development occurs/signal warrants are met	- Construct a traffic signal or roundabout - Roundabout not considered at rail frontage due to close proximity to railroad tracks
CR 78/Emery Way	None	- Construct a traffic signal or roundabout - Construct a southbound left-turn lane at the Emery Way intersection

Intersection	2040 Comprehensive Plan Scenario Mitigation	Max Build Scenario Mitigation
CR 78/CR 69	Construct left-turn lanes at the side-street approaches, with potential for future signalization or roundabout	- Construct a traffic signal or roundabout ⁽²⁾ - Construct a westbound right-turn lane to accommodate the heavy westbound movement
CR 78/CR 15	Construct left-turn lanes on all approaches	- Construct a traffic signal or roundabout ⁽²⁾ - Construct a southbound right-turn lane and a westbound right-turn lane
CR 78/79	Construct left-turn lanes on all approaches	- Construct a traffic signal or roundabout ⁽²⁾ - Construct a westbound right-turn lane to accommodate the heavy westbound movement
CR 78/CR 73	None	Construct eastbound and westbound left-turn lanes
CR 78/CR 77	None	Construct a southbound right-turn lane and eastbound left-turn lane
CR 69/10 th Avenue and CR 69/ Chaparral Avenue	None	- Reconstruct Chaparral Avenue to align with 10th Avenue to create a 4-leg intersection - Construct a traffic signal or roundabout
CR 69/ Vierling Drive	None	Construct a traffic signal or roundabout
CR 69/US 169 North Ramp	None	Construct a traffic signal or roundabout
CR 69/US 169 South Ramp	None	- Construct traffic signal or roundabout. - If signalized, consider converting the shared thru/left-turn lane and right-turn lane configuration on the westbound approach to a left-turn lane and shared thru/right-turn lane configuration and provide a left-turn lane on the eastbound approach.

Intersection	2040 Comprehensive Plan Scenario Mitigation	Max Build Scenario Mitigation
CR 69/ Subdistrict A/B North Access	None	- Construct northbound and southbound left-turn lanes on CR 69 - Construct a traffic signal or roundabout
CR 69/Subdistrict A/B South Access (CR 16)	None	- Construct northbound and southbound left-turn lanes on CR 69 - Construct a traffic signal or roundabout
CR 15/128 th Street	None	Construct a northbound and southbound left-turn lane on CR 15
Marystown Road/US 169 Ramps and CR 15/CR 16	- Construct traffic signal or roundabout⁽¹⁾ - For signalization, consider converting the shared thru/left and right-turn lane configuration at the US 169 Ramps to a left- and shared thru/right-turn lane configuration	None

- (1) Roundabout configuration is identified as a potential future project in the City of Shakopee's Capital Improvement Plan 2019-2023 for the Marystown Road/US 169 Ramp intersections; however, no funding has been identified. These intersections are being further evaluated as part of the Marystown Road Corridor Study with are stakeholders will occur as part of the study to determine the appropriate future traffic control.
- (2) CR 78 is designated as a future principal arterial roadway in the 2040 Scott County Comprehensive Plan, which states that roundabouts are not appropriate for urban principal arterial roadways. However, roundabouts may be feasible and/or desirable in this location and further discussion with area stakeholders should occur to determine the appropriate future traffic control.

The traffic analysis completed for this AUAR represents planning level estimates and should be further refined as development occurs and other regional roadway and intersection improvements are pursued.

Future Considerations

In 2007, area stakeholders analyzed the construction of a new TH 41 river crossing between the cities of Shakopee and Chaska. The new crossing was studied to explore opportunities that serve regional traffic, reduce traffic congestion, and protect the floodplain. Multiple corridors were studied through an Environmental Impact Statement (EIS), which studied the project impacts on social, economic, and environmental resources in the area. As a result, The C-2 alignment was selected as the preferred alternative through the EIS process. The C-2 alignment is in close proximity to the existing TH 41 alignment within this AUAR study area and is shown in Figure 24.

While the preferred alignment was selected, the new crossing is not planned or programmed within MnDOT's near term projects, and the new alignment was not considered in the traffic analysis for this AUAR. However, the City recognizes the alignment and the findings of the FEIS and will monitor the alignment and future right-of-way needs.

