

**Appendix TR:R-A:**  
**Carver County Roadway Systems Plan**

**TR**

**ROADWAYS**

The Carver County  
2030 Comprehensive Plan

**CARVER COUNTY**  
**Public Health & Environment Division**  
**Planning and Water Management Department**  
Government Center, Administration Building  
600 East 4th Street  
Chaska, Minnesota 55318

The Carver County 2030 Comprehensive Plan  
[www.co.carver.mn.us/2030plan](http://www.co.carver.mn.us/2030plan)

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**CARVER COUNTY  
ROADWAY SYSTEMS PLAN  
(2010 – 2030)**

**Final Report  
September 2009**

Prepared by the:  
**Carver County Public Works Department**

in Partnership with Carver County  
Cities and Townships,  
with Support from the  
**Minnesota Department of Transportation**

**Plan Consultant:  
SRF Consulting Group, Inc.**

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# 1.0 INTRODUCTION

Carver County officials have completed the Roadway Systems Plan to help them provide a safe and efficient transportation system. In addition, the Roadway Systems Plan provides direction to help the county prioritize major future transportation investments, as well as identify potential fiscal resources to advance these projects.

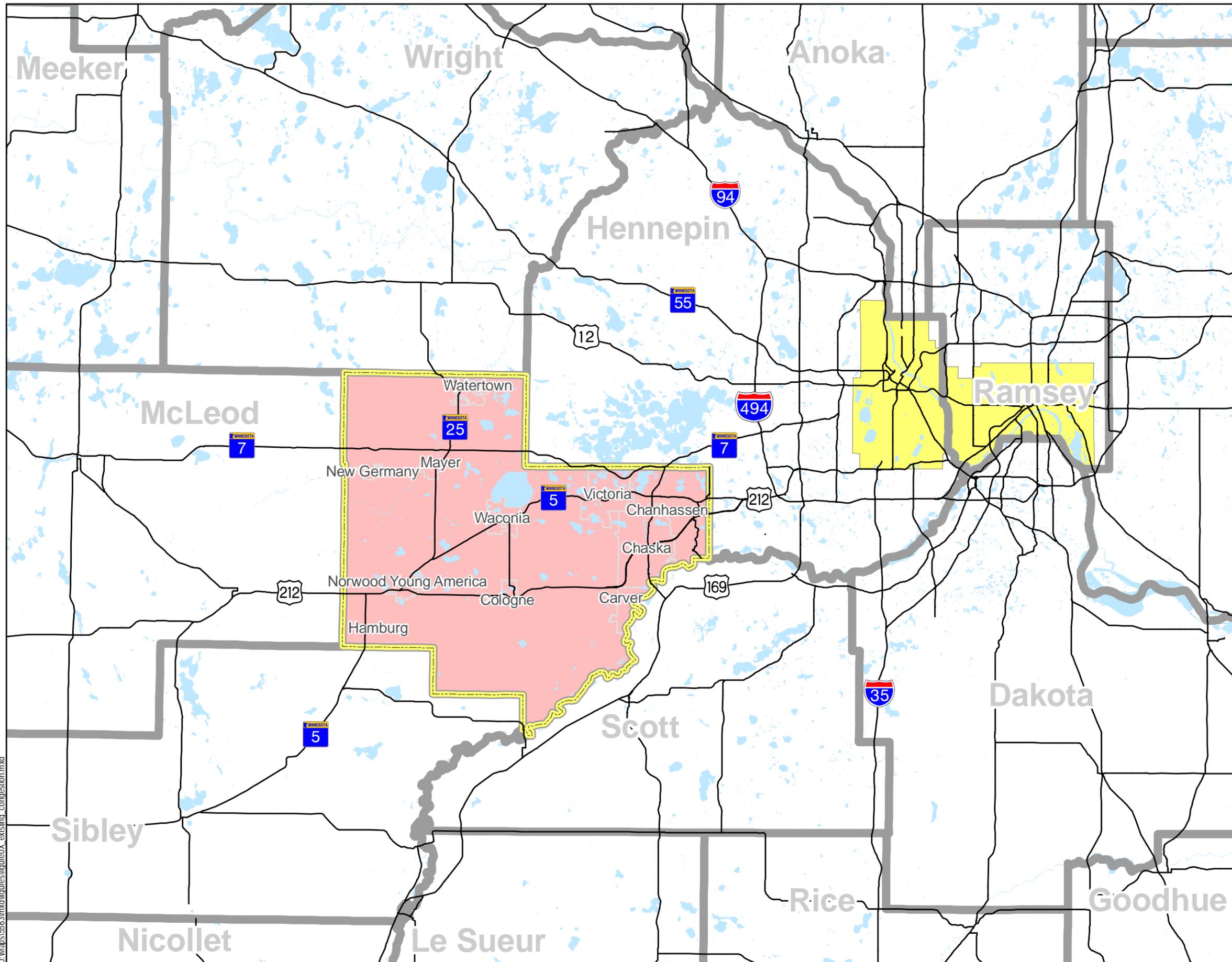
## 1.1 Background

Carver County is one of the fastest growing counties in Minnesota. The county has experienced an annual growth rate average of 3.1 percent between 1970 and 2000. Between 2000 and 2030 strong population growth in the county is expected to continue at a rate of around 3.5 percent per year. By 2030, the forecasted population of the county is expected to be 199,401. The majority of future growth within the county will be located in the cities of Chanhassen, Chaska, Victoria and Waconia, as a result of the outward growth from Eden Prairie (which is almost fully developed) along the Highway 5 and Highway 212 corridors. These four cities are estimated to account for over 60 percent of the county population in 2030. Table 1 in Section 2.2 lists the historic and estimated future population totals for the townships and cities (divided into regions) in the county.

The last Carver County Transportation plan update was completed in 1999. The intent of the Roadway Systems Plan is to supplement the past plan with updated information, along with providing direction to the county and other affected jurisdictions in accommodating anticipated growth and projected travel needs. This plan will be used as a tool to prioritize major transportation investments on the county roadway system. This plan benefited from the participation of the local communities. The emphasis of this plan is on the roadway network.

## 1.2 Study Location

Carver County is located on the southwestern portion of the Twin Cities Metropolitan Area (TCMA) (see Figure 1) and is bordered by Wright County to the north, Hennepin County and Scott County to the east, Sibley County to the south, and McLeod County to the west. The county's transportation needs are diverse due to its mixture of rural and developing areas. The far western portions of the county are predominately rural, and the county has placed a high value on maintaining these rural areas by directing growth toward small towns (freestanding growth centers) in the western portion of the county and to the larger urbanizing cities in the central and eastern portions of Carver County.



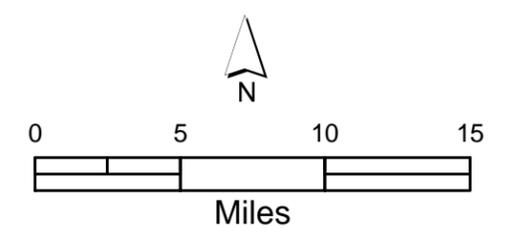
CARVER COUNTY LOCATION



Figure 1

Legend

- Trunk Highways
- Minneapolis-St. Paul
- Municipal Boundaries
- County Boundaries
- Carver County



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## 1.3 Plan Purpose

The main goals of the Carver County Roadway Systems Plan are to preserve the current roadway system, accommodate future growth and address emerging new transportation issues. By fulfilling these goals, the plan will address projected travel needs of the county's residents and businesses into the future. Therefore, the purpose of this plan is four-fold:

1. Update the Current Plan to Meet Metropolitan Council Requirements

The Metropolitan Council requires that cities and townships within the seven county metropolitan region update their comprehensive plans every 10 years to ensure their plans stay consistent with Metropolitan Council's System Plan. This update addresses requirements outlined in the Local Planning Handbook (2008).

2. Enhance the County's Arterial Roadway System

As a product of the population growth in Carver County there has been an increase in weekday commuting into and out of the county, spurred by the higher numbers of jobs in the metropolitan area. The future population growth in the county will increase traffic on the county's roadways. Arterial roadways in Carver County carry the majority of the traffic volume and serve as the main travel corridors for travel throughout the county. It is important that more arterial roadways are added to the county system to meet the future capacity demands.

3. Reduce the Number of Crashes and Fatalities within the County

Local leaders wish to reduce roadway/intersection crashes and fatalities in the county. Roadway safety is a key consideration when planning for roadway or intersection improvements. Efforts to improve roadway safety in Carver County include reviewing county roadway geometrics and identifying improvement needs, enforcing speed limits along arterial routes and addressing problems at high-crash locations.

4. Incorporate Statewide Transportation Initiatives

There are two important statewide transportation initiatives that have been implemented since the 1999 Carver County Transportation Plan. These include the development of the Interregional Corridor System (IRC) and the new access management guidelines for all state roadways. These policies are recognized and were incorporated accordingly into this plan.

## 1.4 Important Statewide Changes

As previously indicated, there have been two important statewide initiatives that have been implemented since the completion of the 1999 Transportation Plan. These initiatives included the development of the IRC system and Statewide Access Management Guidelines. The sections below discuss the initiatives.

### 1.4.1 IRC System

The first statewide initiative was the development of the IRC system to support statewide economic activity by maintaining safe, timely and efficient transportation between regional trade centers. The IRC system consists of approximately 2,900 miles of the state's principal and minor arterial roadways that connect the Twin Cities Metropolitan Area with primary, secondary and shopping regional trade centers in Greater Minnesota. Of the 2,900 miles, about two-thirds (1,900) are identified as medium priority IRCs and approximately one-third are identified as high priority IRCs. Additionally, other important roadways not identified as IRCs are included on the Regional Corridor System. Within Carver County, Trunk Highway (TH) 212 has been identified as a high priority IRC, and TH 7 and TH 5 (south of TH 212) are identified as regional corridors. In addition, TH 41 has been identified as an important connection between TH 212 and TH 169, which is another high priority IRC.

The performance measure for the IRCs is the average travel speed across the corridor. The speed performance targets for high priority IRCs are 60 mph and 55 mph for medium priority IRCs. The Statewide Performance Plan calls for 90 percent of the IRC system to meet these targets by 2023. Because of the importance of TH 212 to the state, a corridor management plan was developed.

According to the TH 212 vision, recommended future improvements include:

#### 0 – 25 years:

- Upgrading TH 212 to a four-lane expressway from Norwood Young America east to CR 147.

#### Beyond 25 years:

- Eliminating the need for signals at the intersections of Highway 5 north, Faxon Avenue and County Road 134 and increasing the posted speed limit through Norwood Young America to 60 mph.
- Constructing an interchange at the Highway 284 intersection, which would eliminate the need for a signal.

These recommendations will be included as part of the analysis for this plan.

## 1.4.2 Statewide Access Management Guidelines

The second statewide initiative is related to access management. As communities grow and traffic volumes increase on a road system, access becomes more of an issue. Access policies need to be uniform throughout an area in order to be effective. Proper spacing and design of intersections with private access to the trunk highway system is necessary to guarantee the safety and mobility of statewide travelers, while accommodating the access and accessibility needs of the communities. Mn/DOT's access management guidelines identify intersection spacing, signalization and private access standards. Functional classification is the method in which roadways are grouped into classes according to the character of service they are intended to provide. The access guidelines apply as Mn/DOT policy to the State Trunk Highway System. The guidelines are not required to be applied to local streets and highways, including the municipal and county State Aid systems. While Carver County has discretion over the access guidelines for its roadways, Mn/DOT encourages local governments to use these guidelines as a reference when developing or implementing their own local access management policies. Mn/DOT's guidelines for the Trunk Highway System as well as for functionally classified roadways have been incorporated into this plan (see Section 6.2).

## 1.5 Agency and Public Participation

Public participation is essential to the planning process. Identifying and confirming transportation-related issues was an important part of developing the Carver County Roadway Systems Plan. Without this step, recommendations and improvements have little context for residents, business owners, public safety officers, elected officials and agency staff, and may not fully address the needs of those using the county road system. The public participation element of the planning process is a means to communicate transportation issues and needs, provide opportunities for discussion of issues, findings, recommendations and build support for the plan.

The Carver County Roadway Systems Plan was developed over the course of approximately four years. Below is a general summary of the major agency and public participation opportunities conducted over the course of the plan's development.

- City Representative Meetings (2005 through 2007) – Several meetings were held early in the Roadway Systems Plan development with city staff representatives from the communities in Carver County. The purpose of these meetings was to update communities on the plan process and provide opportunities for input. In addition, communication with each community was important to ensure coordination with their comprehensive plan updates, specifically relating to the updating of Traffic Analysis Zones (TAZs), which were coordinated with future expected land use. Later, each community was also given the opportunity to review and provide input on the preliminary plan findings and recommendations.
- Elected Leader Meetings (2005 through 2007) – Meetings were held with County, Township, and City elected officials throughout the Roadway Systems Plan development process. The purpose of these meetings was to update elected officials on the elements of the plan and ultimately the findings and recommendations of the plan.
- Public Meetings (2008) – As part of the comprehensive plan process, three public open house meetings were held during the summer of 2008 in Chaska, Cologne and Mayer.

At these open house meetings, the draft Roadway Systems Plan's preliminary findings and recommendations were presented and public input on this information was solicited.

- City Comprehensive Plan Reviews (2008 through 2009) – The County reviewed the transportation section of each of the draft community comprehensive plan updates to identify and resolve any significant discrepancies with the major elements of the County Roadway Systems Plan (i.e., functional classification, TAZ data, future traffic forecasts and proposed roadway improvements).
- Public Agency Plan Review (2008 through 2009) – The draft plan, revised based on the initial input from city representatives, elected leaders, and the general public, was made available for public and agency review in the fall of 2008. The Metropolitan Council, Mn/DOT, townships and adjoining counties were provided an opportunity to review and provide feedback on the plan through this process.
- Private Sector Groups (2009) – In the summer of 2009, presentations were made to interested private sector groups (e.g., Chamber, businesses, development representatives to gain their input on the draft plan).
- Carver County Planning Commission and County Board Review (2009) – Agency and public comments were summarized and proposed responses were presented to the Planning Commission and County Board for review and approval in August 2009. A table summarizing the comments received and County's responses is provided in Appendix A. The final revised County Roadway Systems Plan was adopted by the Planning Commission and County Board in September 2009.

## 2.0 EXISTING CONDITIONS

Land use, population, traffic volumes, commuting trends, and safety were investigated during the plan’s development process to help identify the transportation-related issues.

### 2.1 Land Use

The far western portions of the county are predominately rural and the eastern portion of the county is experiencing the majority of the urbanization. Because of this, the county’s transportation needs are diverse due to the mixture of rural and developing areas in the county. A detailed analysis of the existing and future land use in the county as well as the general land use goals are included in the 2030 Carver County Comprehensive Plan.

### 2.2 Population

Carver County is experiencing a high level of population growth, with most of the growth taking place in the central and eastern portions of the county. The cities of Chaska, Chanhassen, Victoria and Waconia are estimated to account for over half of the total county population by 2030. Table 1 below organizes the cities and townships into three geographic regions. The following conclusions can be made about population growth in Carver County:

- Growth levels are significant in the eastern portion of the county. The eastern region experienced the fastest growth with an annual growth rate of 4.0 percent per year between 1970 and 2000. However, the more predominantly rural regions of the county, regions 2 and 3, also grew in population even though many rural areas throughout the State of Minnesota declined in population.
- According to the population forecast numbers, population is anticipated to continue to increase at a rate of 3.5 percent per year from 2000 to 2030. If the population forecasts hold true, the current population of the county (2000) will almost triple by 2030.

**TABLE 1**  
**Carver County Population <sup>1</sup>**

Region	Population						
	1970	1980	1990	2000	2005	2020	2030
1 – East <sup>2</sup>	16,413	23,433	33,360	53,644	60,380	114,020	132,850
2 – Central <sup>3</sup>	4,924	5,177	5,299	9,143	27,870	32,981	44,291
3 – West <sup>4</sup>	5,325	5,980	6,551	7,418	16,220	17,820	22,260
<b>Carver County</b>	<b>26,662</b>	<b>34,590</b>	<b>45,210</b>	<b>70,205</b>	<b>104,470</b>	<b>164,821</b>	<b>199,401</b>

<sup>1</sup> Source: 1970-2000 population totals from U.S. Census Data; 2005 estimates and 2020/2030 population projections obtained from the Metropolitan Council

<sup>2</sup> Includes the Cities of Chanhassen, Chaska, Victoria, Waconia and Carver; and the Townships of Chaska, Laketown and Waconia

<sup>3</sup> Includes the Cities of Norwood Young America, Cologne and Hamburg; and the Townships of Benton, Dahlgren, Hancock, San Francisco and Young America

<sup>4</sup> Includes the Cities of Mayer, New Germany and Watertown; and the Townships of Camden, Hollywood and Watertown

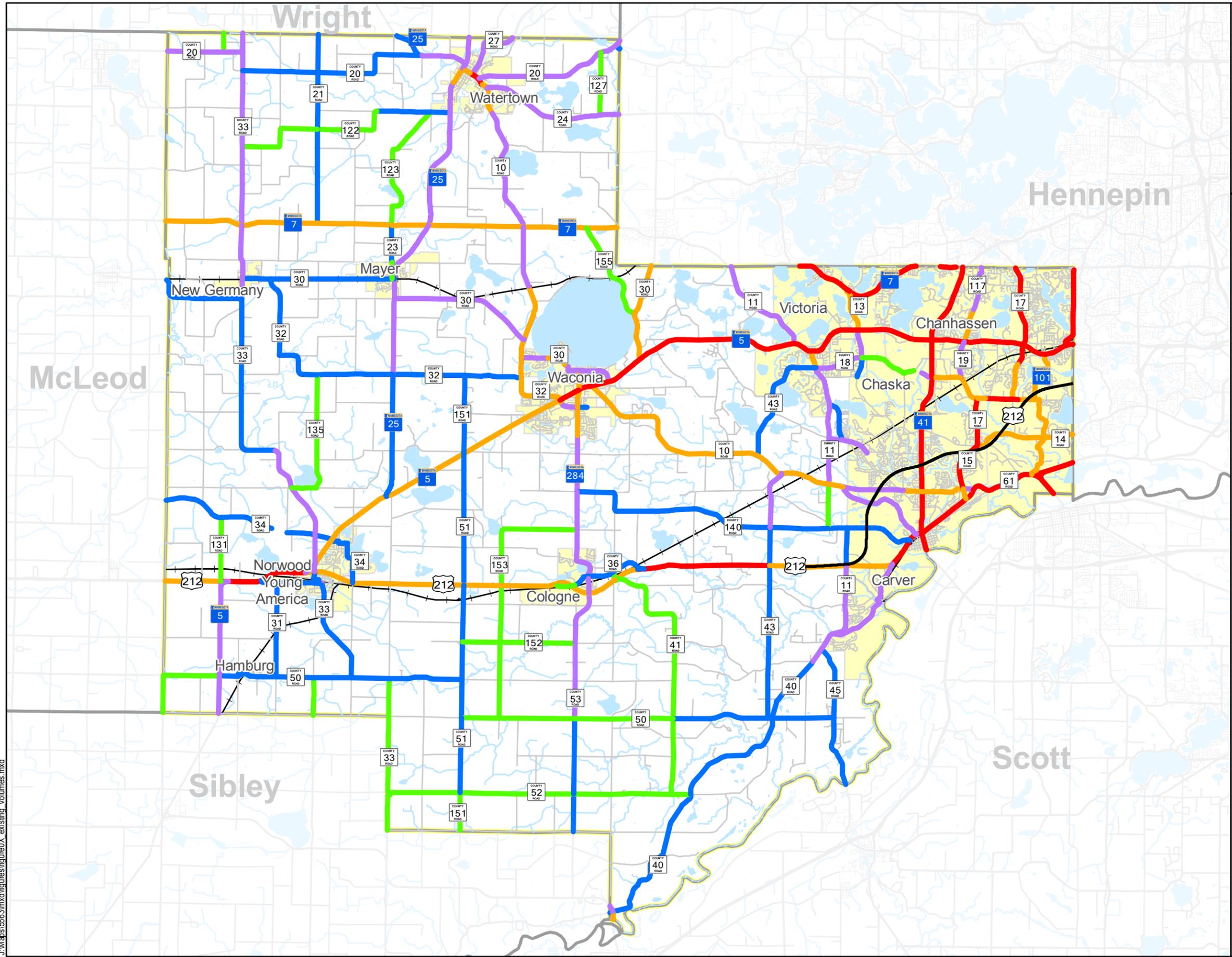
- The majority of the future population will continue to be focused in the eastern region of the county. This area is anticipated to grow at an annual rate of 3.1 percent between 2000 and 2030. However, both the central and western portions of the county (regions 2 and 3) are anticipated to experience the higher population growth rates between 2000 and 2030 at 5.4 (central) and 3.7 (west) percent. The level and location of projected growth continues to support the Metropolitan Council's land use policy of focusing growth in urbanized areas.
- Population and employment growth will result in additional transportation demands, thus the number of daily trips in the county will rise.

One of the primary factors that could affect the amount of growth Carver County will experience is the level of congestion on key transportation facilities. Many of the key transportation facilities in the eastern portion of the county presently experience delays, and traffic levels will increase as additional growth occurs. If traffic delays increase on these facilities, people wanting to move into the area may begin to give transportation issues greater consideration. This may ultimately slow the projected growth.

## 2.3 Existing Traffic Volumes and Commuting Trends

Continued decentralization of population and employment in the Twin Cities Metropolitan Area carries significant implications for transportation. Historical travel patterns have been predominantly into and out of the central cities. These patterns are rapidly changing as employment growth occurs in many second- and third-ring suburbs. This is creating more diverse and complex commuting patterns between suburban communities and rural areas. In fact, a significant portion of commuter trips no longer flow to the central cities but are moving from suburb to suburb. In addition, suburban employment centers are now within commuting distance of many smaller rural communities.

Another transportation trend in Carver County is the increase in north-south travel demand. Twenty years ago most of the metropolitan area was east of Carver County and, therefore, the predominant travel pattern was an east-west flow. With the urban area spreading to southern Wright County, northern Scott County, eastern Carver County and into western Hennepin County, the travel demand between these areas has resulted in increased north-south traffic flow. Average annual daily traffic (AADT) volumes on major highways and road segments were collected using 2004 Mn/DOT traffic volume data as well as the county's County State Aid Highway database. In general, traffic volumes tend to increase as they approach larger population centers such as Chanhassen and Chaska. The major transportation corridors in Carver County include TH 5, TH 7, TH 25, TH 41, TH 101 and TH 212. Subsequent with population growth, traffic volumes along these corridors have grown since the last Transportation Plan update in 1999. Figure 2 on the following page illustrates the existing traffic volumes in the county.



**EXISTING TRAFFIC VOLUMES**



**Figure 2**

**Legend**

**Average Daily Traffic**

- ADT < 500
- ADT 500 to 1,999
- ADT 2,000 to 4,999
- ADT 5,000 - 10,000
- ADT > 10,000
- New TH 212\*
- Railroads
- Carver County
- Municipal Boundaries

Source: Mn/DOT 2004, Carver County 2005  
 \* Traffic volumes for new TH 212 were not available at the time of this map printing.



## 2.4 Congestion/Operational Analysis

By identifying segments with congestion or operational problems, improvement options can be investigated and planned (i.e., roadway improvements, intersection control changes, alternative routes, setback requirements, etc.). In addition, these corridors can be targeted for access controls and other management tools to improve their traffic operations until major improvements are completed.

For the purposes of this analysis, threshold volumes were developed by roadway type. Threshold volumes are the volumes at which operational problems may occur (traffic backups, side street delays, slower speeds, etc.). Appendix B lists planning-level daily threshold volumes for the different roadway design types.

These threshold volumes were compared to existing average annual daily traffic volumes for each roadway segment in the county, and each segment was categorized into one of the following:

- *Uncongested* – the existing volume is less than 85 percent of the threshold volume, indicating a low probability of operational problems due to volume of traffic on the facility.
- *Near Congestion* – the existing volume is between 85 percent and 100 percent of threshold volumes, suggesting a moderate probability of operational problems due to traffic volume on the facility.
- *Congested* – the existing volume exceeds 100 percent of the threshold volume, indicating a high probability of operational problems due to the volume of traffic on the facility.

## 2.4.1 Existing Congested Roadways

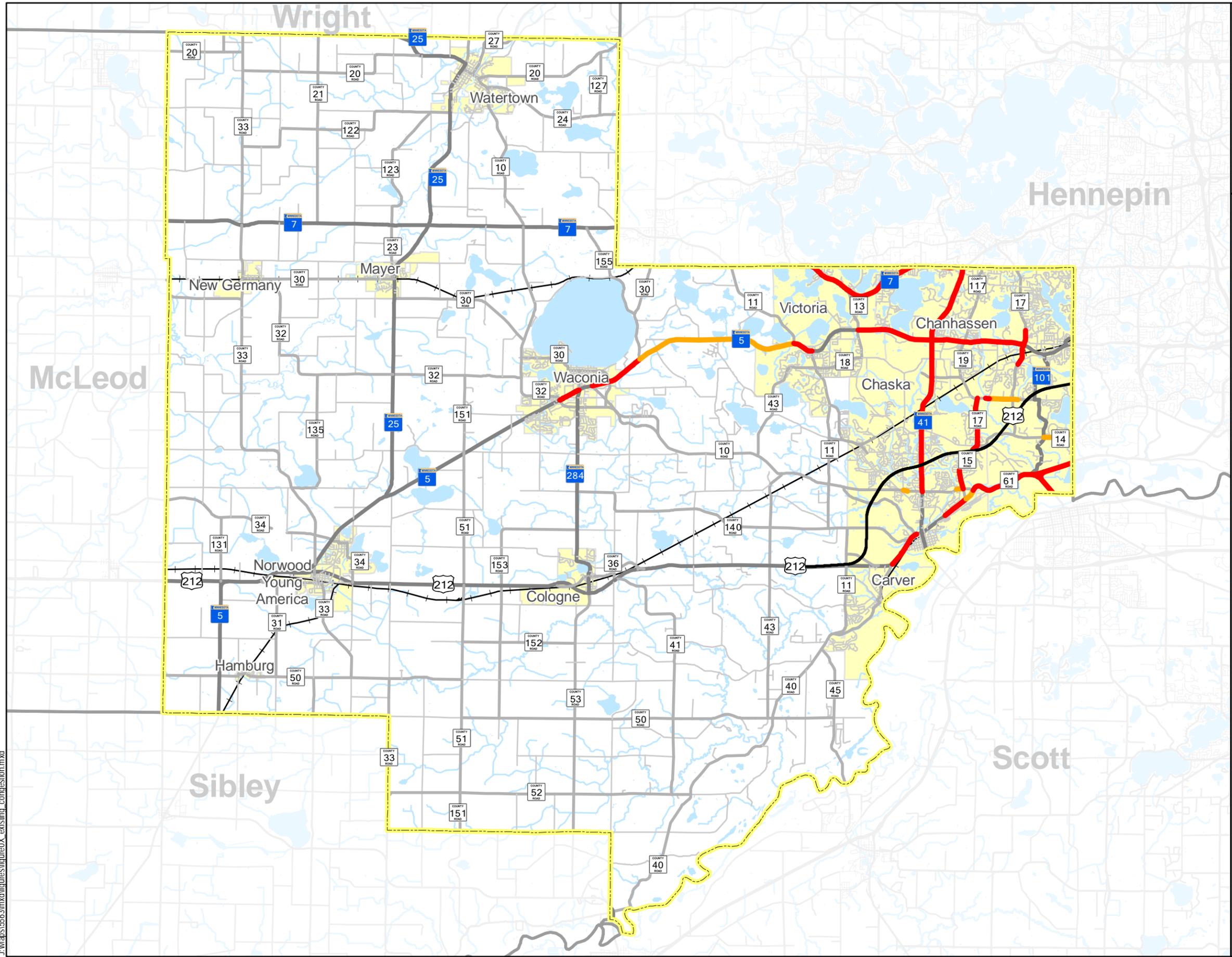
The majority of the existing congestion in the county is located in the eastern portion along Trunk Highways 5, 7, 41 and 212. It should be noted that the methodology described above is a planning-level analysis that uses average daily traffic volumes and is not appropriate for all traffic conditions. For example, traffic conditions that do not fit average daily traffic criteria include summer volumes, holiday travel periods, road closures and river crossing closures. These conditions will produce different levels of congestion.

The roadway segments identified above as well as the other segments that are currently congested or approaching congestion are presented in Figure 3. Due to the current and expected future population growth, congestion in areas of central and eastern Carver County is expected to become more of an issue on regional facilities, occurring frequently during the peak hours. Congestion on state facilities (such as TH 5, TH 7, TH 41, TH 101, TH 212) and county facilities (such as CSAH 10, CSAH 15 and CSAH 18) is expected to increase, even with the construction of the new TH 212 between the City of Chaska and the border with Hennepin County (note: through the text of the Roadway Systems Plan, county highways eligible for State Aid are regularly referred to as CSAH XX, and those roadways eligible for only county funds are referred as to CR XX, although the County Public Works Department signs all roadways with the CR shield and plan maps reflect this policy).

## 2.4.2 Level of Service

Level of Service (LOS) describes how well a roadway operates. It ranges from LOS A to LOS F. LOS A corresponds with low volume and little restriction of traffic movement, while LOS F corresponds with severe restriction in traffic movement, resulting in significant delays. Level of Service is directly linked to a road's ability to carry traffic. Generally daily traffic volume thresholds, as presented in Appendix B, document approaching congestion or over congestion, and correspond to LOS D/E.

Many factors can affect a roadway's ability to carry traffic. These factors include design type, volume distribution by time and direction, the type of traffic (truck versus automobile), operating speeds and number of access points. Based on these factors, daily capacity can fluctuate from 8,000 to as high as 17,000 for a two-lane facility. For example, TH 101 (south of CSAH 14) and TH 5 between Victoria and Chanhassen are both two-lane rural roadways. TH 101 has significant curvature and sight distance limitations and, therefore, has a more realistic estimated capacity of closer to 10,000 vehicles instead of the established daily threshold of 15,000 (see Appendix B). TH 5 has better alignment, sight distance and limited access, so this facility is better able to accommodate the established estimated capacity of 15,000 vehicles per day.



EXISTING CONGESTION

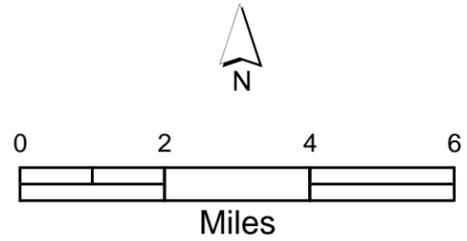


Figure 3

Legend

- Volume/Capacity Ratio**
- 0.85 - 1.00 (Approaching Capacity)
  - 1.01 + (Over Capacity)
  - New TH 212\*
  - |— Railroads
  - Carver County
  - Municipal Boundaries

Source: Mn/DOT 2004, Carver County 2005  
 \* Congestion on new CR 61 is reflective of volume levels when this was TH 212.



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The third and latest edition of the Metro District's Transportation System Plan (TSP) for 2008-2030 predicts nearly a \$20 billion shortfall between Performance-Based Plan investment needs (of \$27 billion) versus the Fiscally Constrained Plan investments (i.e., anticipated funding) of approximately \$6.7 billion over the 23-year period. The inability to accommodate transportation needs will result in increased safety and congestion problems throughout the region. The level of unmet capacity needs in central and eastern Carver County is cause for justifiable concern. The impacts of the future growth without additional infrastructure investments, is of serious concern to the county, local jurisdictions, businesses and residents.

## **2.5 Safety and Crash Analysis**

Public safety is a high priority for all agencies responsible for improving and maintaining public transportation facilities. To evaluate potential safety problems in the county, a crash analysis was performed using Carver County crash records from 2001–2005. Records were collected for state trunk highways, county state aid highways and county roads. Analysis of crash data focused on identifying problems at intersections and on roadway segments. The analysis is described in the following sections.

### **2.5.1 Segment Crash Analysis**

While a majority of crashes occur at intersections, it is also important to look at crashes along roadway segments to identify abnormally high crash locations. Although numerous factors (i.e., geometric or cross-section deficiencies, sight distance problems, excessive access, blowing and drifting snow, etc.) contribute to crashes, segment analysis identifies potential problems so that further investigations to determine design solutions can be undertaken at these critical locations. In addition, segments can be targeted for safety improvements and investments.

In order to identify segments with high crash rates, a comparison was made between average crash rates by facility type, and the rates for each individual segment in the county. Crash rates for Trunk Highways 212, 101, 41, 7 and 5 were compared with Mn/DOT statewide average crash rates for similar facility types. Table 2 shows Mn/DOT average comparison crash rates for different rural and urban roadway types based on Annual Average Daily Traffic (AADT) volumes.

**TABLE 2**  
**Mn/DOT Statewide Average Comparison Crash Rates for Trunk Highways and US Highways**

Code	Definition	Volume Threshold (ADT)	Mn/DOT Statewide Average Comparison Crash Rate
U-1A	Urban two-lane undivided trunk highway	10,000	ADT 1,500-4,999 = 3.5 ADT 5,000-7,999 = 2.6 ADT > 8,000 = 3.3
U-4A	Urban four-lane divided trunk highway/expressway	32,000	2.1
R-1A	Rural two-lane undivided trunk highway	15,000	ADT 1,500-4,999 = 1.3 ADT 5,000-7,999 = 1.4 ADT > 8,000 = 1.3
R-3A	Rural four-lane divided trunk highway/expressway	38,000	1.1

For County State Aid Highways (CSAH) and County Roads (CR) in Carver County, an average crash rate for each facility type was calculated. These average crash rates were used as comparison rates for the roadway segment crash rate analysis.

**TABLE 3**  
**Average Comparison Crash Rates for CSAH and CR Facilities**

Code	Definition	Volume Threshold (ADT)	Carver County Average Comparison Crash Rate <sup>1</sup>
U-1	Two-lane undivided urban street	10,000	2.9
U-2	Two-lane undivided urban arterial street	10,000	2.0
U-3	Four-lane undivided urban street	22,000	2.2
R-1	Rural two-lane undivided roadway	15,000	2.8
R-2	Rural two-lane undivided reduced speed and capacity *	10,000	1.2

<sup>1</sup> Carver County rates are based on analysis of County crash data. Average comparison rates were developed for different facility types within the county using 2001-2005 crash data.

\* Roadways with limited visibility, poor geometrics and/or poor roadway surface (gravel or poor pavement quality).

Information from Tables 2 and 3 was used to calculate a ratio of segment crash rates to average crash rates by facility type. Based on this analysis, high-crash segments on both the Mn/DOT and Carver County systems were identified.

While the ratio of segment crash rates to average crash rates identifies areas with potential safety problems, it does not account for variations caused by short segment lengths and low traffic volumes. For the purposes of this plan, high-crash segments have been identified as segments that have a crash rate ratio greater than 1.5 times the average crash rate for a facility type and a

crash frequency of more than four crashes per mile per year. Using these criteria, high-crash segments with a high frequency were identified and shown in red on Figure 4 on the following page. The orange lines shown in Figure 4 indicate locations where the crash ratio is 1.5 or higher, but there were fewer than four crashes per mile per year.

When reviewing the high-crash segment map, it is important to remember the following:

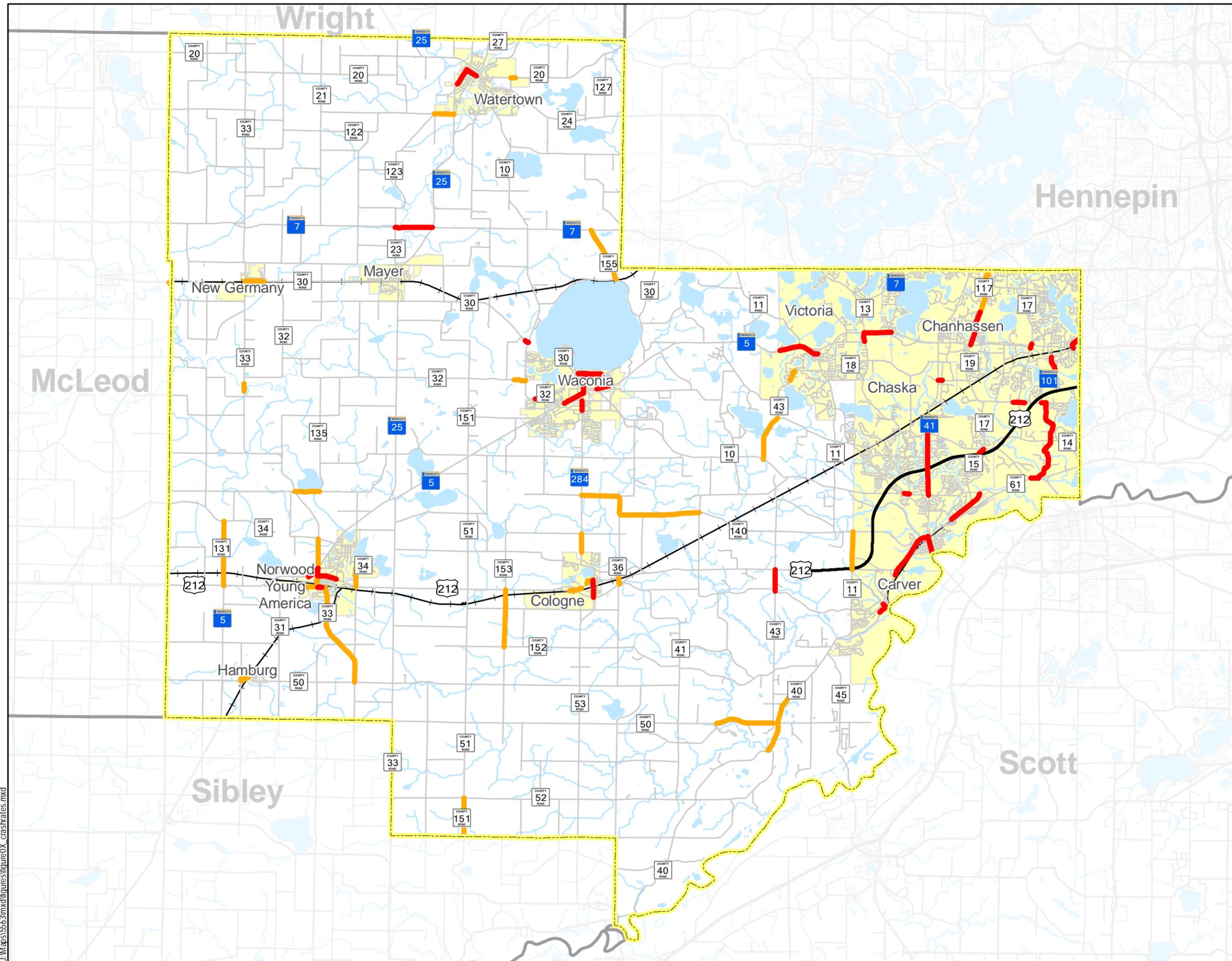
- Short highway segments can result in high crash rates.
- Segments with low traffic volumes are subject to more variability (a small number of crashes can result in a high crash rate).
- Different types of highway facilities have different crash rates. For example, the average crash rate for a rural expressway is 1.1 crashes per million vehicles per mile, while an urban expressway has an average crash rate of 2.1.

As shown in Figure 4, a number of the high-crash rate, high-frequency segments are in the urbanized areas of the county and along or adjacent to trunk highways where traffic volumes are higher (i.e. TH 41, TH 101 and existing TH 212 in Chaska and Chanhausen). For the most part, solutions to high-crash locations occurring on state roads will fall under Mn/DOT's jurisdiction. However, based on the high-rate crash segments shown in Figure 4, there are also some areas along CRs and CSAHs that exhibit safety needs. Based on the segment crash analysis results, it is recommended that these identified crash locations be considered in selecting future safety improvement projects.

## **2.5.2 Road Safety Audits**

During the summer of 2006, Carver County completed a road safety audit (RSA) of 11 sites. RSAs are a critical strategy for reducing traffic-related death and injury. RSAs examine the performance, design, and operations of county roadways and intersections. The ultimate goal of the RSA process is to increase safety (i.e., reduce fatal and injury crashes within the county) through engineering, enforcement and/or other strategies.

RSAs are an excellent safety tool that the county should continue to utilize. Through the RSA process, specific mitigating improvements or strategies can be identified for implementation to better improve safety on the county roadway system. This information can be used to supplement the planning-level crash analysis in Section 2.5.1.



HIGH-CRASH RATE SEGMENTS



Figure 4

Legend

Segment Crashes

- High Rate, High Frequency\*
- High Rate, Low Frequency\*\*
- New TH 212
- |—|—| Railroads
- Carver County
- Municipal Boundaries
- 212 US Highways
- 25 State Highways
- 33 County Roads

Source: Mn/DOT Crash Data  
 High crash rate is any segment that has a crash rate greater than 1.5 times the average crash rate for that design type.  
 \* High Frequency - More than 4 crashes per mile per year.  
 \*\* Low Frequency - 4 or less crashes per mile per year.



## **3.0 ANALYSIS OF FUTURE TRANSPORTATION NEEDS**

In order to better determine future roadway expansion and connectivity needs, future population growth and land development patterns were analyzed as part of this plan.

### **3.1 Travel Demand Modeling Process**

Travel demand models estimate the amount of travel on transportation facilities given assumptions of future development and transportation system improvements. The forecasts generated provide basic information about facility use (such as roadway volumes or transit ridership) and generalized travel impacts (such as vehicle miles of travel and vehicle hours of travel).

Travel demand forecasts developed for Carver County were based on the modified Twin Cities regional travel demand model, which was released by the Metropolitan Council in 2004. The base year used to develop the model was 2000 because of the availability of US Census data and travel behavior data for that time period.

#### **3.1.1 Zonal Data Representation**

The travel demand model uses development activity as expressed by population, household, retail employment and non-retail employment to estimate travel activity. The Carver County area is represented by 37 zones (transportation analysis zones or TAZs) in the Metropolitan Council model, which were further divided into a total of 254 zones to better reflect the location of development within Carver County. Local communities provided input for the allocation of development data into the zones. Figure 5 shows the location of the TAZs in Carver County. Section 3.2 breaks down the socioeconomic information by TAZ.

#### **3.1.2 Roadway Network Representation**

The base year roadway system is presented in the travel demand model as a representation of attributes such as area type, facility type, length, speed, number of lanes and capacity. The level of detail in the highway network was expanded throughout Carver County to include all county roadways and selected local roadways.

#### **3.1.3 Travel Demand Modeling Process**

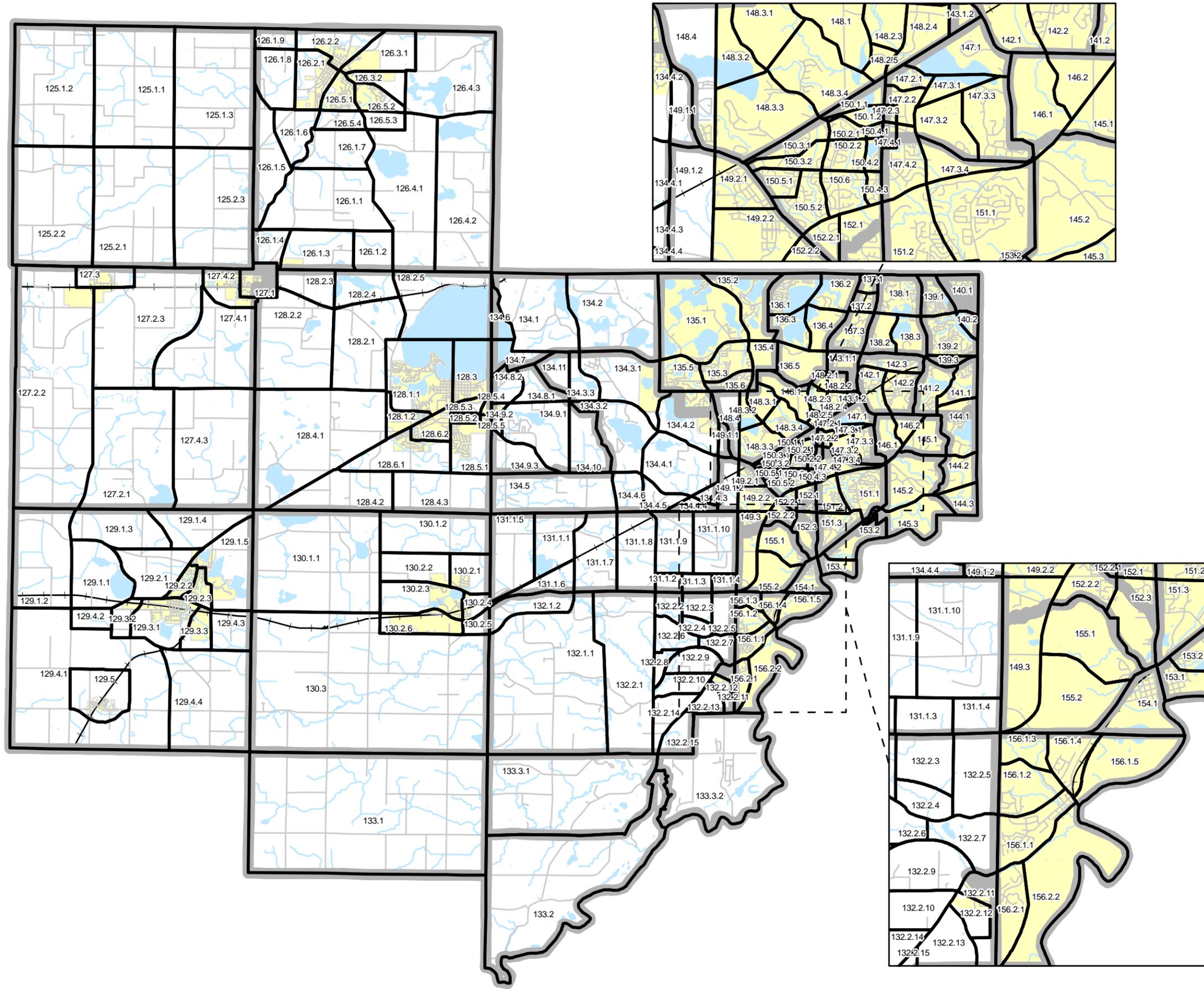
As noted above, travel demand forecasts developed for Carver County were based on the Twin Cities regional travel demand model, as prepared by the Metropolitan Council in 2004. The main components of the travel forecasting process are shown in Figure 6 and are described below. Detailed documentation of the model parameters is available from the Metropolitan Council.