19. Impact on Infrastructure and Public Services:

AUAR Guidance: This item should first of all summarize information on physical infrastructure presented under items (such 6, 17, 18 and 21). Other major infrastructure or public services not covered under other items should be discussed as well – this includes major social services such as schools, police, fire, etc. The RGU must be careful to include project-associated infrastructure as an explicit part of the AUAR review if it is to exempt from project-specific review in the future.

Roadways:

See response from Item 18 (Transportation)

Storm Sewer:

A thorough analysis of the storm sewer flows and routing will be prepared and reviewed with the City of Shakopee and appropriate agencies upon the development of both the infrastructure plan documents and individual development site documents.

Water System:

Analysis was completed to understand the future water demands resulting from the proposed development (see response from Item 11). In cooperation with Shakopee Public Utilities, needed improvements have been identified to provide water service within the AUAR study area and future growth areas.

Sanitary Sewer:

Future sanitary sewer service will be extended into the study area to adequately serve the proposed development. The long-range planning completed within the Sanitary Sewer Master Plan will be used to guide the timely extension of services.

Other Public Services:

Emergency services are currently provided by the City of Shakopee and Scott County within the study area. The Shakopee Fire Department's service area currently extends into all portions of the study. While service is currently provided, additional planning for increased density and development will be coordinated. Police service is currently provided by the Scott County Sheriff. As growth occurs within the study area, planning for the extension of the Shakopee Police Department's service area will occur.

20. Cumulative Potential Effects:

Because the AUAR process by its nature is intended to deal with cumulative potential effects from all future developments within the AUAR area, it is presumed that the responses to all items on the EAW form automatically encompass the impacts from all anticipated developments within the AUAR area.

However, the total impact on the environment with respect to any of the items on the EAW form may also be influenced by past, present, and reasonably foreseeable future projects outside of the AUAR area. The cumulative potential effect descriptions may be provided as part of the responses to other appropriate EAW items, or in response to this item.

The overall development of the AUAR study areas is consistent and compatible with the City's Comprehensive Plan. While the timing of the development will occur as development interests and market conditions allow, the overall development and supporting policies create an opportunity for quality commercial, industrial and residential development.

21. Other Potential Environmental Effects:

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

AUAR Guidance: If applicable, this item should be answered as requested by the EAW form.

The proposed development, as described in Item 6, is not anticipated to generate any environmental impacts beyond those discussed within this document. As the development scenarios are refined through the study area, additional review should be completed to define any potential impacts.

22. Summary of Issues:

The RGU may answer this question as asked by the form, or instead may choose to provide an Executive Summary to the document that basically covers the same information. Either way, the major emphasis should be on: potentially significant impacts, the differences in impacts between major development scenarios, and the proposed mitigation

Fish, Wildlife, and Ecologically Sensitive Resources

The AUAR study area is in close proximity to the Minnesota Valley State Recreation Area, and development must not impact the recreational value of this area (i.e., noise). The study area may include habitat areas for sensitive species in the State of Minnesota including the Butternut, Little Brown Bat, Big Brown Bat, Lake Sparrow, Purple Martin, Northern Long-Eared Bat, and Rusty Patched Bumble Bee. Impacts to the habitat for these species must be avoided as development is pursued.

Physical Impacts on Water Resources

While the specific impacts to project area wetlands are unknown at this time, it is anticipated that future development will result in impacts to wetlands. These impacts will be minimized and mitigated as development is pursued and the appropriate permitting with the MPCA and USACE will be required.

Erosion and Sedimentation

The City's zoning ordinance regulates development within the shoreland areas and stormwater management practices are also managed through city regulations. The potential for erosion and sedimentation of soils exposed during development in the AUAR study area will be minimized by using the appropriate Best Management Practices (BMPs) during and after construction.

Stormwater

Unavoidable impacts to storm water quality and volumes will result from the increased impervious surface within the AUAR study area. The City will require mitigation of storm water runoff to meet management objectives for each of the identified sub-watersheds. The management objectives include maintaining or reducing, to the extent feasible, existing surface water runoff volume and phosphorus loading, and detention basins where appropriate.

Historic Properties

Historic sites were identified within the study area during a SHPO inventory review, as noted in Item 14. It is understood that additional resources may be located within the study area. As development proposals are defined, Phase 1 archeological surveys should be completed within the study area due to the location and results of the SHPO inventory review.

Traffic

Traffic impacts will be mitigated to the degree necessary to maintain traffic operations at an acceptable LOS D or better by implementing the intersection improvements identified within the section. Attention should be placed on the timing of development to ensure that improvements are being pursued as warranted.