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# CARVER COUNTY TAZ BOUNDARIES



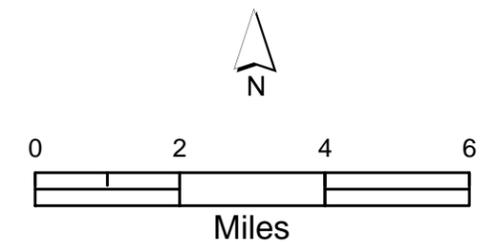
Figure 5

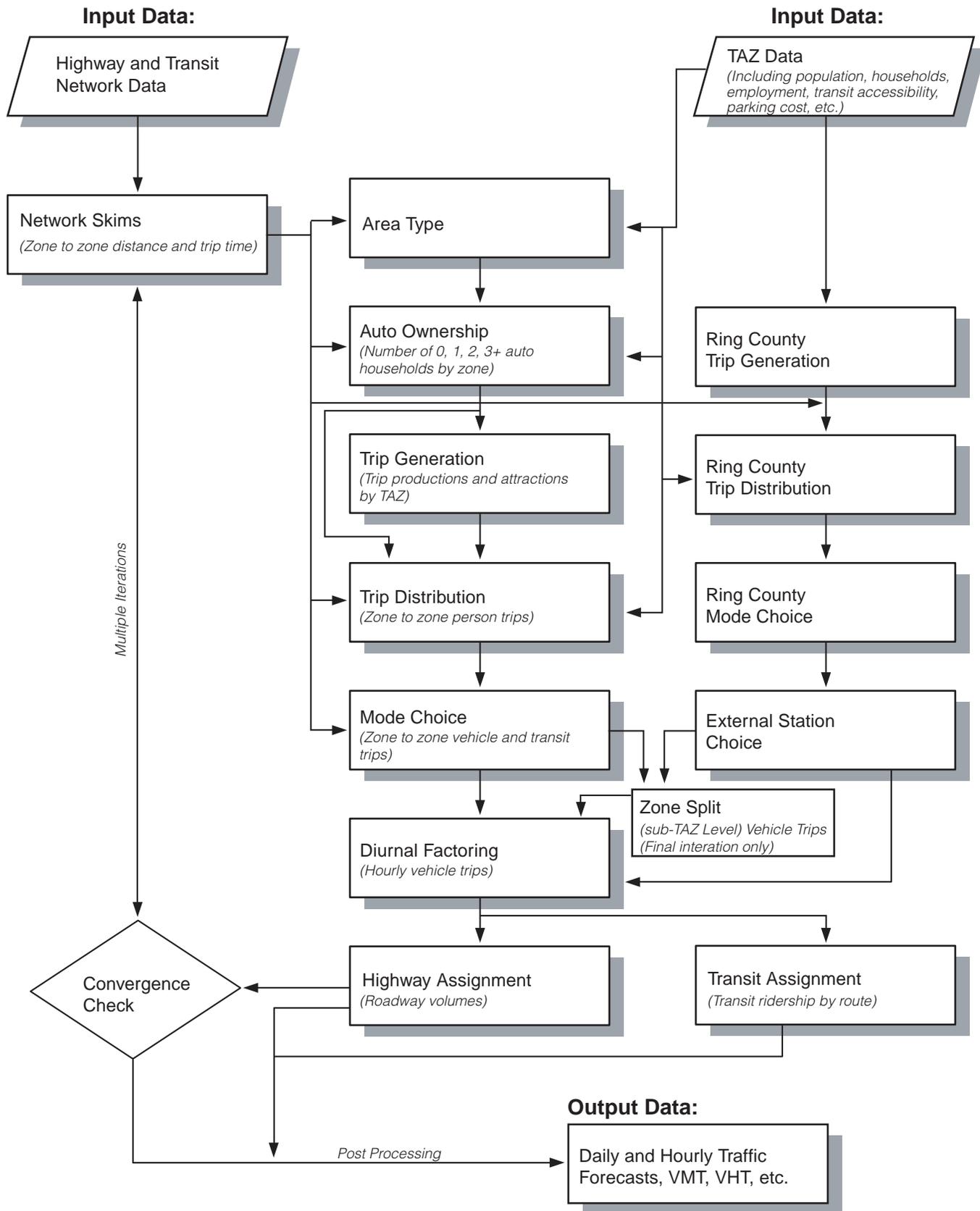


## Legend

- Carver County TAZ
- Met Council TAZ 2000

Source: Metropolitan Council, Carver County





**Travel Demand Forecasting Process**

*Figure 6*

**Highway Network:** As noted above, roadways are described in terms of attributes, such as area type, facility type, length, free-flow speed, number of lanes and capacity. The level of detail in the highway network was expanded throughout Carver County to include all county roadways. Detailed assumptions are discussed in subsequent sections of this chapter.

**Zonal Data:** As noted above, the TAZ structure of the regional model was expanded from a total of 37 zones in Carver County to 254 zones. The extra zones were subdivisions of regional model zones within Carver County. Socioeconomic assumptions are described in a subsequent section of this chapter and in Appendix C. In addition to these zones, five pseudo-external stations were added at low-volume roadways adjacent to Sibley County and McLeod County but not included in the Twin Cities regional model.

**Trip Generation:** Trip generation is the process by which the number of trips attributed to a zone is estimated based on the amount and type of socioeconomic activity in that zone (i.e. population, households and employment). The end result of trip generation estimation is the total number of trips produced by and attracted to each zone.

**Destination Choice:** The destination-choice trip distribution process converts the person-trips estimated in the trip generation process to movements between pairs of zones based on the amount of travel activity in a zone and a generalized travel time between the producing zone and other zones.

**Mode Choice:** The mode choice process takes the number of person-trips between each pair of zones and determines whether the trips are made by single-occupant vehicles, carpools or transit.

**Highway Assignment:** Highway trips for each of the 24 periods were routed from zone-to-zone along the roadway system using an equilibrium assignment process. This process reflected congested conditions at appropriate times of the day for any given portion of the highway system. The hourly assignments were summed to produce a daily traffic volume.

**Validation:** The model was run using 2000 highway network and socioeconomic data in order to compare the modeled daily volumes with actual ground counts. The model was calibrated through multiple iterations until the travel patterns and choices of modes and routes reflected the current traffic patterns. Then, future socioeconomic and future roadway system data was incorporated into the model to generate the various forecast scenarios.

## 3.2 Travel Demand – Future (2030) Improvement Scenarios

### 3.2.1 Future (2030) Development Scenarios

The above travel demand process was applied to future development and roadway conditions to estimate future year traffic volumes and levels of congestion. For the Carver County Roadway Systems Plan, two future-year development scenarios were modeled:

1. 2030 Baseline – Development assumptions consistent with the Metropolitan Council’s 2030 Regional Development Framework (as amended through November 8, 2006).
2. 2030 “Unconstrained” – Development assumptions as determined by individual communities including those with assumptions above-and-beyond the Metropolitan Council’s framework.

When the Roadway Systems Plan was initiated, several Carver County communities were in discussion with the Metropolitan Council regarding development assumptions. By November 2006, many of the differences had been eliminated or reduced.

Development was allocated to the TAZs prepared for the Carver County model, based on communication with the local communities. Travel demand model variables for development include population, households, retail employment and non-retail employment. Communities were provided with maps of zone boundaries and future-year development totals, which they were asked to allocate among the zones in their city. Where annexation of adjacent townships was pending or anticipated, the communities were asked to allocate to those areas as well.

In some cases during the process of allocating development information, SRF staff needed to adjust slightly the results provided by the cities to maintain consistency with other data sources, such as the 2000 US Census or the Metropolitan Council control totals. In all cases every effort was made to maintain consistency with the intent of the development plans as provided by the municipalities.

Table 4 summarizes the resulting municipal-level development assumptions used in the forecasts, including the year 2020, for which no traffic modeling was prepared. Zone-level data are shown in Appendix C, summarized by Metropolitan Council zone and also by Carver County Traffic Model zone. The TAZs used in this study are shown in Figure 5.

Further, the models' data was slightly revised and its forecasts updated based on coordination with city comprehensive plans.

### 3.2.2 Roadway Scenarios

Several future-year roadway system scenarios are represented in the modeling for the plan:

- **Baseline** (existing plus funding-committed)
- **State-only** (baseline plus improvements to capacity-deficient state roadways)
- **County-only** (baseline plus improvements to capacity-deficient Carver County roadways)
- **State-County** (baseline plus improvements to capacity-deficient roadways, regardless of jurisdiction)
- **Unconstrained** (baseline plus improvements to capacity-deficient roadways, regardless of jurisdiction)

The purpose of the multiple scenarios was to determine the consequences of county or state improvements beyond the baseline forecasts on the requirements of the remainder of the transportation system.

### 3.2.3 Baseline Assumptions

The Metropolitan Council requires a financially constrained roadway scenario that reflects the funding currently anticipated by Mn/DOT. Regional roadway system improvements assumed in the 2030 base network (Table 5) are consistent with the adopted Mn/DOT Metro District 2008-2030 Transportation System Plan (TSP) and Metropolitan Council Transportation Policy Plan (2005).

**Table 4**  
**Travel Demand Model Assumed Development Totals by Community**

Community	2000					2030 Constrained Growth (Regional Control Totals)					2030 Unconstrained Growth				
	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment
Benton Township	939	307	8	292	300	940	340	15	315	330	940	340	15	315	330
Camden Township	955	316	0	12	12	1,030	400	0	50	50	1,030	400	0	50	50
City of Carver	1,266	458	52	124	176	<b>19,560</b>	<b>7,550</b>	<b>N/A</b>	<b>N/A</b>	<b>3,030</b>	4,919	1,886	99	250	349
City of Chanhassen	20,321	6,914	1,524	6,048	7,572	38,000	14,800	1,926	11,974	13,900	38,000	14,800	1,926	11,974	13,900
City of Chaska	16,853	5,859	964	8,858	9,822	35,700	14,000	2,061	14,539	16,600	44,704	17,462	2,822	19,929	22,751
Chaska Township	750	310	200	226	426	0	0	0	0	0	0	0	0	0	0
City of Cologne	1,012	385	48	164	212	9,440	3,840	200	250	450	9,440	3,840	200	250	450
Dahlgren Township	1,453	479	0	<b>203</b>	<b>203</b>	<b>1,600</b>	<b>600</b>	<b>N/A</b>	<b>N/A</b>	<b>200</b>	16,222	6,196	1,965	1,410	3,375
City of Hamburg	538	206	53	47	100	1,000	400	53	117	170	1,000	400	53	117	170
Hancock Township	367	121	0	35	35	440	170	3	47	50	440	170	3	48	51
Hollywood Township	1,102	371	50	78	128	1,300	500	44	126	170	1,300	500	44	126	170
Laketown Township	1,859	509	40	215	255	0	0	0	0	0	0	0	0	0	0
City of Mayer	554	199	33	42	75	9,600	3,700	110	290	400	12,630	4,800	150	333	483
City of New Germany	346	143	20	30	50	<b>1,500</b>	<b>650</b>	<b>N/A</b>	<b>N/A</b>	<b>300</b>	1,380	600	80	140	220
City of Norwood Young America	3,108	1,171	243	1,308	1,551	11,871	5,432	547	2,123	2,670	11,871	5,432	547	2,124	2,671
San Francisco Township	888	293	0	30	30	1,200	460	2	58	60	1,200	460	2	58	60
City of Victoria	4,025	1,367	109	727	836	28,000	10,200	1,764	3,336	5,100	32,716	11,745	2,545	3,576	6,121
City of Waconia	6,814	2,568	606	3,168	3,774	25,000	10,000	1,739	11,261	13,000	24,687	9,654	1,770	10,908	12,678
Waconia Township	1,284	429	11	169	180	1,590	620	48	402	450	1,590	620	22	428	450
City of Watertown	3,029	1,077	167	503	670	7,700	3,000	188	1,582	1,770	9,719	3,700	244	1,752	1,996
Watertown Township	1,432	478	57	134	191	1,800	700	70	210	280	530	200	14	57	71
Young America Township	838	267	38	49	87	1,200	450	9	91	100	1,200	450	9	91	100
<b>Total</b>	<b>69,732</b>	<b>24,227</b>	<b>4,223</b>	<b>22,363</b>	<b>26,586</b>	<b>199,381</b>	<b>78,065</b>	<b>10,940</b>	<b>48,675</b>	<b>59,615</b>	<b>215,518</b>	<b>83,655</b>	<b>12,510</b>	<b>53,936</b>	<b>66,446</b>

**TABLE 5**  
**Assumed Base 2030 Scenario Regional Roadway System Improvements**

Roadway	From	To	Improvement/Addition
TH 41	Old TH 212	New TH 212	expand to four lanes
TH 101	south county border	north of new TH 212	expand to four lanes
new TH 212	west of CSAH 11/CR 147	east county border	expand to four lanes

The improvements not identified as funded in the Mn/DOT TSP, and thus not included in the Base Scenario are:

- No new TH 41 river crossing is assumed
- No capacity improvements are assumed on TH 212 west of the future CSAH 11/CR 147 interchange
- No capacity improvements are assumed on TH 7 in Carver County
- No capacity improvements are assumed on TH 5 west of TH 41 (Arboretum Drive)
- No capacity improvements are assumed on TH 41 north of new TH 212

While some or all of the above assumptions were included in various scenario testing for the County Plan (see 3.2.4), these needs have not been programmed for funding in the Mn/DOT plan.

Table 6 presents the county roadway improvements assumed in the Base 2030 analysis. These improvements have been previously programmed or otherwise identified as likely in other studies (such as the TH 41 River Crossing EIS). The roadway sizing may be adjusted, based on the final modeling of scenarios.

**TABLE 6**  
**Assumed Base 2030 Scenario Arterial and Collector Improvements**

Roadway	From	To	Improvement/Addition
CSAH 10/32/30	TH 5	CSAH 10/30 split	expand to four lanes
CSAH 10	CSAH 11	old TH 212 (CSAH 61)	expand to four lanes
CSAH 11	TH 212	CSAH 10	intersection realignment with CR 140, expand to four lanes
CSAH 11	CSAH 10	CSAH 18	expand to four lanes
CSAH 14	CSAH 11	Bavaria Road	construct new connections to create an extension of CSAH 14/Pioneer Trail west of TH 41
CSAH 14	Bavaria Road	TH 41	expand to four lanes
CSAH 15 (Audubon Road)	Old TH 212 (CSAH 61)	CSAH 18	expand to four lanes
CSAH 17 (Powers Blvd)	CSAH 14	78th Street	expand to four lanes
CSAH 18	CSAH 13	TH 41	construct new connection utilizing 82nd Street to create an extension of CSAH 18 between CSAH 13 and TH 41
CSAH 30 (east)	TH 5	102nd Street	construct new connection utilizing Little Avenue to create an extension of CSAH 30 between TH 5 and 102nd Street
CSAH 30 (east)	TH 5	CSAH 10	expand to four lanes
old TH 212 (CSAH 61)	TH 41	CSAH 15 (Audubon Road)	expand to four lanes

### 3.2.4 Scenario Results

Appendix D contains larger maps of the five future traffic forecast scenarios which include specific 2030 AADT forecast volumes posted at key points along both the state and county roadway networks. In all cases, the development anticipated for Carver County will require the construction or expansion of several state and county facilities. The capacity improvements to the Mn/DOT roadways to accommodate future traffic flow will not alleviate the need for improvement of many county roadways. Similarly, the capacity improvements on the county roadway system will not sufficiently reduce congestion on the state system to avoid the need for expansion.

### 3.3 Future Capacity and Connectivity Improvements

#### 3.3.1 Future Congestion

Future congestion needs along the county roadway system were identified by the forecasting scenarios. The State Scenario assumes that the state will make the necessary 2030 capacity improvements to eliminate congestion on their roadways and that the county roadway improvements included in the Base Scenario (see Table 6) plus a few additional capacity improvements will be made in addition to the state improvements (see Table 7). The assumed future four-lane state highway and related county roadway segments included in the State Scenario that are in addition to those listed in Tables 5 and 6 for the Base Scenario are listed in Table 7. The State Scenario still results in a number of congested locations along the county roadway system. However, using the additional county roadway capacity improvements assumed in the County Scenario (see Table 8) and also by making the connectivity improvements listed in Table 9, future congestion on the county roadway system would be eliminated. During the County Scenario modeling process, county roadway segments with probable capacity issues were identified and recognized as future four-lane segments. It is in the county’s best interest to make the capacity improvements included in the County Scenario to eliminate future congestion concerns on the county roadway network. However, under the combination of the state and county improvements (which creates the State and County Scenario), there are two county roadway segments that would no longer need to be four-lane facilities and would revert to two-lane facilities. These segments include:

- CSAH 40 – from CSAH 11/CR 147 to CSAH 50
- CSAH 14 (extension) – from the new segment (CSAH 30 east extension) to new segment/Laketown Road

There are also three roadway segments that will need to be expanded to four-lane facilities under the State and County Scenario. These segments include:

- CSAH 13 – from TH 7 to TH 5
- New segment/Little Avenue (CSAH 30 [east]) – from new segment (extension of 13th Street east) to 102nd Street
- Market Avenue – from TH 212 to CR 153/118th Street

**TABLE 7  
Assumed 2030 State Scenario Four-Lane Segments**

Roadway	From	To
TH 5	Orchard Road	Arboretum Drive (west of TH 41)
TH 7	west county border	east county border
TH 7	north county border	north county border
TH 41	north county border	TH 5
TH 212	CSAH 34	west of CSAH 36
TH 212	west of Kelly Avenue	west of CR 147/CSAH 11
CSAH 11/CR 147	new TH 212	Dahlgren Road
CSAH 14	TH 41	Hundertmark Road

**TABLE 7 (continued)****Assumed 2030 State Scenario Four-Lane Segments**

<b>Roadway</b>	<b>From</b>	<b>To</b>
CSAH 18	TH 41	Norex Drive
new segment (CSAH 30 [west])	TH 5	new segment (extension of 13th Street east)

**TABLE 8****Assumed 2030 County Scenario Four-Lane Segments**

<b>ROADWAY</b>	<b>FROM</b>	<b>TO</b>
CSAH 10	CSAH 10/20 intersection	30th Street
CSAH 10/20	TH 25	CSAH 10/20 intersection
new segment (30 <sup>th</sup> Street extension)	CSAH 10	CSAH 20
TH 25	CSAH 10/20 (south intersection)	new segment (south of TH 7)
CSAH 30 (east)	TH 5	north county border
new segment (CSAH 30 (west))	TH 5	new segment (extension of 13th Street east)
new segment (13th Street extension (CSAH 10))	TH 284	CSAH 11
102nd Street	TH 284	CSAH 10
TH 284	TH 212	CR 153/118th Street
new segment/Laketown Road	TH 5	CSAH 14 (extension)
CSAH 11	TH 5	CSAH 18
CSAH 18	TH 41	TH 101
new segments/Airport Road/ Tellers Road/Marsh Lake Road (CSAH 14 extension)	new segment (CSAH 30 east extension)	Bavaria Road
CSAH 14	TH 41	TH 101
CSAH 11/CR 147	new TH 212	CSAH 40
old TH 212 (CSAH 61)	TH 41	CSAH 40
CSAH 40	old TH 212 (CSAH 61)	Broadway Street
CSAH 40	CSAH 11/CR 147	CSAH 50
CSAH 45	CSAH 40	south county border
old TH 212 (CSAH 61)	CSAH 17 (Audubon Road)	east county border
CSAH 17 (Powers Blvd)	78th Street	north county border
TH 101	north of new TH 212	north county border
TH 101	old TH 212 (CSAH 61)	south county border

### 3.3.2 Future Connectivity Improvements

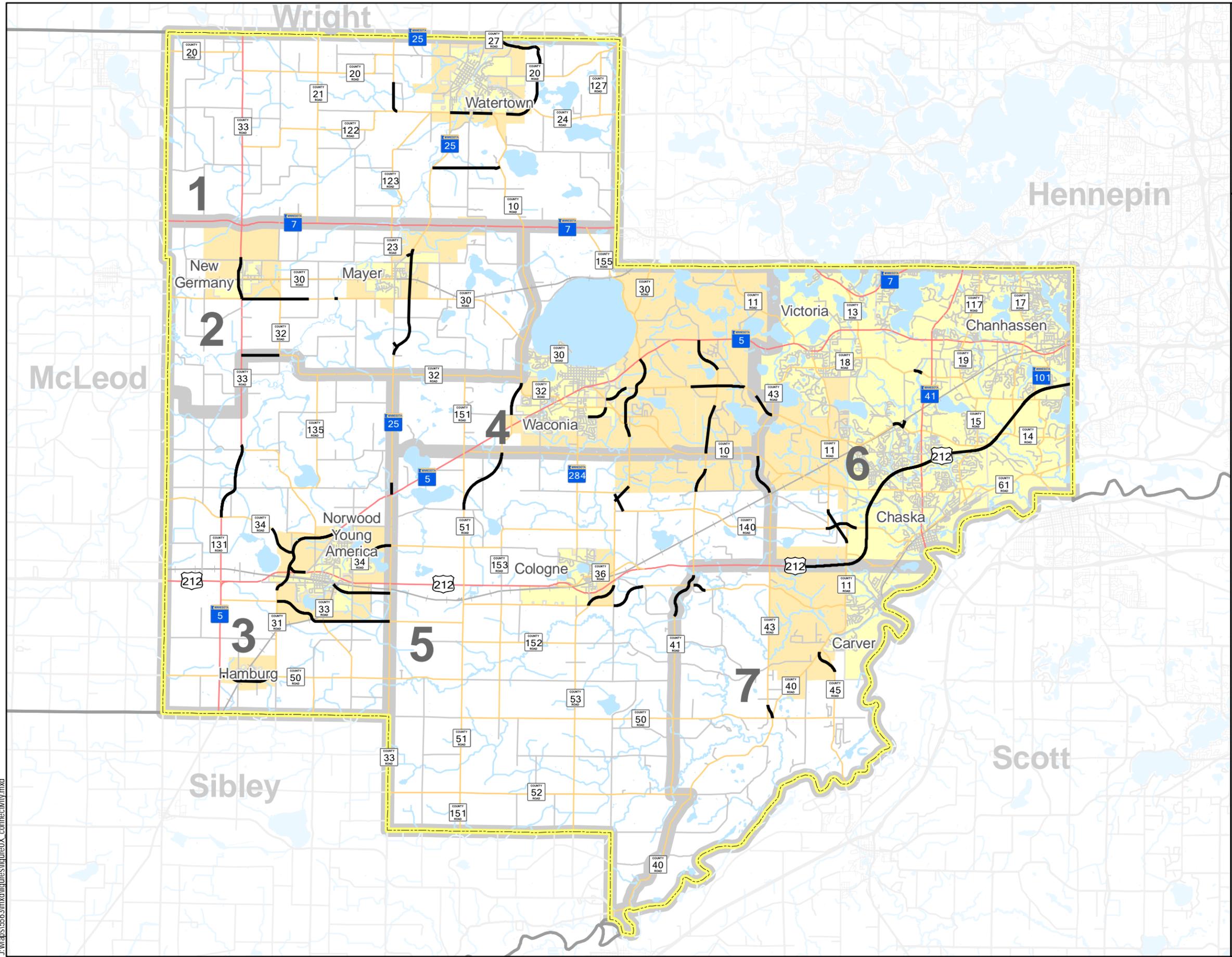
Besides making capacity improvements to eliminate future congestion concerns on the county system, future connectivity improvements were also factored into the 2030 Scenario forecasts. Future connectivity needs in Carver County were identified by coordinating with the communities, reviewing various planning documents and trying to establish a future county roadway network that is well spaced, has more continuous north/south corridors, improves traffic circulation with additional bypasses and new beltways outside of downtown areas, and better promotes inter-county travel. A total of 48 future roadway connectivity improvements were identified and are illustrated in Figure 7. Table 9 presents a complete listing of the future connections and their termini (which includes segments that will not be part of the CSAH/CR system by 2030). The general location of the new segments in Table 9 are identified by the subarea that they are located within.

**TABLE 9  
Future Roadway Connectivity Improvements**

Subarea	From	To
1	new segment (south end of curve)	TH 25
1	Quarry Avenue	30th Street (east end)
1	CSAH 10	Newton Avenue
1	Unnamed Street (west end)	TH 25
1	CR 122/new segment (south end of curve)	24th Street
1	TH 25	CSAH 10
2	62nd Street	CSAH 33/CSAH 30 intersection
2	CSAH 33	70th Street (west of the South Fork Crow River (west end))
2	CSAH 30 (west of Crow River)	CSAH 30 (east of Crow River)
2	TH 25/north Mayer city limits	new segment (corridor east of TH 25)
2	.36 miles north of 82nd Street	.17 miles east/new segment
2	TH 25/north Mayer city limits	82nd Street
2	CSAH 33	CSAH 32
3	102nd Street	CSAH 34
3	Urban Avenue	new segment (east of Utopia Avenue)
3	north of NYA city limits/TH 5	TH 212
3	new segment (north end)/TH 25	TH 5
3	new segment (west end)	TH 5
3	Preserve Boulevard (east end)	TH 25
3	Elm Street E (east end)	Salem Avenue
3	TH 212	CSAH 31
3	CSAH 31 (north/south)	CSAH 33
3	CSAH 33	Salem Avenue

**TABLE 9 (continued)**  
**Future Roadway Connectivity Improvements**

<b>Subarea</b>	<b>From</b>	<b>To</b>
3	TH 5	CSAH 31
4	CSAH 32/10	94th Street
4	15th Street (east end)	CSAH 10
4	TH 5	Little Avenue
4	No Name Street	Airport Road
4	Airport Road	Tellers Road
4	.42 miles east of Abbywood Road	CSAH 43
4	TH 5	Laketown Road
4	Laketown Road	CSAH 10
5	102nd Street	114th Street
5	Market Avenue	CSAH 41
5	just north of 110th Street	CR 140
5	Market Avenue	CSAH 53
5	Juniper Avenue	Augusta Road
5	CR 140/110th Street intersection	CR 140
6	CSAH 10	CSAH 43 (.15 miles south of Augusta Road)
6	CSAH 11 (.35 miles north of Hampshire Road)	CSAH 11/CR 147 (.4 miles south of CR 140)
6	CSAH 11/CR 140	new segment (.25 miles east of CSAH 11/CR 140)
6	new segment (.25 miles east of CSAH 11/CR 140)	CR 140 (.25 miles east of CSAH 11 east intersection)
6	82nd Street W	CSAH 18
6	CR 41	old TH 212 (CSAH 61)
7	Kelly Avenue	CSAH 41
7	Kelly Avenue	Dahlgren Road
7	CSAH 43	CSAH 40/CSAH 50
7	CSAH 40	CSAH 45



FUTURE CONNECTIVITY IMPROVEMENTS

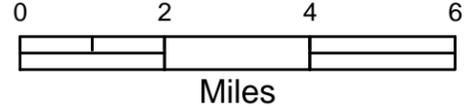


Figure 7

Legend

-  Future Connectivity Improvements
-  Trunk Highways
-  County Roads
-  Local Roads
-  Railroads
-  Sub-Areas
-  Municipal Boundaries
-  City Growth Areas 2030

Source: Metropolitan Council, Carver County



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## 4.0 ROADWAY SYSTEM PLAN

This section of the plan updates the county’s functional classification system, identifies potential jurisdictional transfers and provides a rationale for these changes, and discusses designation modifications. These specific elements constitute critical components of the county’s roadway system.

### 4.1 Existing Functional Classification

Roadway functional classification categories are defined by the role they play in serving the flow of trips through the overall roadway system. Within the Twin Cities Metropolitan Area, the Metropolitan Council has established detailed criteria for roadway functional classifications. This functional classification criteria was included as an appendix in the Metropolitan Council *2030 Transportation Policy Plan*. The functional classification criteria from the Metropolitan Council Plan is presented in Appendix E.

The intent of the functional classification system is to create a hierarchy of roads that collect and distribute traffic from neighborhoods to the metropolitan highway system. Roadways with a higher functional classification (arterials) generally provide for longer trips, have more mobility, have limited access and connect larger centers. Roadways with a lower functional classification (collectors and local streets) generally provide for shorter trips, have lower mobility, have more access and connect to higher functioning roadways. A balance of all functions of roadways is important to any transportation network.

The existing Carver County functional classification system has been incorporated into the current Metropolitan Council functional classification map. The functional classification process considered the following roadway and system characteristics:

- The trip length characteristics of the route as indicated by length of route, type and size of traffic generators served and route continuity.
- The ability of the route to serve regional population centers, regional activity centers and major traffic generators.
- The spacing of the route to serve different functions (need to provide access and mobility functions for entire area).
- The ability of the route to provide continuity through individual travelsheds and between travelsheds.
- The role of the route in providing mobility or land access (number of accesses, access spacing, speed, parking and traffic control).
- The relationship of the route to adjacent land uses (location of growth areas, industrial areas, and neighborhoods).

The functional classification system is broken down into four categories – principal arterials, minor arterials (‘A’ and ‘B’), collectors (major and minor) and local roadways.

### 4.1.1 Principal Arterials

Principal arterials are part of the metropolitan highway system and provide high-speed mobility between the Twin Cities and important locations outside the metropolitan area. They are also intended to connect the central business districts of the two central cities with each other and with other regional business concentrations in the metropolitan area. Principal arterials are generally constructed as limited access freeways in the urban area, but may also be constructed as multiple-lane divided highways.

Carver County is served by two principal arterials:

- TH 212, a varying two-lane/four-lane roadway that runs southwest-northeast through the county.
- TH 7, a two-lane roadway that runs east-west through the northern portion of the county.

### 4.1.2 Minor Arterials

Minor arterials also emphasize mobility over land access, serving to connect cities with adjacent communities and the metropolitan highway system. Major business concentrations and other important traffic generators are located on minor arterial roadways. In urbanized areas, one to two mile spacing is considered appropriate.

#### 4.1.2.1 'A' Minor Arterials

'A' minor arterials are roadways that are of regional importance because they relieve, expand or complement the principal arterial system. 'A' minor arterials are categorized into four types, consistent with Metropolitan Council guidelines:

- *Relievers* – Minor arterials that provide direct relief for metropolitan highway traffic.
- *Expanders* – Routes that provide a way to make connections between urban areas outside the I-494/I-694 beltway.
- *Connectors* – Roads that provide good, safe connections to and among communities at the edge of the urbanized area and in rural areas.
- *Augmenters* – Roadways that augment principal arterials within the I-494/I-694 beltway.

Carver County has 'A' Minor Relievers, Expanders and Connectors, but does not have any 'A' Minor Augmenter roadways because it is outside of the I-494/I-694 beltway.

#### 4.1.2.2 'B' Minor Arterials

All minor arterials other than 'A' minor arterials are classified as 'B' minor arterials. 'B' minor arterials provide a citywide or inter-city connector function, and serve medium-length to long distance trips.

### 4.1.3 Collectors

Collectors are designed to serve shorter trips that occur within the county and to provide access from neighborhoods to other collector roadways and the arterial system. They are expected to carry less traffic than arterial roads and to provide access to some properties.

#### 4.1.3.1 Major Collectors

Major collector routes are longer, connect smaller rural communities, carry intra-county traffic and provide access from neighborhoods to the arterial system. They supplement the arterial system by emphasizing mobility over land access. However, because of their location, they are lower-volume roads than arterial routes.

#### 4.1.3.2 Minor Collectors

Minor collectors are less important collector routes that provide supplementary interconnection among rural growth centers and connection to major collector and arterial routes. Their emphasis is on land access, and because of their location they also carry lower-volumes than arterial routes.

### 4.1.4 Local Streets

Local streets (township roads and city streets) provide access to adjacent properties and neighborhoods. Local streets are generally low speed, and designed to discourage through traffic.

Figure 8 illustrates the existing functional classification of the roadways within Carver County.

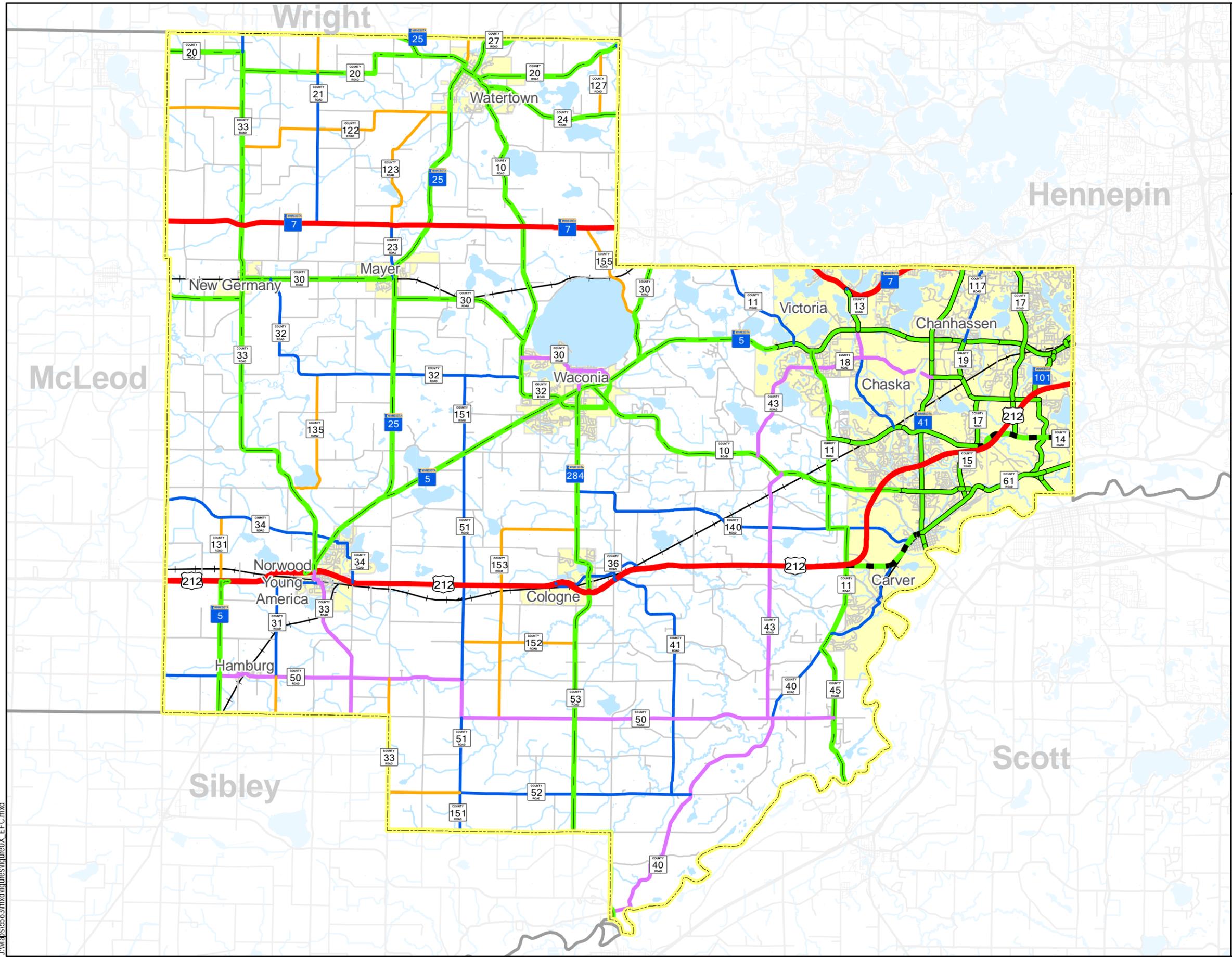
### 4.1.5 Functional Classification Comparison

Carver County is located within the Metropolitan Council seven-county metro area. Table 10 compares the current breakdown by functional classification of all the roadways in both the seven-county metro area and Carver County in mileage and percentage. The county should attempt to stay relatively consistent with the roadway classification percentages in the seven-county area. However, since Carver County is one of the faster growing counties, it can expect to be on the high end of many of these categories.

**TABLE 10**  
**Seven-County Metro Area and Carver County Existing Functional Classification Breakdown**

	Mileage Totals		Mileage Percentages	
	7-County Total	Carver County	7-County Total	Carver County
<b>Principal Arterials</b>	1,627.35	46.83	8.92 %	4.23 %
<b>Minor Arterials</b>	2,618.69	224.36	14.35 %	20.26 %
<b>Collectors</b>	1,583.70	137.33	8.68 %	12.40 %
<b>Locals</b>	12,416.83	698.72	68.05 %	63.10 %
<b>Total</b>	18,246.57	1,107.24	100.0 %	100.0 %

Source: Metropolitan Council – mileage breakdown as of January, 2007.



EXISTING FUNCTIONAL CLASS

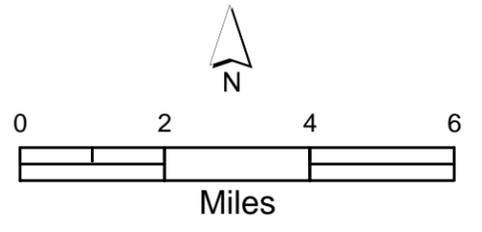


Figure 8

Legend

- Functional Class**
- Principal Arterial
  - A Minor Reliever
  - A Minor Expander
  - A Minor Connector
  - B Minor
  - Major Collector
  - Minor Collector
  - Railroads
  - Carver County
  - Municipal Boundaries

Source: Metropolitan Council, Carver County



## 4.2 Future Functional Classification

### 4.2.1 Future Functional Classification Plan

To better highlight proposed functional classification changes, the county was divided into seven subareas. These subarea divisions and the complete future functional classification roadway network are shown in Figure 9. Also in Figure 9, all of the future functional classification changes to roadway segments not currently on the county's functional classification system were categorized into a year range in which they were expected to be added to the county roadway network (i.e. by year 2010, 2020, 2030, or after 2030 [2031]). The larger subarea figures along with the tables presenting the rationale for the proposed functional classification changes in each subarea are included in Appendix F.

As evident in Figure 9, the three main objectives in the development of the future roadway network included:

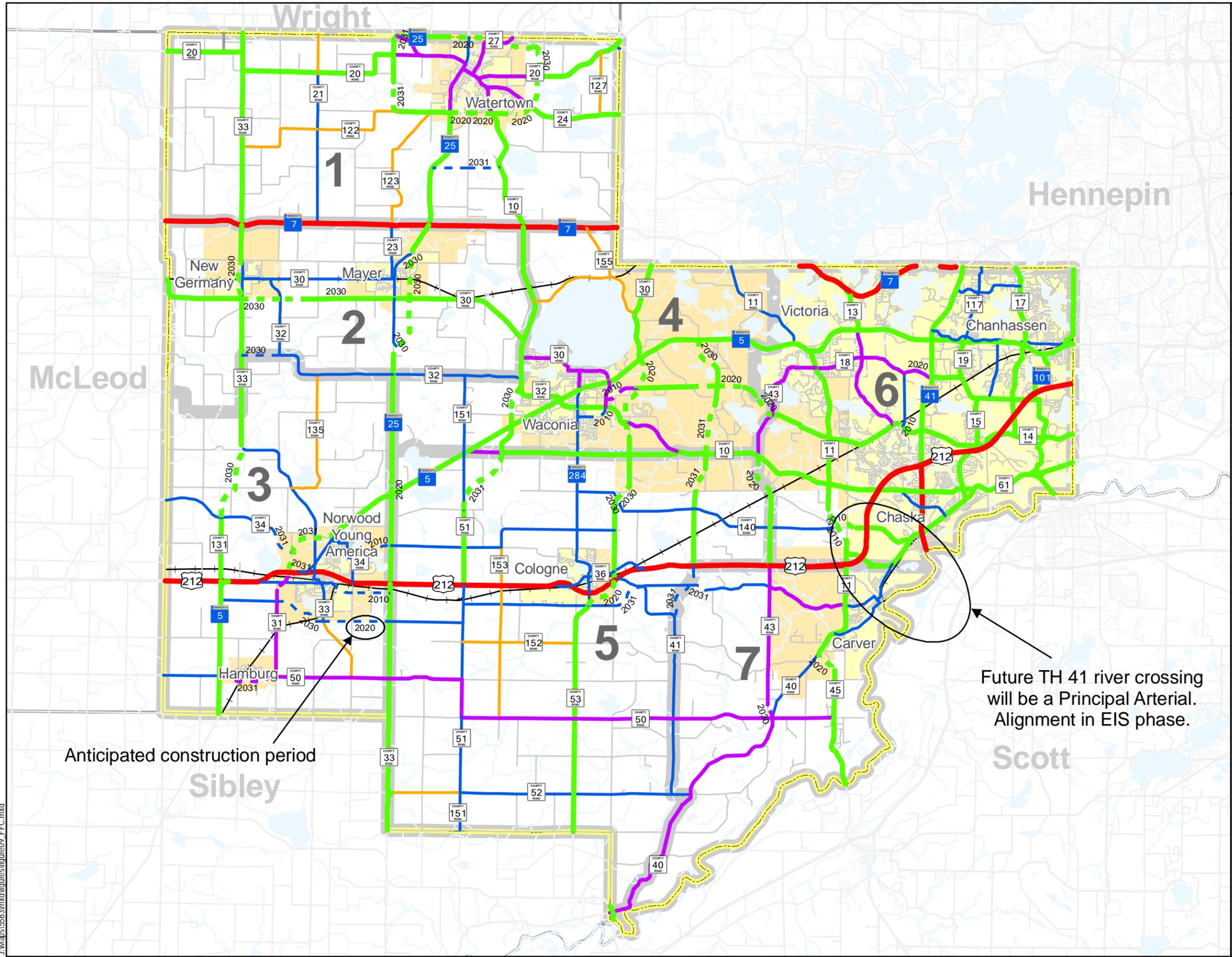
- Create more continuous north/south routes through the county
- Improve traffic circulation by incorporating bypasses and beltways around and away from existing downtown areas
- Create a collector classification frontage road system for TH 212 between Carver and Norwood Young America

Figure 9 and the subarea maps included in Appendix F illustrate the Future Functional classification for the range of time from 2010 to 2030. As the population and employment of the region continues to grow and urban development encompasses more of the land area, additional principal arterial roadways will be needed, beyond the planning horizon of this study (e.g., 2031 and on). Based on spacing, connectivity, and other functional classification criteria, the following routes have tentatively been identified by the county as future (post 2030) principal arterials:

- TH 41 – from the north county border to TH 212.
- CSAH 33/CR 131/TH 5 – from the north county border running south along CSAH 33, utilizing a new roadway segment connection to CR 131, continuing south along CR 131 connecting with TH 5 south of TH 212, running to the south county border.
- CSAH 30/Little Avenue/Market Avenue/CSAH 53 – from the north county border running south, utilizing new roadway segment connections along with segments of Little Avenue, Market Avenue and CSAH 53 to the south county border.

## 4.3 Jurisdictional Transfers

The jurisdiction of roadways is an important element in the Roadway Systems Plan because it affects a number of critical organizational functions and obligations (regulatory, maintenance, construction and financial). The primary goal is to match the roadway's function with the government-level best suited to handle the route's function.



FUTURE FUNCTIONAL CLASS

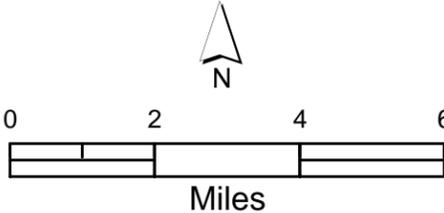


Figure 9

Future Functional Class

- Principal Arterial
- A Minor Arterial
- B Minor Arterial
- Major Collector
- Minor Collector
- Local
- Railroads
- 3 Sub-Areas
- Carver County
- Municipal Boundaries
- City Growth Areas 2030

Source: Metropolitan Council, Carver County



Future TH 41 river crossing will be a Principal Arterial. Alignment in EIS phase.

Anticipated construction period

Since the adoption of the 1999 Carver County Transportation Plan, the following transfer recommendations have been completed:

- CR 110 (*County to City of Waconia*)
- CR 111 (*County to City of Chaska*)
- CSAH 30 (*County to Regional Park*)
- Guernsey Avenue (*Dahlgren/Laketown Townships to County*)
- Old TH 212 (CSAH 61) (*State to County*)

Three additional general guidelines established for Carver County to help evaluate and identify roadways that should be on the future (2030) county or state system are listed below:

- All future 'A' Minor Arterial roadways will be on the county system (this includes all new roadway segments as well as current city/township roadway segments needed to create the continuity of 'A' Minor Arterial routes).
- Generally, all new roadway segments with a future functional classification of 'B' Minor Arterial or below will not be on the county roadway system.
- All short, low-volume and/or discontinuous roadway segments will not be on the county roadway system.

Potential jurisdictional transfers should be pursued as opportunities arise. Some examples of opportune times for discussing jurisdictional issues are:

- When municipalities reach a population of 5,000 and create their Municipal State Aid (MSA) system. (i.e. City of Watertown)
- When a new segment of roadway is constructed that replaces the function of a current roadway
- During improvements or major rehabilitation of a facility that is identified as a potential transfer candidate

## 4.4 System Designation

While all Carver County highways are signed as County Roads (CR), for the funding purposes the county highway system is divided into two categories, County State Aid Highways (CSAH) and County Roads (CR). The difference in designation relates to the route's function and funding. The CSAH system originated in the mid 1950s to provide an integrated network of secondary roads servicing the state's rural transportation needs. Routes qualifying or designated as CSAHs are eligible to receive state funding for maintenance and construction activities, while CRs are funded with local property tax dollars. In Carver County, generally 2-digit numbered county roads are eligible for State Aid (i.e., CR 18, CR 10); while 3-digit county roads (i.e., CR 131, CR 153) are funded only with local tax dollars. Administration of the CSAH system is based on a detailed set of rules administered by the Minnesota Department of Transportation Office of State Aid. These rules outline requirements and responsibilities including designation, maintenance and reconstruction.

Reviewing the system designation ensures that demographic and transportation changes in the county have been adequately addressed through system designation changes. Route designation, as outlined in Chapter 8820.07 of the State Aid Rules "Selection Criteria," parallels the functional classification criteria used to designate collector and arterial routes. State Aid criteria are summarized as follows:

- State Aid routes carry heavier traffic volumes or are functionally classified as collector or arterial routes on the county's functional classification system.
- State Aid routes connect towns, communities, shipping points and markets within a county or in adjacent counties; provide access to churches, schools, community meeting halls, industrial areas, state institutions and recreational areas; or serve as a principal rural mail route and school bus route.
- State Aid routes provide an integrated and coordinated highway system, consistent with projected traffic demands.

In 2001 Carver County requested that the State Aid Screening Board designate an additional 11.70 miles of CSAH mileage. The Board approved 7.76 miles of the request or about 70 percent. These changes helped the county increase its annual State Aid allocation from Mn/DOT. Currently, there are two segments being requested for designation change, totaling 4.21 miles. Both of these segments are along Pioneer Trail (CSAH 11 to TH 41) and (TH 41 to CSAH 17 (Audubon Road). Hopefully these Carver County changes will be seriously considered in the near future by the Screening Board.

Carver County's transportation system should be periodically reviewed to identify additional potential designation changes, based on functional classification changes, jurisdiction changes, proposed new roadway alignments and major construction projects recommended by this plan.

Other methods of revising designations remain available for the county to consider. These include three approaches:

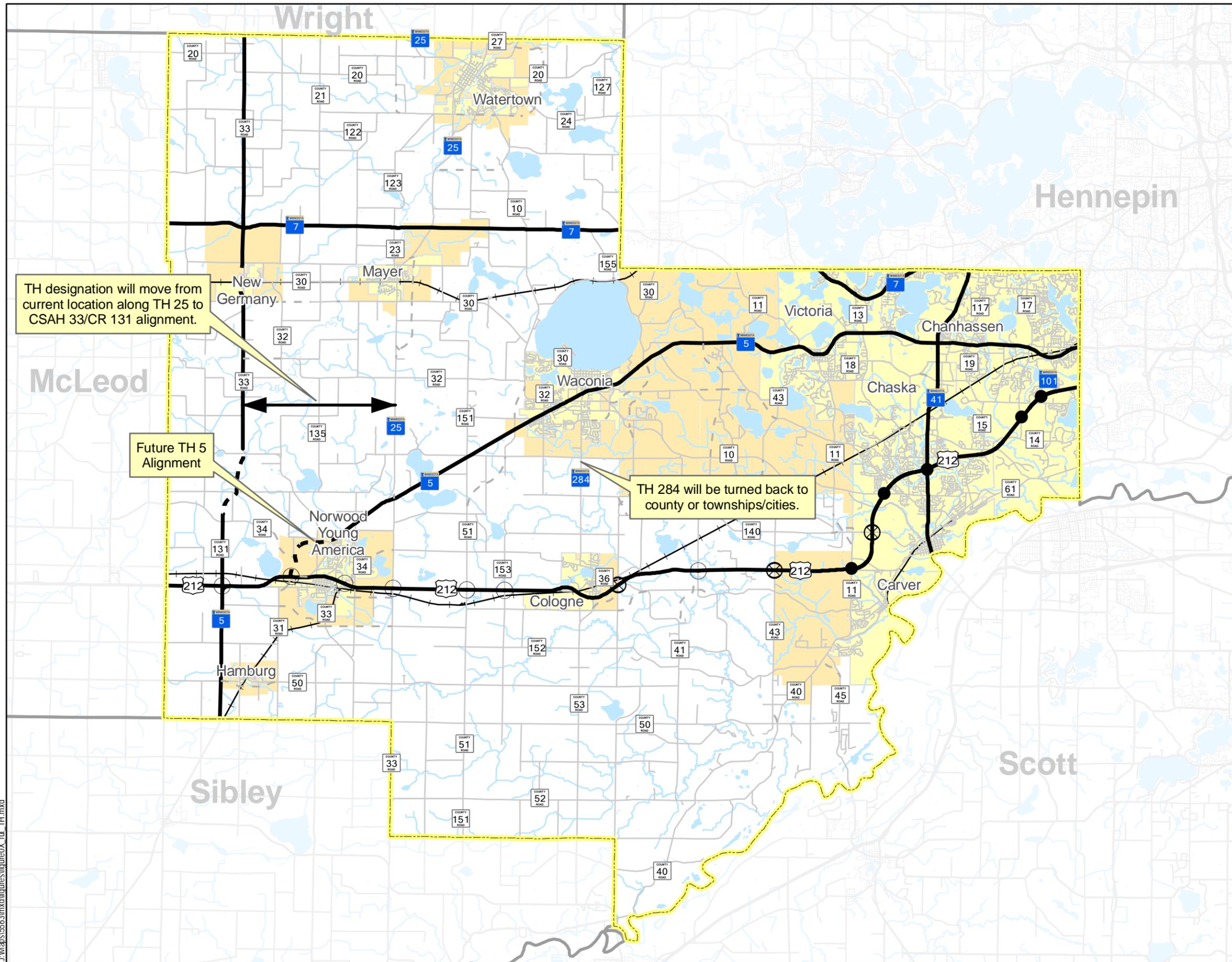
1. As cities grow beyond 5,000 in population and become eligible for Municipal State Aid (MSA), it may be possible to have these cities accept on to their new MSA system, CSAH roads within their boundaries. Appropriately selected, these changes could help cities by increasing their State Aid "needs" while also benefiting the county by freeing-up CSAH mileage that could then be assigned to existing CRs or new routes.

2. If existing MSA eligible cities have less than 20 percent of their municipal roadways designated MSA, it may be advantageous to the city to have the county upgrade a CSAH within the city and then have the city accept it on to its MSA system. In this example, the city obtains county assistance for a roadway important to the city, and then the county, by transferring the CSAH designation to MSA, frees up CSAH mileage to be used on another important road in its system.
3. The county can maintain its current CSAH designations, but increase its “needs” and therefore increase funding for these roadways by regularly updating its “after the fact right-of-way” and “miscellaneous after the fact” needs data.

As explained above, system designation and continually updating “State Aid needs” is an important element to the county’s transportation system because it can affect the sources of funding and facility standards. The county has done a good job of updating its CSAH system, and it should continue monitoring opportunities to leverage state funds.

The long-term (2030) designation vision for the roadway system in Carver County is illustrated in Figures 10 and 11, which represent the proposed 2030 CR/CSAH and TH roadway systems in the county.





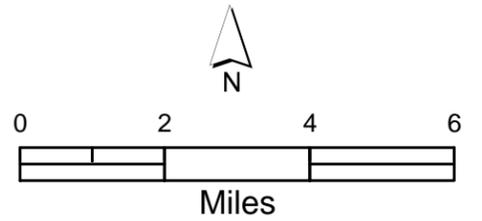
FUTURE TRUNK HIGHWAY SYSTEM



Figure 11

Legend

- Future Trunk Highway System
- TH 212 Access**
- Interchange Access Locations
- Potential Interchange Preservation Location
- Local Access Locations  
Definition: Long-Term Full-Movement Intersection
- Railroads
- Carver County
- Municipal Boundaries
- City Growth Areas 2030
- US Highways
- State Highways
- County Roads



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## 5.0 SPECIAL AREA STUDIES

Special area studies required more detailed investigation and analysis. Three special area studies were completed by the County and its partners during the Roadway Systems planning process. These included:

- Norwood Young America Development Scenarios
- Mayer North/South Corridor Preservation Study
- TH 5 Corridor Study

These studies were completed because they involved unique land use, traffic, environmental or other engineering and planning issues. Further, they were of significant inter-jurisdictional interest, and there was an urgent need to develop solutions to the problems and issues raised. The following is a brief discussion of the analysis and results of each special area study.

### 5.1 Norwood Young America

The purpose of the Norwood Young America Special Area Study was twofold. First, concepts were developed to show how TH 212 could be transitioned to a limited access freeway facility. SRF held meetings with Mn/DOT, county and community leaders/staff to discuss previous concepts, development plans and constraints. Two freeway concepts were developed by SRF and were shared with Mn/DOT, county and city staff (concepts on file with these organizations). These two potential freeway concepts addressed Norwood Young America's 2030 full-development scenario (based on full-development of the cities land use plan, it was determined that at-grade intersections on TH 212 would be overloaded, and grade-separated intersections would be needed to obtain acceptable operations).

Secondly, an analysis was performed to determine the threshold at which the existing at-grade network configuration would fail (LOS D/E threshold), with reasonable at-grade geometric improvements implemented. The impetus for conducting this analysis was the real potential for development. Retail developers have shown interest in the northwest quadrant of TH 212 and TH 5-25, sparking the City to review future development scenarios for this portion of land. The current socio-economic data from the Metropolitan Council's System Statement for Carver County provides one viewpoint of how the area may grow over the next 25 years. In addition, the year 2004 Comprehensive Plan provides a number of future land use plan options for the area (see Figure 12 – Future Land Use Plan, Option 1). Because this study was completed prior to the City's final Comprehensive Plan update (2009) and it was completed using the full development model assumptions, the modeling scenario data presented below is not consistent with the data presented in Chapter 3 of this plan. The following summarizes our assumptions, analysis and findings:

1. The study consultant reviewed two alternative development scenarios. First, trip generation estimates were developed based on Carver County socioeconomic data (TAZ data provided by the city) and information from the 2003 ITE Trip Generation Reports. Second, trip generation estimates were developed for Carver County TAZ 129.2.1 using floor area ratios (FARs). This generated more intense land use than the city had previously shown for future land use scenarios. Figure 13 displays the Carver County TAZs in the immediate vicinity and the data below documents the level of development assumed.

FAR Assumptions (129.2.1 = 1100 acres)

0.18 for Commercial uses (10 percent)

0.15 for Office uses (0 percent)

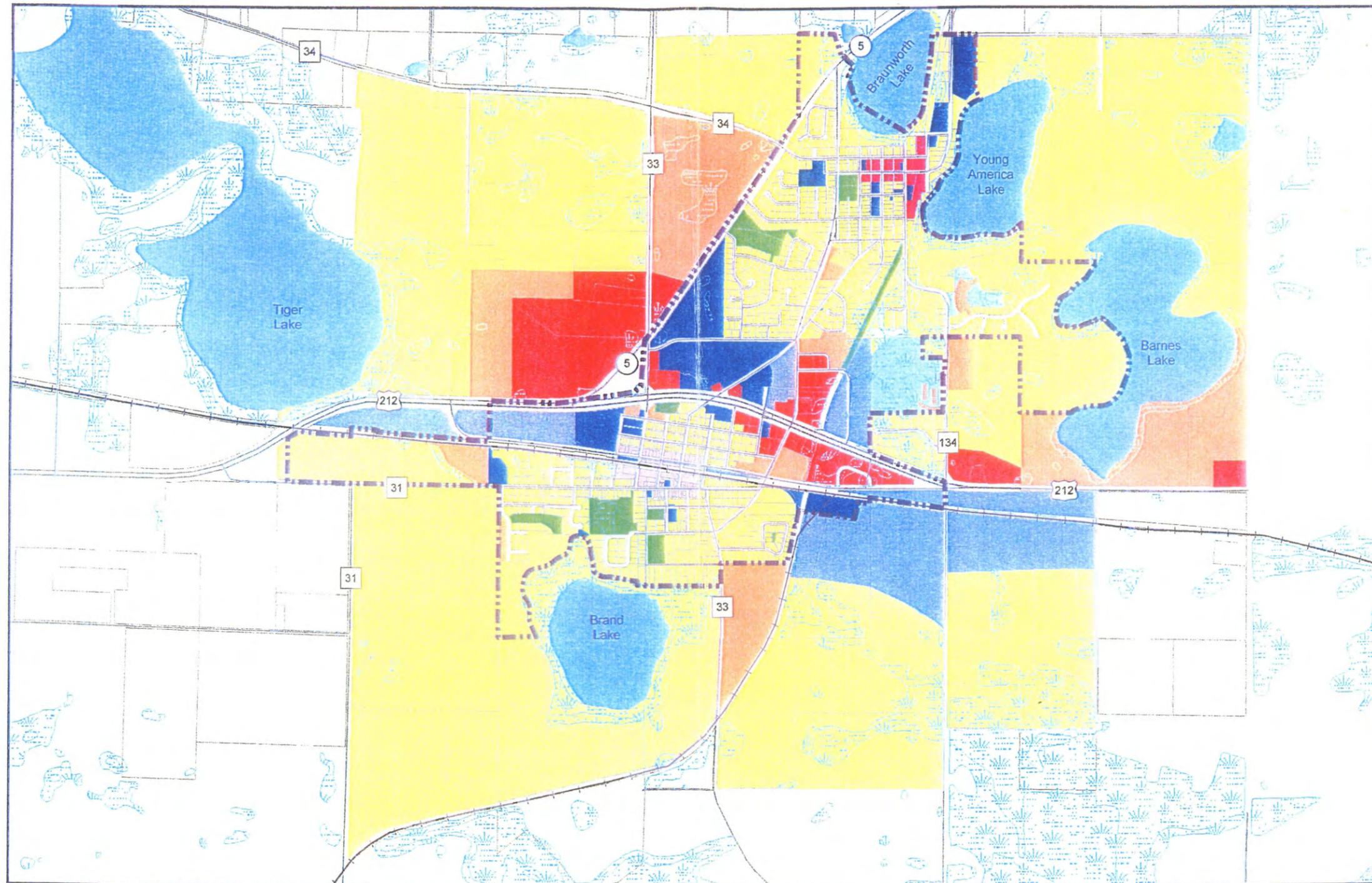
3 units/acre low density housing and/or 6 units/acre medium-high density housing  
(45 percent low density and 20 percent medium-high density)

\* Note that approximately 25 percent of this TAZ is wetland/lake

2. Under the first scenario, approximately 560 trips will be generated during the a.m. peak hour and 780 trips during the p.m. peak hour. Under the second scenario, approximately 2,700 trips will be generated during the a.m. peak hour and 5,600 trips during the p.m. peak hour. The second scenario assumes a full-build condition given the FARs used in the trip generation estimates.
  - Comparison of the two scenarios indicates that the socioeconomic data yields 15-20 percent of the FAR development scenario trips.
3. The first scenario will operate acceptably during the peak hours assuming an at-grade intersection at the existing TH 212/TH 5-25 intersection, without any geometric improvements.
4. The second full-build scenario will operate unacceptably during the peak hours assuming an at-grade intersection at the TH 212/TH 5-25 intersection, with extensive geometric improvements. The extensive geometric improvements were an attempt to achieve acceptable LOS (LOS D), but were unsuccessful.
5. A sensitivity test was conducted to assess the size or area of commercial land use that could be developed with an at-grade intersection on TH 212. The analysis gradually modified the commercial land use assumptions (% of area developed) to obtain a reduced trip generation estimate. These reduced trip estimates were analyzed with an at-grade intersection at TH 212/TH 5-25. Adjustments were continually made until the intersection could function at an acceptable LOS D or better.
  - The sensitivity test indicates that approximately 50 percent of the assumed commercial use could be accommodated by at-grade improvements and could obtain an acceptable LOS D or better. (Note: because the future trips were estimated using numbers from ITE trip generation manual for FARs, the trips are likely to be conservative. An additional 10+ percent of traffic potentially could be accommodated based on taking into account multi-use trip reductions)
  - The analysis assumed the following geometric improvements at TH 212/TH 5-25:
    - Dual eastbound left-turn lanes, two through lanes and a right-turn lane
    - A westbound left-turn lane, two through lanes and a right-turn lane
    - Dual southbound left-turn lanes, a through lane and a right-turn lane
    - A northbound left-turn lane and a shared through/right-turn lane

As stated above, it was determined that approximately 50 percent of the anticipated commercial development could be built before the improved TH 212/TH 5-25 intersection falls below LOS D. If the city wishes to pursue a larger portion of commercial development in this area, additional intersection and geometric improvements will need to be examined.

In summary, the geometric improvements listed above for the TH 212/TH 5-25 at-grade intersection only address the short- to mid-term development needs. With direction and input from the stakeholders involved, it was determined that there will be additional roadway/intersection improvements needed to accommodate the long-term development around the TH 212/TH 5-25 intersection. Figure 14 provides general concepts for the long-term improvements being considered. Some of the specific improvements include eliminating the free right onto TH 5, developing a frontage/backage road parallel to TH 212, and also adding a Reduced Conflict Interchange (RCI) in conjunction with the future TH 5/CSAH 31 and TH 212 intersection realignment.



**Future Land Use Plan** Option 1  
 2004 Comprehensive Plan  
 Norwood Young America, Minnesota

700 0 700 Feet

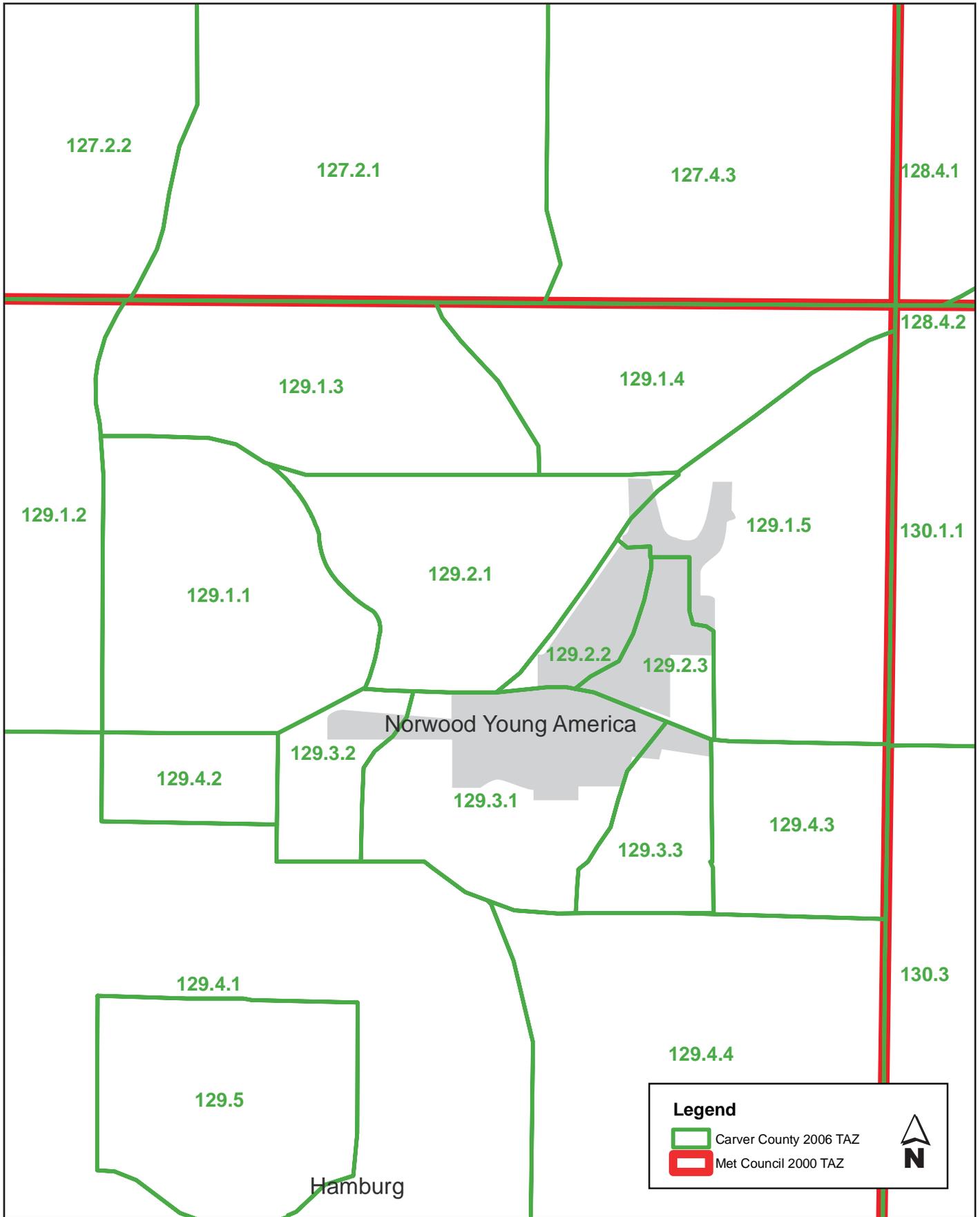
- Railroad
- Municipal Boundary
- Parcel Boundary
- Low - Medium Density Residential

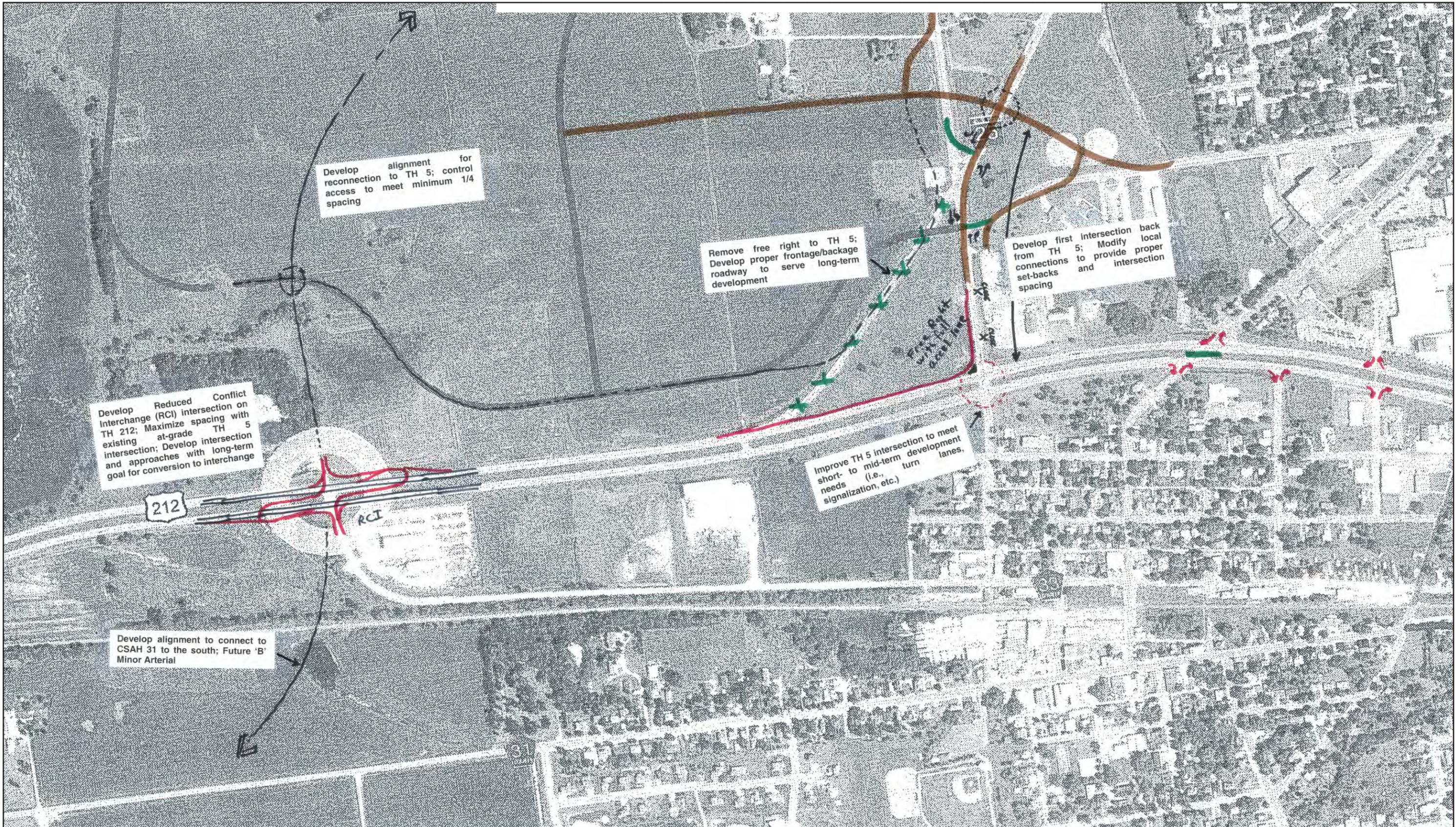
- Medium - High Density Residential
- Downtown Commercial
- General Commercial
- Civic Center
- Public/Semi-Public/Utility
- Park/Open Space - Homeowner Association Maintained
- Park/Open Space
- Industrial
- Open Water
- Wetlands

**DAHLGREN  
SHARDLOW  
AND UBAN**

February 28, 2005  
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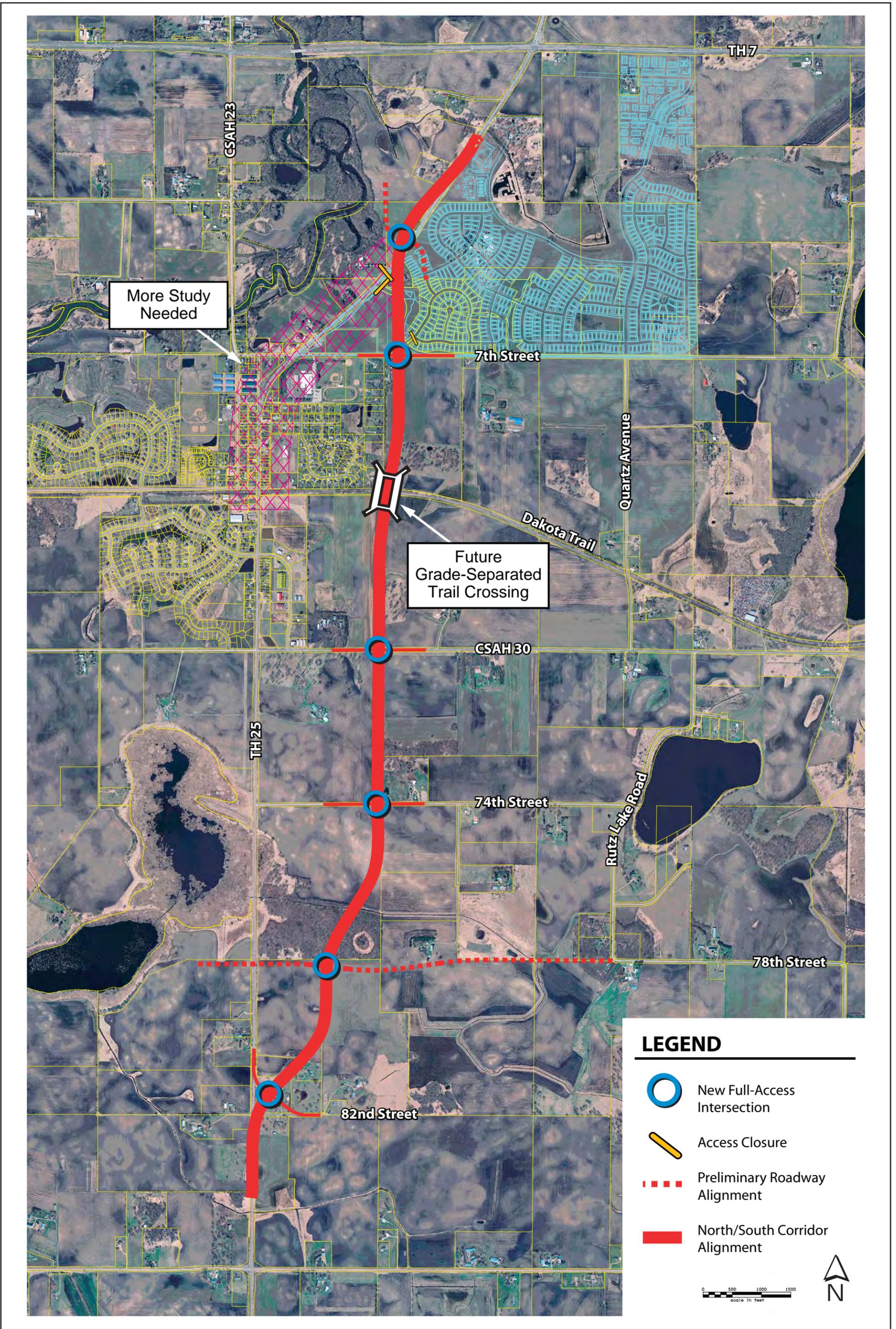


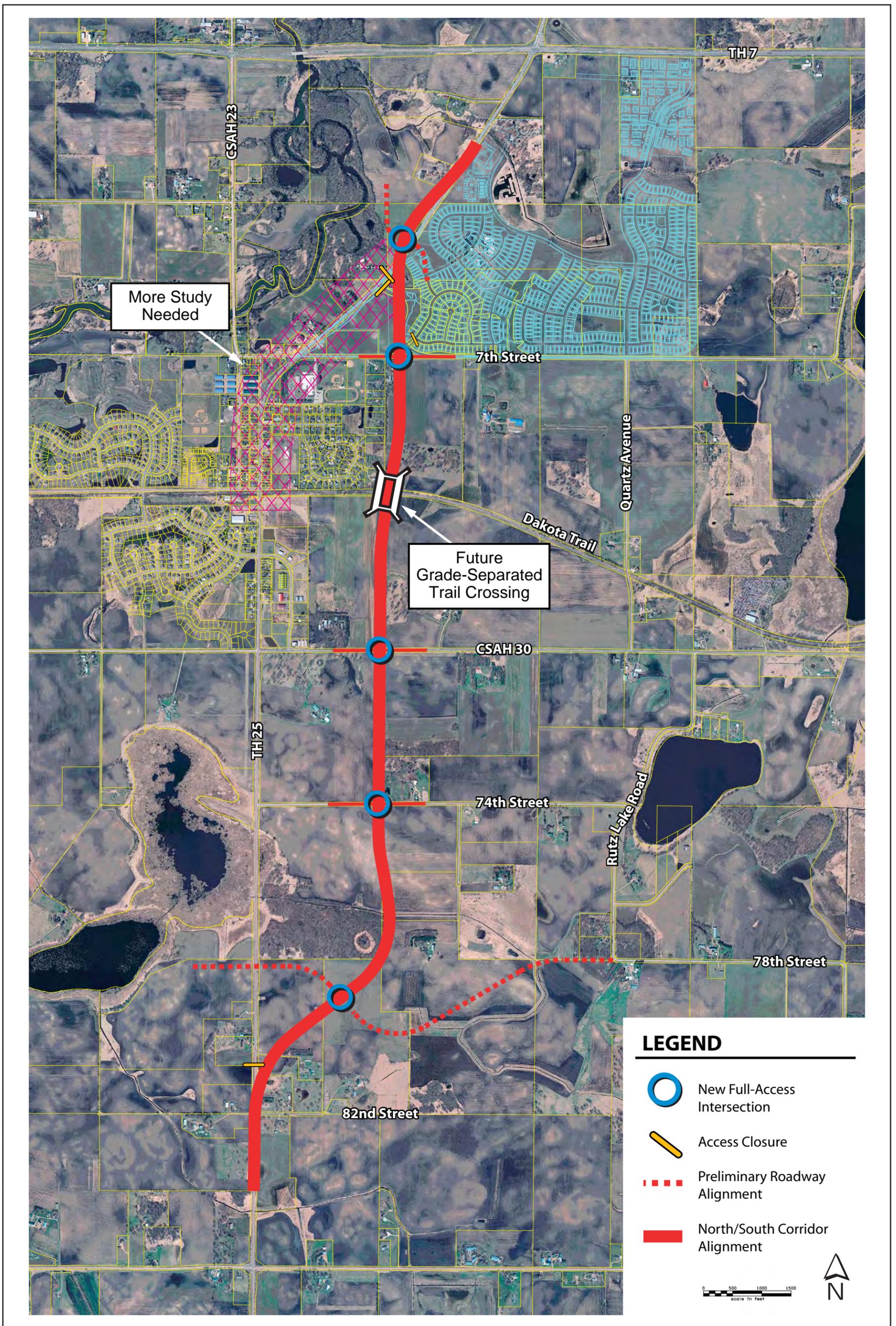


## 5.2 Mayer North/South Corridor Study

The purpose of this study was to identify potential alignments and associated general impacts resulting from the preservation and future construction of a north/south minor arterial. The study area extended from 82nd Street to TH 7, east of the City of Mayer. The Mayer Transportation plan recognized the need for this minor arterial, and noted rapidly increasing land costs, as well as current and future development pressures. All of these issues prompted the need to undertake the study. The Carver County traffic forecast model estimated the 2030 AADT on TH 25 through downtown Mayer would be approximately 9,100, which would create congestion and delay and would also increase current safety problems. The model indicated that the north/south corridor would attract 7,100 AADT, thus relieving TH 25 congestion and increasing mobility and safety for longer, non-local trips.

A Project Management Team (PMT) composed of city, county and Mn/DOT officials guided the study process. Two alternative alignments were identified and mapped (see Figures 15 and 16). Alternative 2 reflected the alignment in the Mayer Comprehensive Plan and Alternative 3 was prepared by the PMT. Study goals and objectives were established by the PMT. The two alignments, as well as a no-build alternative (Alternative 1), were evaluated. Fifteen criteria were used in the evaluation (e.g. route length, access spacing, cost, right-of-way required, wetland or unique environment impacts, potential cultural resource effects, relocations, and prime agricultural land impacts). It was understood by the PMT that this was a cursory analysis using preliminary impact information. Please refer to Table 11. After discussion of the technical evaluation, the PMT recommended by consensus that **Alternative Alignment 3** be advanced for further public and agency review/comment.





**TABLE 11**

*Note: Quantities may change during environmental documentation process and as designs are refined. Quantities below are intended for use as a measure of relative impact only between Build Alternatives. Quantities are not intended to be final, precise counts of any factor.*

Study Goal	Objective	Measurable Criteria	Future North/South Corridor		
			No-Build Alternative	Alignment Alternative 2	Alignment Alternative 3
Ensure safe and efficient mobility for the traveling public	Discourage circuitry by providing the most direct route	<ul style="list-style-type: none"> <li>Route length (miles)</li> </ul>	3.5	3.4	3.4
	Provide appropriate public street access and signal spacing according to access standards, and improve mobility and safety conditions	<b>County Access Spacing Guidelines:</b> <ul style="list-style-type: none"> <li>1/2 mile for primary intersections</li> <li>1/4 mile for secondary intersections</li> <li>1/2 signal spacing</li> </ul>	Significant number of access points <u>do not</u> meet access and signal spacing standards	New access <u>meets</u> access and signal spacing standards, and improves mobility and safety conditions	New access <u>meets</u> access and signal spacing standards, and improves mobility and safety conditions
Minimize expected future public expenditures for roadway development	Minimize right-of-way acquisition needs	<ul style="list-style-type: none"> <li>Acres of required right-of-way</li> </ul>	0	67.1	64.0
	Limit construction and Right-of-Way (ROW) costs	<ul style="list-style-type: none"> <li>Total project cost (mill. \$)</li> </ul>	No new construction, thus no cost	Total Cost = <b>\$22.9 million</b>	Total Cost = <b>\$22.0 million</b>
Avoid or minimize impacts to the natural environment	Avoid or minimize and mitigate wetland impacts	<ul style="list-style-type: none"> <li>Acres of wetlands impacted</li> </ul>	Current alignment runs through a major wetland area (new alignment may allow for removal of current TH 25 alignment through New Berliner Lake)	1.1	1.3
	Recognize and protect unique environments	<ul style="list-style-type: none"> <li>Acres of Natural Resource Inventory (NRI) area impacted</li> </ul>	0	3.6	0.4
		<ul style="list-style-type: none"> <li>Number of stream or ditch crossings</li> </ul>	1	1	1
Avoid or minimize impacts on cultural resources	Avoid construction on or near potential historic properties	<ul style="list-style-type: none"> <li>Distance of facility from nearest known historic properties</li> </ul>	Close proximity to numerous historic properties in Mayer	Approximately 0.3 miles from nearest site	Approximately 0.3 miles from nearest site
	Avoid construction on or near archaeological sites	<ul style="list-style-type: none"> <li>Risk of archaeological site impacts</li> </ul>	Low – nearest known site is approximately 1.0 miles away	Low – nearest known site is approximately 1.0 miles away	Low – nearest known site is approximately 1.0 miles away
Avoid, minimize or mitigate impacts on valuable public lands	Avoid impacts to school or park land	<ul style="list-style-type: none"> <li>Acres of affected school or park land</li> </ul>	No impacts to existing or planned school/park facilities	School acres impacted = 2.1 Park acres impacted = 0.3	School acres impacted = 2.1 Park acres impacted = 0.3
		<ul style="list-style-type: none"> <li>Potential Section 4(f) impacts</li> </ul>	No	Yes	Yes
Minimize social costs and impacts	Avoid or minimize number of relocations	<ul style="list-style-type: none"> <li>Number of residential relocations (includes ancillary buildings)</li> </ul>	No anticipated relocation impacts because no improvements are planned	5	3
		<ul style="list-style-type: none"> <li>Number of commercial relocations</li> </ul>	No anticipated relocation impacts because no improvements are planned	0	0
	Minimize the amount of farmland impacted or divided by alignment	<ul style="list-style-type: none"> <li>Number of farmland parcels severed</li> </ul>	No farmland parcel division issues because alignment already exists and no improvements are planned	12	14
		<ul style="list-style-type: none"> <li>Acres of prime agricultural land impacted</li> </ul>	No agricultural land impacts because alignment already exists and no improvements are planned	36.3	31.3

**NOTE:**

- Without new alignment, 2030 traffic volumes through Mayer are forecasted at approximately 9,000 vehicles.
- No-Build Alternative** uses the existing TH 25 alignment through downtown Mayer and assumes that no future improvements will be made to the existing roadway (i.e. no expansion).
- Alignment Alternative #2** is the alignment that was identified in the Mayer Comprehensive Plan. It travels through the NRI area just to the east of the current TH 25 alignment. New alignment is anticipated to carry 7,100 vehicles of the forecasted future 2030 ADT for the No-Build Alternative.
- Alignment Alternative #3** is the alignment identified by the PMT. It travels around the NRI area and then runs along the same alignment path as Alignment Option #2 north to TH 25. New alignment is anticipated to carry 7,100 vehicles of the forecasted future 2030 ADT for the No-Build Alternative.

**LEGEND:**  
 Existing conditions – **No-Build** – is considered neutral – current state – no change and is therefore provided for informational purposes only. Evaluation of Alternative Alignments 2 and 3 is provided to assess the relative impacts of each, based on study objectives and identified measurable criteria, as established by the Purpose and Need process. Future environmental documentation will evaluate the selected preferred alternative compared to the No-Build Alternative.

The rating system used to compare alternatives is provided below. It assesses the relative ranking of each alternative’s ability to meet the study objective as noted. The ratings are:

- + **Meets Objective Best**
- **Meets Objective Less Well**
- X **Does Not Meet Objective**
- O **Similar Impacts Noted**

### 5.3 Trunk Highway 5 Corridor Study

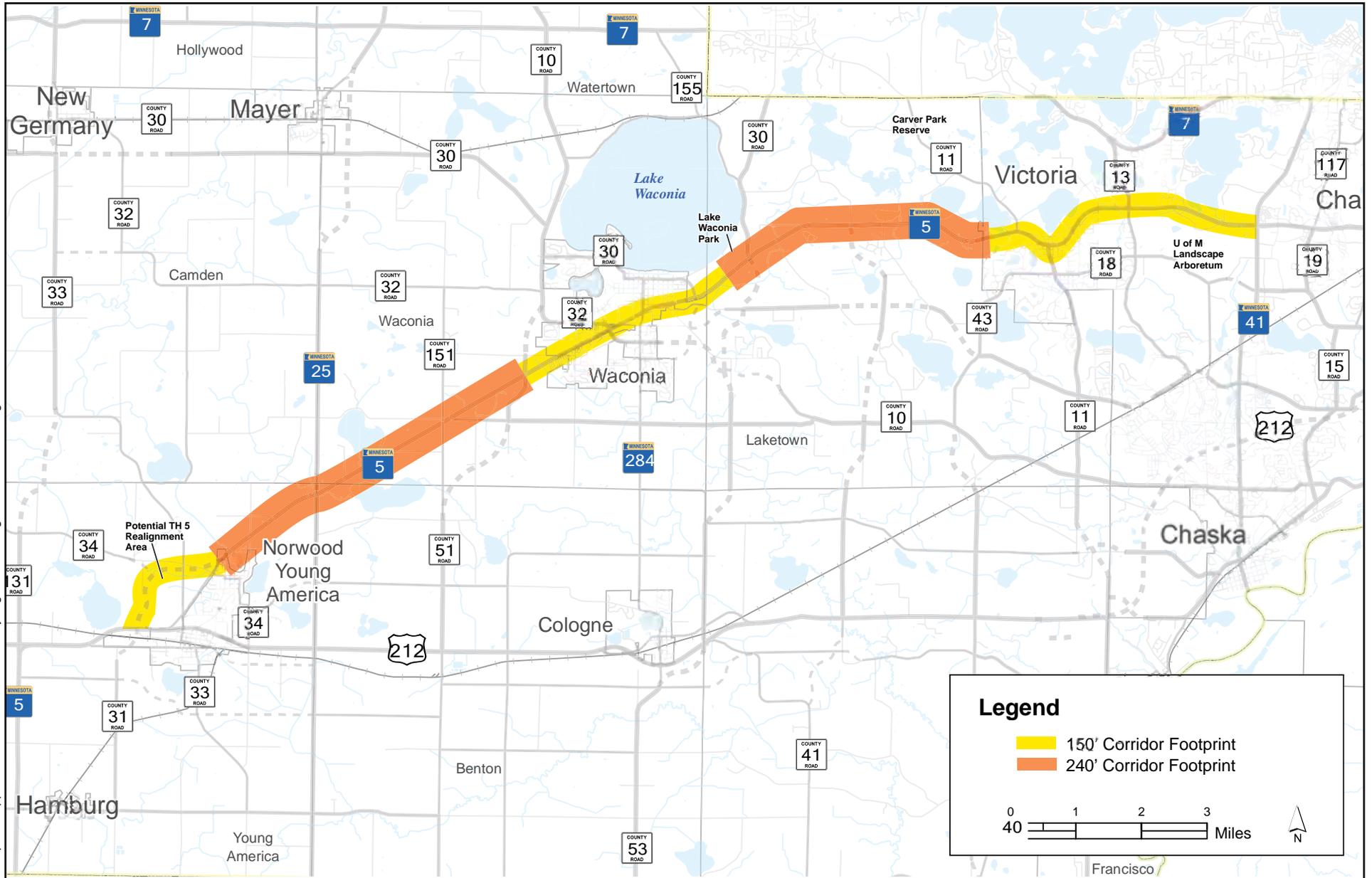
The Trunk Highway 5 (TH 5) Corridor Study was undertaken by Carver County and the cities of Chanhassen, Victoria, Waconia, and Norwood Young America, in collaboration with Mn/DOT. The purpose of the study was to guide future land use and transportation planning and identify improvements along TH 5 from TH 41 in Chanhassen to TH 212 in Norwood Young America.

A Technical and an Advisory Committee guided the study process, participated in corridor analysis and alternative evaluation, reviewed study findings and approved the study's recommendations.

The overview provided below presents the key findings generated by the study process:

- A complete list of critical corridor issues, needs and opportunities was fully vetted by public and key stakeholder review.
- A strong purpose and need statement was prepared that documents the significant mobility, safety and system linkage needs for the project. The statement complies with state and federal review agency guidelines. This purpose and need information has already been used by the corridor's advocacy group to familiarize key lawmakers with the project and justify funding needs.
- A scoping level analysis of six possible conceptual alternatives for the TH 5 corridor was completed and utilizing, a qualitative evaluation process, a proposed conceptual footprint was selected (Alternative #5: south four-lane expansion, combined with the Norwood Young America bypass, interim TSM improvements, pedestrian/trail facilities and transit enhancements). The alternative evaluation process followed the new policy established by FHWA. This work establishes an excellent foundation for the environmental documentation that state and federal agencies will require as a next step. Figure 17 presents the proposed conceptual footprint for the corridor
- Corridor vision and design criteria were established, and detailed locally supported conceptual layouts for each of the six corridor segments were prepared to document key engineering recommendations (e.g., right-of-way, typical sections, access modifications, reconfigured connecting local roadways, trail and pedestrian facilities and potentially impacted properties). Table 12 presents the corridor vision and design criteria for the TH 5 Corridor.

Graphic Support: 6276 TH 5 Corridor Study/Figures/HorzFigures Folder/HorzFigures.indd.



### Study Area Corridor Footprint

TH 5 Corridor Study - From TH 41 to TH 212  
Carver County

Figure 17

**TABLE 12  
TH 5 CORRIDOR VISION AND DESIGN CRITERIA**

<b>A-Minor Arterial</b> <i>Segment Termini</i>	<b>Chanhassen (1)</b> <i>TH 41 to CSAH 13</i>	<b>Victoria (2)</b> <i>CSAH 13 to Krey Avenue</i>	<b>Laketown (3)</b> <i>Krey Ave to Scandia Road</i>	<b>Waconia (4)</b> <i>Scandia Road to Orchard Road</i>	<b>Benton (5)</b> <i>Orchard Road to 5<sup>th</sup> Ave</i>	<b>Norwood Young America (6)</b> <i>5<sup>th</sup> Ave to TH 212</i>
<b>Design Speed</b>	55 mph or higher	Less than 45 mph	55 mph or higher	Less than 45 mph	55 mph or higher	55 mph or higher
<b>Typical Roadway Section</b>	4 lane, urban, divided	4 lane, urban (raised or depressed median to be determined)	4 lane, rural, divided	4 lane, urban (raised or depressed median to be determined)	2 lane, rural (Preserve ROW for future 4 lane, rural, divided)	BYPASS: Preserve ROW for future 4 lane, urban, divided
<b>Pedestrian and Bicycle Trails</b>	Trail along TH 5	Separate trail and/or trail/sidewalks along TH 5	Trail along TH 5	Separate trail and/or trail/sidewalks along TH 5	Trail along TH 5	Trail along TH 5 Bypass
<b>Intersection Spacing, Turn Lane, and Connecting Roadway Intersection Guidelines*</b>	<ul style="list-style-type: none"> <li>▪ 1/2-mile full intersection spacing</li> <li>▪ 1/4-mile secondary intersection spacing</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1/4-mile full intersection spacing</li> <li>▪ 1/8-mile secondary intersection spacing</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1/2-mile full intersection spacing</li> <li>▪ 1/4-mile secondary intersection spacing</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1/4-mile full intersection spacing</li> <li>▪ 1/8-mile secondary intersection spacing</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1/2-mile full intersection spacing</li> <li>▪ 1/4-mile secondary intersection spacing</li> </ul>	<ul style="list-style-type: none"> <li>▪ 1/4-mile full intersection spacing</li> <li>▪ 1/8-mile secondary intersection spacing</li> </ul>
<b>Signal Spacing**</b>	1/2-mile	1/4-mile	1/2-mile	1/4-mile	1/2-mile	1/2-mile
<b>Private Access Guidelines</b>	<ul style="list-style-type: none"> <li>▪ Strongly discourage new private access</li> <li>▪ Investigate ways to provide alternative access for private businesses and residences over time as opportunities arise.</li> </ul>					
<b>Right-of-Way</b>	<ul style="list-style-type: none"> <li>▪ 135 feet with trail, streetscape, and single left turn lane</li> </ul>	<ul style="list-style-type: none"> <li>▪ 150 feet with trails/sidewalks, streetscape, and double left turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>▪ 210 feet without trail, but with left turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>▪ 130 feet with sidewalks, streetscape, and single left turn lane</li> <li>▪ 135 feet with trail, streetscape, and single left turn lane</li> </ul>	<ul style="list-style-type: none"> <li>▪ Post 2030: 240 feet with trail and left turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>▪ BYPASS: 150 feet with trails/sidewalks, streetscape, and double left turn lanes</li> </ul>

\* At full movement intersections, left and right turn lanes should be provided; turn lanes should be 300 feet long with a 180 foot taper. Also, when a minor arterial intersects TH 5, the first full movement on the minor arterial should be spaced 1/4 mile from TH 5, for collectors the distance should be 1/8 mile, and for other public streets it should be at least 300 feet.

\*\*Spacing for future signal lights is identified above; signal lights can only be installed along TH 5 if they meet warrants, further they will generally be located at primary full movement public intersections, and should be coordinated to provide progression.

- Planning-level cost estimates were prepared for each corridor segment documenting anticipated corridor construction, trail development, right-of-way, connecting local roadway and project development and delivery expenses. Table 13 documents the TH 5 Corridor cost estimate summary.

**Table 13**  
**TH 5 Corridor Cost Estimate Summary**

<b>Description</b>	<b>Estimated Cost</b>
Construction	\$98,400,000 – \$137,700,000
Trails and Trail Crossings	\$3,400,000
Project Development and Delivery	\$20,400,000 - \$28,300,000
Right of Way	\$12,900,000
Local Streets	\$37,200,000
<b>RANGE OF TOTAL ROADWAY COSTS</b>	<b>\$172,300,000 - \$219,500,000</b>

- Descriptive illustrative pictorials and refined cost estimates (LWD) for the Victoria and Waconia urban segments were completed by Mn/DOT.
- A comprehensive social, economic, and environmental (SEE) scan analysis of 23 factors was prepared for the entire corridor, which identified potential impacts and suggests the appropriate level of analysis that should be completed by future environmental documents, thereby expediting the upcoming EA/EAW process.
- Eighteen critical interim improvement projects (see Table 14) were identified that could be implemented in the near-term and would be consistent with the longer range comprehensive corridor improvement plan.
- A description of the project development process was provided to advance the corridor project (e.g., specific funding, system planning and project implementation activities).
- An expansive public, stakeholder and resource agency involvement process was completed that included 22 meetings, beginning with initial input regarding corridor needs and issues, through the alternative analysis and the locally supported conceptual concepts, to the draft study review.
- Two scoping studies will be completed by Mn/DOT that will advance work on the TH 41 to CR 13 (Chanhassen to Victoria) and Maple to Cherry Streets (Waconia) segments of the corridor.

The intent of this study was to propose and analyze corridor concept alternatives, conduct initial environmental screening that identified fatal flaws, and select a corridor footprint that could be carried into a future environmental study. As noted earlier, the findings and recommendations discussed in the report are intended to be used as basis for future environmental documentation. The study also identified the needed right of way, access management strategies and local road circulation patterns related to improvements to TH 5, so that future development and community planning decisions can be made that support and complement the vision for TH 5, as funding for the planned improvements is secured.

**Table 14**  
**TH 5 Corridor Interim Improvement Projects**

	LOCATION	DESCRIPTION	ISSUES
<b>HIGHEST PRIORITY</b> (Immediate Opportunities)	TH 5 Bridge over Hennepin County Regional Railroad Authority Trail (Victoria) - (1)	Bridge Replacement	- Low Bridge Sufficiency Rating - Bridge Clearance for LRT
	TH 5 Subgrade Replacement Reconstruction – (2)	Intersection Improvements	- Sink Hole Due to Poor Soils
	TH 284/ CR 57 Intersection (Waconia) - (3)	Intersection Improvements	- Safety - Congestion
	CR 13 to TH 41 Segment (Chanhassen & Victoria) - (4)	Segment Improvements including TH 5 intersections at: - CR 13/ Bavaria Rd/ Rolling Acres Rd - Minnewashta Parkway - Arboretum Drive/ Crimson Bay Rd	- Safety - Congestion - Traffic Circulation
	Maple and Cherry Street (Waconia) - (4)	Intersection Improvements	- Safety - Medical Campus Access
	City of Waconia Segment in Developed Area	Access Management Improvements along Existing 2-lane Highway	- Safety - Congestion
<b>HIGHER PRIORITY</b>	TH 41 (Chanhassen)	Intersection Improvements	- Safety - Congestion
	City of Victoria Segment in Developed Area	Access Management Improvements along existing 2-lane Highway	- Safety - Congestion
	CR 11 (West - near Dairy Queen in Victoria)	Intersection Improvements	- Safety - Congestion
	Rural Segments between Victoria and Waconia and between Waconia and NYA	Shoulder Improvements	- Safety
<b>HIGH PRIORITY</b>	Park Drive (Victoria)	Intersection Improvements	- Safety
	CR 92 Intersection Signal (Waconia)	Intersection Control Improvements (Signalization)	- Safety - Congestion
	CR 51	Intersection Improvements	- Safety
	TH 25 (NYA)	Intersection Improvements	- Safety - Alignment
	5th Avenue (NYA)	Intersection Improvements	- Safety
	CR 34 (NYA)	Intersection Improvements	- Safety
	2nd Street SW (NYA)	Intersection Improvements	- Future Capacity
	TH 212/ TH 5-25 (NYA)	At-grade Intersection Improvements	Short to Mid-term: - Area Development Needs Long-term Roadway Network: - Capacity - Safety

(1) - Bridge replacement scheduled for replacement in 2013 per MnDOT project scoping report

(2) - Replacement of signal system scheduled by MnDOT for 2011

(3) – Reconstruction on TH 5 near Victoria scheduled by MnDOT for 2010

(4) - Selected by the Technical Committee for additional project scoping by MnDOT

## 6.0 IMPLEMENTATION PLAN

This section of the plan provides valuable strategies, tools and practices that can assist county officials implement the Roadway Systems Plan's recommendations and make wise long term decisions.

### 6.1 Roadway Systems Plan Adoption

The first step towards implementation of the plan is for Carver County to adopt it. By adopting the plan, the County Commission will establish priorities and guidelines on which to base future transportation decisions. All jurisdictions in the county should receive copies of the adopted plan to help them support the county's efforts to implement the plan. Citizens and members of the business community should understand the opportunities or limitations that the plan provides. Giving all affected groups full knowledge of the county's transportation goals will help them understand how these goals are linked to land use elements shown in the county's comprehensive land use plan. Copies of the plan should be provided to cities, townships and public libraries in the area, so it can be accessed by the greatest number of people.

The county should periodically review and update the Roadway Systems Plan and its traffic forecasting model, based on estimates of future development, population trends, changing financial resources, and citizen and local government input. Depending on the speed and degree of change, it is recommended that the plan be reviewed at least every five to 10 years.

### 6.2 Access Management

Access management guidelines provide a means for transportation engineers and planners to balance private property concerns with the need to provide for a safe and efficient transportation system. Standardized guidelines provide a way for clear communications between the agencies and individuals involved (developers, city/county staff, landowners) in the process. The access spacing guidelines that have been developed for Carver County reflect the standards adopted by Mn/DOT. Through this coordination, access in Carver County will be consistent with Mn/DOT best practices.

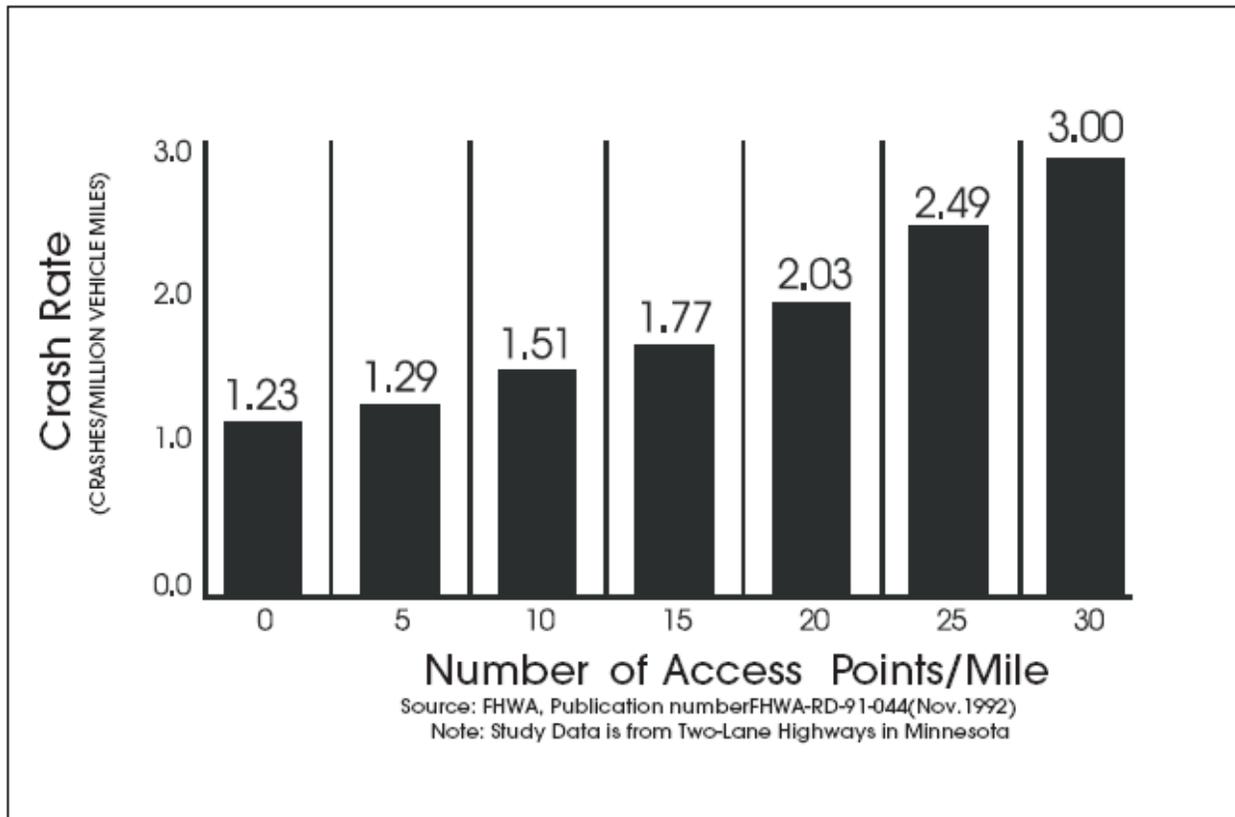
#### 6.2.1 Benefits of Access Management

Access guidelines are important because they define a starting point for balancing property access, safety and mobility concerns. Transportation agencies regularly receive requests for additional access (e.g. new public streets, commercial driveways, residential and field accesses), which are evaluated by numerous agencies. Because of the number of individuals and agencies involved, it is easy to have an inconsistent access decisions. This can result in confusion between agencies, developers and property owners as well as long-term safety and mobility problems. Standard access guidelines can be used to improve communication, enhance safety and maintain the capacity and mobility of the important transportation corridors. In addition, access guidelines may be used to respond to access requests and to promote good access practices, such as:

- Aligning access with other existing access points.
- Providing adequate spacing to separate and reduce conflicts.
- Encouraging indirect access over direct access on high-speed, high-volume arterial routes.

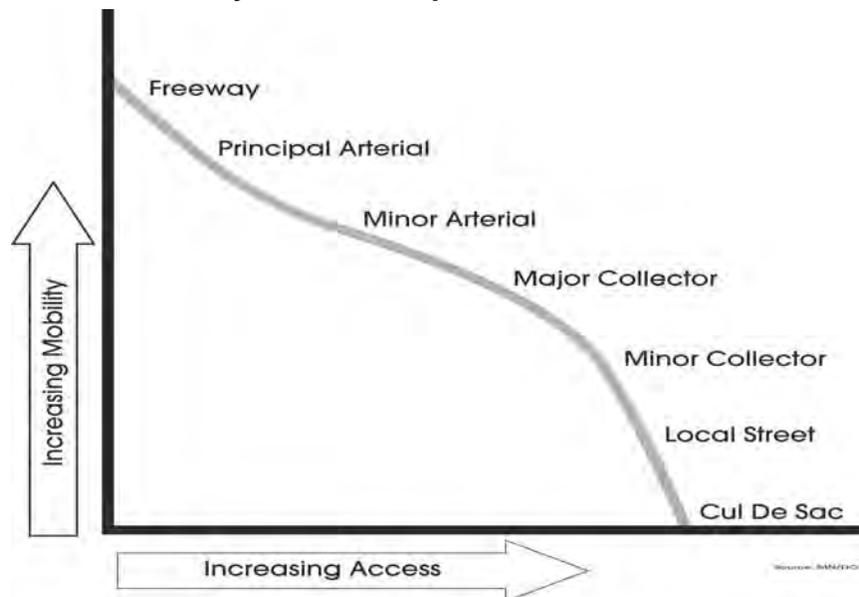
Providing access management in some form, whether it is through grade-separated crossings, frontage roads or right-in/right-out access, reduces the number of conflicts and results in improved safety. Numerous studies have demonstrated a direct relationship between the number of full access points and the rate of crashes, including FHWA Access Research Report No. FHWA-RD-91-044. Figure 18 documents this relationship.

**FIGURE 18**  
**Access/Crash Relationship**



Access management also plays an important role in maintaining roadway capacity and maximizing mobility, while supporting the jurisdiction’s functional classification system plans. A key challenge facing Carver County and its planning partners is adequately balancing access and mobility on the roadway system. The relationship of access to mobility, in part, determines the road’s functional classification (see Figure 19).

**FIGURE 19**  
**Access/Mobility Relationship**



### 6.2.2 Legal Basis for Access Management

Minnesota State Statutes direct public road authorities to provide “reasonable, convenient, and suitable” access to property unless these access rights have been purchased. Courts have interpreted this to allow:

- Restrictions of access to right-in/right-out
- Redirection of access to another public roadway if the roadway is reasonable, convenient and suitable

In special circumstances, broader authority (police power) has been given to public agencies if the situation is deemed to jeopardize public safety. However, this is a very high standard to meet and is seldom used by public agencies.

In addition to the above, land use authorities may exercise additional authority in limiting access through development rules and regulations. Land use authorities can require:

- Dedication of public rights-of-way
- Construction of public roadways
- Mitigation measures of traffic and/or other impacts
- Change in and/or development of new access points

These types of access controls are processed through local elected officials. Since stronger land use and access controls are available at the county and city level, and these units of government are usually involved at the planning stages, access guidelines and corridor management practices should be focused at this level. However, the potential long-term benefits of access management require support and good communication at all governmental levels.

### 6.2.3 Carver County Access Spacing Guidelines

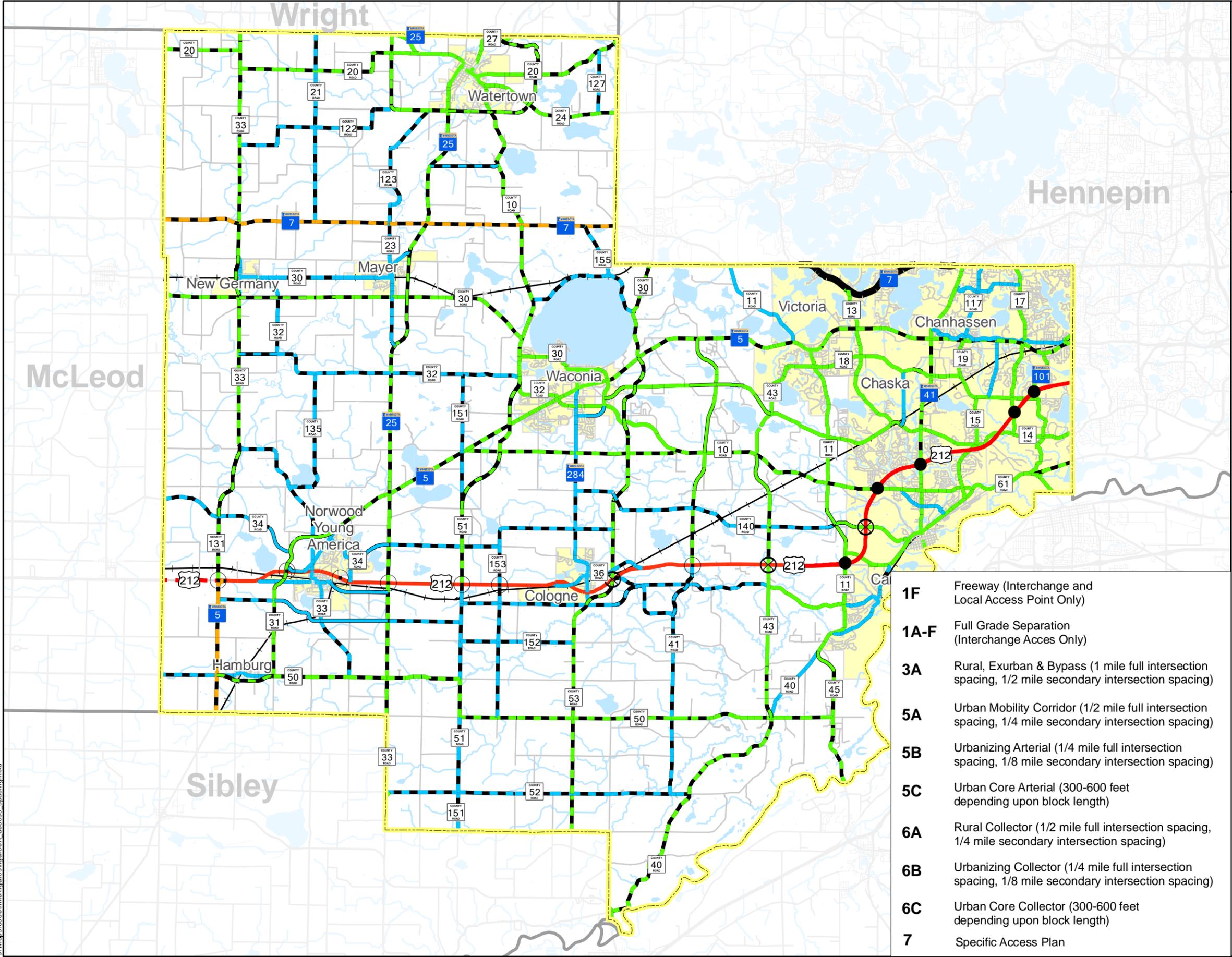
Carver County currently has access spacing guidelines in place, which were included in the 1999 Transportation Plan. However, these guidelines were based primarily on the type of roadway facility and traffic loads. In 2002, the Minnesota Department of Transportation developed its own set of access policies and spacing guidelines for the Trunk Highway System based on a roadway's functional classification and its role in the regional transportation system. Consistent with the Mn/DOT policies, the proposed Carver County access spacing guidelines now use roadway functional classification and proximity to developed/developing areas as the basis for the recommended spacing of access along a corridor. Having access recommendations based on functional classification rather than traffic volumes enables the county and cities to protect access on roadways based on their intended long-term function. Table 15 illustrates the Mn/DOT and Carver County access spacing guidelines. Figure 20 shows the access categories as they have been assigned to the roadway network. It is important to point out that in some cases for critical segments of mobility corridors, the access spacing has been "managed-up," proposing wider spacing than that expected by the roadway's functional classification (i.e., TH 5).

On Table 15 for each functional classification category, the recommended full movement as well as conditional secondary intersection spacing is given. In addition, each category identifies signal spacing and the treatment of private access. Regarding roadways most applicable to the Carver County system, it should be noted that the guidelines are more restrictive (exception/deviation) of private access along minor arterials in developing areas than in rural and/or urban core areas (subject to conditions). This is due to the fact that planning should be able to limit private access in these developing areas versus areas that have already been developed (core urban area) and/or areas where there is no other supporting street system (rural).

Because there will be a need to deal with special circumstances, procedures have been developed to address potential problems (Appendix G explains the conditions, exceptions and deviations for private access on roadways that are not part of the Trunk Highway System). For specific information on private access points along Trunk Highways, please refer to Mn/DOT's Access Management Guidelines in Technical Memorandum No. 02-10-IM-01.

**TABLE 15  
Mn/DOT and Carver County Access Management Guidelines**

Category	Area or Facility Type	Typical Functional Class	Intersection Spacing		Signal Spacing	Private Access	
			Primary Full Movement Intersection	Conditional Secondary Intersection			
Mn/DOT Access Spacing Guidelines	<b>1</b>	<b>High Priority Interregional Corridors (TH 212)</b>					
	1F	Freeway	Principal Arterials	Interchange Access Only			
	1A-F	Full Grade Separation		Interchange Access Only			
	1A	Rural, Exurban & Bypass		1 mile	1/2 mile	INTERIM ONLY By Deviation Only	By Deviation Only
	<b>2</b>	<b>Medium Priority Interregional Corridors (N/A)</b>					
	2A-F	Full Grade Separation	Principal Arterials	Interchange Access Only			
	2A	Rural, Exurban & Bypass		1 mile	1/2 mile	STRONGLY DISCOURAGED By Deviation Only	By Exception or Deviation Only
	2B	Urban Urbanizing		1/2 mile	1/4 mile	STRONGLY DISCOURAGED By Deviation Only	By Exception or Deviation Only
	2C	Urban Core		300 – 600 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
	<b>3</b>	<b>High Priority Regional Corridors (TH 7)</b>					
	3A-F	Full Grade Separation	Principal and Minor Arterials	Interchange Access Only			
	3A	Rural, Exurban & Bypass		1 mile	1/2 mile	1 mile	Permitted Subject to Conditions
	3B	Urban Urbanizing		1/2 mile	1/4 mile	1/2 mile	By Exception or Deviation Only
	3C	Urban Core		300 – 600 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
Carver County Access Spacing Guidelines	<b>4</b>	<b>Principal Arterials</b>					
	4A-F	Full Grade Separation	Principal Arterials	Interchange Access Only			
	4A	Rural, Exurban & Bypass		1 mile	1/2 mile	1 mile	By Deviation Only
	4B	Urban Urbanizing		1/2 mile	1/4 mile	1/2 mile	By Exception or Deviation Only
	4C	Urban Core		300 – 600 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
	<b>5</b>	<b>Minor Arterials</b>					
	5A	Rural, Exurban & Bypass	Minor Arterials	1/2 mile	1/4 mile	1/2 mile	Permitted Subject to Conditions
	5B	Urban Urbanizing		1/4 mile	1/8 mile	1/4 mile	By Exception or Deviation Only
	5C	Urban Core		300 – 600 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
	<b>6</b>	<b>Collectors</b>					
	6A	Rural, Exurban & Bypass	Collectors	1/2 mile	1/4 mile	1/2 mile	Permitted Subject to Conditions
	6B	Urban Urbanizing		1/4 mile	1/8 mile	1/4 mile	
	6C	Urban Core		300 – 600 feet dependent upon block length		1/8 mile	
<b>7</b>	<b>Specific Access Plan</b>						
7	All	All	By Adopted Plan				



RECOMMENDED FUTURE ACCESS SPACING



Figure 20

TH 212 Access

- Approved Interchange Access Locations
- ⊗ Potential Interchange Preservation Location\*
- Local Access Locations\*

High Priority Interregional Corridors

- 1F
- - - 1A-F

High Priority Regional Corridors

- · - · 3A

Minor Arterials

- · - · 5A
- 5B
- · - · 5C

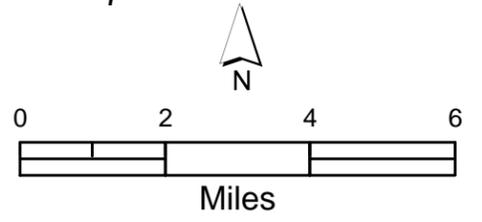
Collectors

- · - · 6A
- 6B
- · - · 6C

Specific Access Plan

- 7

- 1F** Freeway (Interchange and Local Access Point Only)
- 1A-F** Full Grade Separation (Interchange Access Only)
- 3A** Rural, Exurban & Bypass (1 mile full intersection spacing, 1/2 mile secondary intersection spacing)
- 5A** Urban Mobility Corridor (1/2 mile full intersection spacing, 1/4 mile secondary intersection spacing)
- 5B** Urbanizing Arterial (1/4 mile full intersection spacing, 1/8 mile secondary intersection spacing)
- 5C** Urban Core Arterial (300-600 feet depending upon block length)
- 6A** Rural Collector (1/2 mile full intersection spacing, 1/4 mile secondary intersection spacing)
- 6B** Urbanizing Collector (1/4 mile full intersection spacing, 1/8 mile secondary intersection spacing)
- 6C** Urban Core Collector (300-600 feet depending upon block length)
- 7** Specific Access Plan



\* Refer to section 6.2.5 for definitions

## 6.2.4 Access Management Implementation

Carver County is experiencing an increase in population and employment. As discussed at greater detail in Section 2.2 of this document, population is anticipated to double between now and 2030. With growth will come development pressures, which will inevitably lead to requests for access onto the county and local roadway system. However, these pressures should be thought of as opportunities by engineers and land use planners to actively plan for and promote good access practices in both rural and urbanizing areas.

Access guidelines and corridor management practices should be generally implemented at the county and city levels (and by townships with active land use planning programs) because these units of government are usually involved at the planning stages of development proposals. However, long-term benefits of access management require mutual support and effective communication at all governmental levels.

In addition to establishing spacing guidelines, it is important to consider how these guidelines are implemented as part of county planning and development review procedures. The following points are important to consider:

- The guidelines apply primarily to routes with a collector functional classification or above; however, partners may also use the guidelines on some local streets.
- The guidelines should be used as long-term goals, not as absolute rules.
- Maintaining some flexibility is important in promoting access consolidation.
- The approach to implementation is as important as the guidelines themselves.
- Existing physical barriers or constraints need to be considered.

The first step in encouraging better access management is to develop consistent access standards for both rural and urban roadways. Access management efforts in urban areas typically focus on addressing mobility concerns while balancing access needs of local businesses and residents. In existing corridors where significant development has occurred, the number of existing access points will likely exceed access guidelines. Unless significant redevelopment is occurring in along these corridors, access management must be approached differently than in undeveloped rural areas. In urban areas, new access points should be minimized while existing access points are consolidated or reduced as redevelopment occurs.

Best access management practices in urban and developing areas include the following:

- **Encourage shared driveways and internal circulation plans:** If indirect access cannot be achieved during plat reviews, promote internal site circulation using shared access points.
- **Restrict turning movements to reduce conflicts:** If access points cannot be eliminated, consider turning movement restrictions (e.g., left-in only or right-in/right-out only) through the installation of raised median or other channelization or signing. Eliminating a single turning movement can significantly reduce vehicle conflicts and potential crashes.
- **Develop good parallel street systems for carrying local traffic:** Make sure that important arterial routes have a good parallel street system to provide the local access function and to carry shorter local trips.

- **Develop proper setbacks for future frontage roads:** If frontage roads cannot be justified (benefits do not outweigh costs), make sure that proper building and parking lot setbacks are established so that future frontage roads can be installed with minimal impacts.
- **Develop proper secondary street spacing:** When reviewing plats and new development proposals, be sure that they provide proper intersection spacing for future signals. As a guideline, signalized intersections should be limited depending upon the type of street. Collector streets should provide some continuity and connectivity with other street systems.
- **Encourage proper lot layout to minimize access points:** Promote direct residential access points onto local routes, not arterials or major collectors. Direct residential access to arterial or collector routes can result in complaints when traffic levels increase. In rural areas, where farms have one access point per 40-acre entitlement and where they cluster lots in one portion of the farmstead, access should be encouraged off local roads, not high-speed, high-volume state or county roads.
- **Encourage connectivity between developments:** Individual developments should align streets to provide access to existing developments or reserve right-of-way to provide for future connections to adjacent developments. This promotes neighborhood connectivity, good emergency services and more efficient travel for mail, garbage and bus services as well as street maintenance activities.
- **Consider official map process for important corridors:** Important arterial corridors or future interchange areas that are located in development-prone areas can be protected through an official mapping process. Local agencies should revise zoning ordinances and subdivision regulations to provide for dedication of officially mapped corridors at the time of platting.

As noted earlier, within urban areas, access management objectives usually relate to maintaining roadway capacity and mobility, and of course improving safety. However, the rationale for managing access in rural areas differs somewhat from the rationale used in urban areas. Roadways in rural areas almost always serve low-density land uses and usually have volumes well below capacity thresholds. Managing rural access increases safety (i.e., sight distance, number of conflict areas, and severity of crashes when vehicles run off the road) and minimizes operational/maintenance costs (i.e., snow removal, resurfacing and drainage).

To address access in rural areas, Minnesota’s Local Road Research Board (LRRB) has developed the following best management practices:

- Establish an access policy – develop a formal policy that ensures that the agency has processes in place to determine the need for and evaluate the use, location, spacing and design characteristics of the requested access points.
- Encourage coordination during the zoning and platting process.
- Give access permits for specific use.
- Encourage adequate spacing of access points.
- Protect the functional area of intersections.
- Ensure adequate sight distance at entrances.
- Avoid offset or dogleg intersections and entrances.
- Encourage development of turn lanes and entrances.
- Consider consolidating access or relocating existing access.

- Encourage good driveway and intersection design characteristics, such as:
  - Proper driveway width and turning radii
  - Proper corner clearance
  - Adequate approach grade
  - Alignment of intersections at right angles to maximize sight lines, minimize the time a vehicle is in the conflict area and facilitate turning movements
  - Proper grading of entrance in-slopes and culvert openings
  - Keeping sight triangles and clear zones free of obstructions

## 6.2.5 TH 212 Access Planning

The current construction of realigned TH 212 in eastern Carver County includes five new interchanges, providing direct access to other Trunk Highways (TH 101, TH 41) and key county 'A' Minor Arterial routes (CSAH 17, CSAH 10, CSAH 11). The access plans for each of these was prepared as part of the earlier TH 212 design process and they are currently under construction. These access points are noted on Figure 20.

Additional future access locations along TH 212 are under study. For example, the City of Chaska is interested in establishing an interchange at TH 212 and CR 140 to serve future planned development. This site is noted in Figure 20 as a potential interchange preservation location. Other potential interchange preservation locations along TH 212 that are being proposed by the TH 212 Advanced Design Study include CR 43 and future CR 53 (Market Avenue). These are also identified on Figure 20. It is important to note that any new TH 212 intersection will require the completion of a rigorous access justification evaluation, and will be subject to the full NEPA and Mn/DOT/Metropolitan Council approval process before it can be programmed. Further, the TH 212 Advanced Design Study, which is analyzing the corridor segments between Carver and Norwood Young America, anticipates approximately eight future local access locations. These are defined as long-term full-movement intersections, and are also presented in Figure 20. The County Roadway Systems Plan's future functional classification map calls for a CR to cross TH 212 between CR 43 and the realigned future CR 53 (sometime after 2030). Currently this roadway is a gravel road under township jurisdiction, therefore the Advanced Design Study is not considering it as a future interchange site within its 20 year timeframe. However, if this connection was constructed in the long range, it may necessitate the need for an interchange to maintain the future goal of a TH 212 freeway to Cologne.

As noted, construction of these future interchanges or intersections will be contingent on various approvals and funding availability, which will require time to secure. Therefore, it may be wise for affected jurisdictions to incorporate access layout planning at these locations into their ongoing land development process. Appendix H provides two typical access layouts, which are taken from Mn/DOT's Road Design Manual. This information can assist local officials in planning for and preserving sufficient right-of-way for future TH 212 access, thereby preventing encroaching land uses, non-compatible access or local street system development.

## 6.3 Right-of-Way

Right-of-way is a valuable public asset. Therefore, it needs to be presented and managed in a way that respects its intended function, while serving the greatest public good.

Carver County, with its current and anticipated growth will need to reconstruct, widen and construct new roadway segments to meet future capacity and connectivity demands. Such improvements will require that adequate right-of-way be maintained or secured. To assure consistency and wise use of taxpayer dollars, the county has established right-of-way guidelines. Table 16 presents these right-of-way guidelines by functional classification and facility type. Use of these guidelines during the right-of-way acquisition or preservation process will, over time, reduce cost and streamline project development.

**TABLE 16**  
**Carver County Right-of-Way Guidelines \***

Functional Class	ROW Widths **	ROW Widths Include One Separated Bike/ Pedestrian Facility	ROW Widths Include Two Separated Bike/ Pedestrian Facilities	Facility Type
Principal Arterial	140 feet	155 feet	170 feet	4-lane divided urban
	220 feet	240 feet	260 feet	4-lane divided rural
	180 feet	195 feet	210 feet	5-6 lane divided urban
Minor Arterial	100 feet	115 feet	130 feet	4-lane undivided urban
	120 feet	135 feet	150 feet	4-lane divided urban
	180 feet	200 feet	220 feet	4-lane divided rural
	100 feet	115 feet	130 feet	3-lane urban
	100 feet	120 feet	140 feet	2-lane rural
Collector	100 feet	115 feet	130 feet	3-lane urban
	100 feet	120 feet	140 feet	2-lane rural
	100 feet	115 feet	130 feet	2-lane urban

\* All ROW widths assume no parking on roadway

\*\* Due to certain development conditions or physical features of the site or highway corridor, Carver County may require additional right-of-way width greater than shown in the Right-of-Way Guidelines

### 6.3.1 Right-of-Way Preservation

When future expansion or realignment of a roadway is proposed, but not immediately programmed, agencies should consider right-of-way preservation strategies to reduce costs and maintain the feasibility of the proposed improvement. Several different strategies can be used to preserve right-of-way for future construction, including advanced purchase, zoning and subdivision techniques, official mapping, and corridor signing. Before implementing any right-of-way preservation programs, local agencies should weigh the risks of proceeding with right-of-way preservation without environmental documentation. (Note: Mn/DOT policy requires environmental documentation prior to purchase.) If environmental documentation has not been completed, agencies risk preserving a corridor or parcel that has associated environmental issues.

Appendix I provides typical cross-section examples for some of the two-lane and four-lane facility types noted above.

### 6.3.1.1 Direct Purchase

One of the best ways to preserve right-of-way is to purchase it. Unfortunately, agencies rarely have the necessary funds to purchase right-of-way in advance, and the public benefit of purchasing right-of-way is not realized until a roadway or transportation facility is built. Most typically, local jurisdictions utilize various corridor preservation methods prior to roadway construction and then purchase the right-of-way if it is not dedicated at the time of design and construction.

### 6.3.1.2 Planning and Zoning Authority

Local agencies have the authority to regulate existing and future land use. Under this authority, agencies have a number of tools for preserving right-of-way for transportation projects. These tools include:

- Zoning

If the property is in a very low-density area (e.g., agricultural district), local agencies should try to maintain the existing zoning classification. Lower zoning classification limits the risk for significant development until funding becomes available for roadway construction.

- Platting and Subdivision Regulations

Local platting and subdivision regulations give agencies authority to consider future roadway alignments during the platting process because most land must be platted before it is developed. Cities and counties can use their authority to regulate land development to influence plat configuration and the location of proposed roadways. In most instances, planning and engineering staff works with developers to prepare a plat that accommodates their needs, and conforms to a long-term community vision and/or plans. Local agencies can require right-of-way dedication as part of the platting and subdivision process.

- Transfer of Development Rights

In addition to the above strategies, some agencies negotiate with property owners by allowing increased development densities on portions of the parcel if the developer will transfer right-of-way to the jurisdiction for the future roadways needed by the development. This enables the developer to get the same number of lots or units and also enables the agency to obtain the needed right-of-way.

- Official Mapping

A final strategy to preserve right-of-way is to adopt an official map. An official map is developed by the local governmental unit and identifies the centerline and right-of-way needed for a future roadway. The local agency then holds a public hearing showing the location of the future roadway and incorporates the official map into its thoroughfare or community facilities plan. The official mapping process allows agencies to control proposed development within an identified area and influence development on adjacent parcels. However, if a directly affected property owner requests to develop his/her property, agencies have six months to initiate acquisition of the property to prevent its development. If the property is not publicly purchased, the owner is allowed to develop it in conformance with current zoning and subdivision regulations. As a result, the official mapping process should

only be used for preserving key corridors in areas with significant growth pressures. In some cases, official mapping key parcels/corridors may increase the agency's ability to find sources of funds to purchase at-risk parcels.

### 6.3.1.3 Corridor Signing Program

In addition to land use regulations, some jurisdictions have used an innovative corridor signing program to identify arterial roadways that are planned for expansion projects. This program notifies residents and potential developers that the particular roadway is planned to be upgraded or a new roadway is planned to be constructed. This often makes negotiations with residents/developers easier, since they have been given advanced notice of major roadway expansion projects. Further, this advanced information aids developers plan harmonious land uses and access management measures into their subdivisions. Signs are generally placed along roads on the urban fringe near the city limits or within a city's extraterritorial expansion area.

Additional information on many of the tools and techniques listed above can be found in Appendix J of Mn/DOT's *Interregional Corridors: A Guide for Plan Development and Corridor Management*. This guide also includes information on the environmental review and documentation process as it relates to right-of-way preservation.

## 6.4 Project Development and the Environmental Process

Depending on the size and type of project, implementing improvements identified in the Transportation Systems Plan may require additional public participation and environmental review. Environmental documents must be prepared if state or federal funding is involved in the project, with the type of document depending on the size of the project. For example, projects that construct more than two-lane roadways and have alignments of more than two miles require more in depth analysis than projects that convert an existing at-grade intersection into an interchange or overpass according to state rules.

Even if no federal or state funding is involved, state environmental review requirements and local ordinances or guidelines may apply. Specific rules on the level of environmental documentation can be found in the Highway Project Development Process Handbook at [www.dot.state.mn.us](http://www.dot.state.mn.us).

In addition to state and federal rules regarding environmental documentation, there are a number of local, state and federal permits that regulate wetlands, water quality, air quality, noise and other environmental and cultural resources. Early coordination with appropriate environmental agencies and the State Historic Preservation Office (SHPO) can reduce delays in the project development process and in acquiring applicable permits.

## 6.5 Project Development and Wetland Protection

Wetlands are an important component of the county's landscape. Wetlands provide valuable ecological functions (i.e., water quality protection, surface water storage, wildlife habitat, groundwater recharge and aesthetic/recreational value). There are federal and state regulations that protect these valuable resources. Because Minnesota's rules are stricter than federal regulations, most county agencies do not have wetland protection requirements that go beyond the state rules.

A full copy of the regulations is available in State Statutes Chapter 8420. The details of Minnesota's regulations regarding wetlands are rather complicated. In general, the regulations are intended to protect existing wetlands and to increase the quality of those wetlands by increasing their quantity, quality and biological diversity. The law states:

This chapter shall be interpreted to implement the purpose of the Wetland Conservation Act, which is to:

- A. Achieve no net loss in the quantity, quality and biological diversity of Minnesota's existing wetlands;
- B. Increase the quantity, quality and biological diversity of Minnesota's wetlands by restoring or enhancing diminished or drained wetlands;
- C. Avoid direct or indirect impacts from activities that destroy or diminish the quantity, quality and biological diversity of wetlands; and
- D. Replace wetland values where avoidance of activity is not feasible and prudent.

The Wetland Conservation Act achieves its purpose by requiring persons proposing to impact a wetland by draining, excavating or filling to first, attempt to avoid the impact; second, attempt to minimize the impact; and finally, replace any impacted area with another wetland of at least equal function and value.

As a local road authority, Carver County will be in situations where it wishes to widen or construct new roadways. When looking at options for conducting these types of activities, the county must first look at alternatives that do not impact wetlands. If there are no reasonable or prudent alternatives, the county must work to minimize the impacts to the wetlands. If this is not feasible, the county will be required to construct a new wetland or add on to an existing wetland. The size of the new or expanded wetland must be at least the same size and same quality as the wetland that it is impacting with its project.

## **6.6 Smart Growth/Growth Management**

In communities across the nation, there is a growing concern that current development patterns, dominated by what some call "sprawl" are not in the long-term interest of cities, existing suburbs, small towns and rural communities. Though supportive of growth, communities are questioning the economic costs of abandoning infrastructure in the city and rebuilding it further out. Factors, such as demographic shifts, a strong environmental ethic, increased fiscal concerns, and more nuanced views of growth, are fueling the smart growth movement.

Smart growth concentrates on investing in existing communities. By encouraging growth within communities where people already live and work, smart growth limits the encroachment of new development on farmland and open space and makes existing communities more attractive by creating communities with a mix of housing, restaurants, parks and jobs. Taxpayer burdens are usually reduced because the need for new water, sewer and road infrastructure is minimized.

Carver County is currently experiencing growth, especially along the TH 5 and TH 212 corridors in the eastern portion of the county. While this growth affects all public facilities and services, it is having a profound effect on the county's transportation system. Citizen input strongly

supports smart growth policies in the county. By investing and focusing growth in urban areas and areas contiguous to the cities, the benefits of existing public infrastructure can be maximized while farmland, wetlands, and open space can be preserved. Smart growth provides many options, but the following common-sense principles will help guide public decisions and achieve desired results:

- Stewardship – use land and natural resources wisely to sustain them for the future.
- Efficiency – make efficient, integrated public investments in transportation, housing, schools, utilities, information infrastructure and other public services.
- Choice – give communities smart growth options and choices.
- Accountability – reinforce responsibility and accountability for development decisions.

Carver County should continue its strong proactive planning efforts. The Roadway Systems Plan focuses many of its recommendations on urban areas, or on areas adjacent to existing urban areas. As the county continues to grow, this approach to planning will promote growth within urban areas while protecting the county's rural areas.

## 7.0 FINANCIAL PLAN

One of the most important elements of this plan and a key to its implementation is the preparation of a sound financial program. The financial challenges facing Carver County must be addressed if it is to successfully accommodate multiple transportation demands (e.g., preservation, operations, expansion, and new alignments). This section defines project needs, forecasts future transportation revenues and expenditures, identifies the forecasted funding gap and then presents investment programs that can generate the funds needed to address these fiscal constraints.

### 7.1 Project Planning

Previous sections of the Roadway Systems Plan have analyzed current and future conditions as well as identified a number of specific projects that should be implemented over the next two decades to address critical mobility, safety, capacity and connectivity needs. For example, Tables 7 and 8 in Section 3.3 identify the specific capacity improvements necessary to alleviate future congestion concerns. Because the capacity improvements were identified by the 2030 forecast model, they are assumed to be long-term (2021 – 2030) improvements. Table 9 in Section 3.3 identifies the connectivity improvements needed to create a well-spaced county roadway network that improves traffic circulation throughout the county. Figure 9 also shows the timeframe for each of the future connectivity improvements. The new segments with a 2031 timeframe do not fall within the planning period of this plan and are anticipated to be constructed after 2030.

Additionally, the county has two bridges with low deficiency rates that should be rehabilitated or replaced soon. Further, it is anticipated that Mn/DOT will require the county to match some of its currently programmed and future planned projects such as the capacity expansion activities along TH 212 and TH 5, and also the TH 212/CSAH 40 intersection reconstruction (from the TSP). However, based on the variety and scope of future Mn/DOT projects in the county, it is not possible to anticipate what the required local match will be. Therefore, the local match costs related to future state projects were not factored into the future expenditures.

To assist county leaders in preparing a long-term investment strategy that meets anticipated transportation needs, major new roadway improvements, as identified earlier, were scoped for cost and type of improvement. These improvements were then placed into one of two timeframes:

- Short-Range (2008 – 2020)
- Long-Range (2021 – 2030)

Projects were scheduled based on the information generated by the Carver County forecast model, the current year county Capital Improvement Plan (CIP), technical analysis provided by this planning process, and public input and city/township comments. Refer to Table 17 for a presentation of the future roadway system improvements.

It should be noted that system preservation, maintenance, and operations projects, while important investments, were not included in Table 17 due to their number, reoccurring nature, and the fact that these are programmed by county staff on an annual basis to address needs as they arise.

## 7.2 Future Revenue/Expenditure Analysis

The main revenue sources used by the county to further Carver County's transportation improvements include:

- Local Property Tax: \$1.2 million per year
- State Aid (current state gas tax proceeds and increased MVST): estimated at \$2.4 million per year (from 2008-2012), \$2.7 million per year (from 2013-2030)
- Vehicle Wheelage Tax: \$315,000 per year (collections began in 2008)
- Periodic State and Federal Assistance: approximately \$1.3 million per year based on a six year average)

Over the 23-year period covered by this fiscal analysis (2008 – 2030), these sources are estimated to remain constant and generate approximately \$125.3 million (in today's dollars). Also, in 2005 the County Commission approved a \$13 million general obligation bond issue for a number of specific projects. The bonds will be paid off over the next 15 to 20 years from property taxes.

Regarding future transportation expenditures, as presented on Table 17, major new transportation projects and their costs (i.e., connectivity improvements and capacity expansion projects) have been identified to address future needs over the same 23-year period.

Additionally, bridge rehabilitation/replacement costs need to be accounted for over the 23-year period (2008-2030). Bridge rehabilitation/replacement activities are estimated to cost the county approximately \$1.0 million per year. Thus total bridge replacement/rehabilitation costs (2008-2030) are estimated to be \$23.0 million.

Furthermore, future roadway preservation and reconstruction/rehabilitation costs also need to be projected over the next two decades to provide a complete expenditure forecast. These future preservation expenditures (which are not presented in Table 17) were estimated with assistance and direction from county staff, as noted below:

- Preservation costs associated with the county's future core roadway system (denoted with red lines on Figure 10) are estimated to be \$1.3 million per year. This amount was then multiplied by the 23-year time period. The total preservation costs (2008-2030) are estimated to be \$29.4 million.
- Reconstruction/rehabilitation costs associated with the county's future core roadway system are estimated to be \$8.1 million per year. The total reconstruction/rehabilitation costs (2008-2030) are estimated to be \$187.4 million.
- Preservation costs associated with the county's potential turnbacks (denoted with yellow lines on Figure 10) are estimated to be \$393,000 per year. The total preservation costs (2008-2030) are estimated to be \$9.0 million.
- Reconstruction/rehabilitation costs associated with the county's potential turnbacks are estimated to be \$668,100 per year. The total reconstruction/rehabilitation costs (2008-2030) are estimated to be \$15.4 million.

By compiling all this data, the total anticipated costs for future expenditures (preservation, roadway reconstruction/rehabilitation, connectivity, capacity expansion and bridge rehabilitation/replacement) exceeds \$774.8 million (in today's dollars).

The projected expenditures and forecasted revenue are graphically depicted in Figure 21. From this figure, it is apparent the county is facing a major funding shortfall if it is to meet anticipated transportation demands over the 23-year planning period. The projected funding gap is estimated to be over \$649.5 million. If this gap is to be fully addressed, approximately \$28.2 million in new revenue will be needed each year. While this shortfall represents a significant amount of investment, if new or expanded financing methods are implemented the amount of local resources needed to close this gap can be reduced. Therefore, to assist local leaders in addressing the future funding gap, both general and specific funding sources and programs are provided by the plan.

**TABLE 17  
CARVER COUNTY FUTURE ROADWAY SYSTEM IMPROVEMENTS**

Route	Termini		Length (miles)	Roadway Section Type	Estimated Construction Cost	Total Estimated Improvement Cost*	Project Need Addressed	Responsible Agency
	From	To						
<b>Short Range (2008-2020)</b>								
New Segment	Jonathan Boulevard S	McKnight Road	0.2	4-lane urban	\$600,000	\$1,020,000	Connectivity (New Roadway)	Carver County
CSAH 14	McKnight Road	TH 41	0.5	4-lane urban	\$1,500,000	\$2,550,000	Connectivity (Existing Roadway)	Carver County
CSAH 11	CSAH 10	0.7 miles south of CSAH 10	0.7	4-lane urban	\$2,100,000	\$3,570,000	Connectivity (Existing Roadway)	Carver County
New Segment	0.7 miles south of CSAH	CSAH 11/CR 147 (.6 miles north of TH 212)	0.9	4-lane urban	\$2,700,000	\$4,590,000	Connectivity (New Roadway)	Carver County
CSAH 11/CR 147	0.6 miles north of TH 212	TH 212	0.6	4-lane urban	\$1,800,000	\$3,060,000	Connectivity (Existing Roadway)	Carver County
New Segment	CSAH 11	CR 140	0.7	2-lane urban	\$1,750,000	\$2,975,000	Connectivity (New Roadway)	Carver County
Common Street	TH 25	Quarry Avenue	1.4	2-lane urban	\$3,500,000	\$5,950,000	Connectivity (Existing Roadway)	Carver County
New Segment	Quarry Avenue	CSAH 27	1.5	2-lane urban	\$3,750,000	\$6,375,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 24	30th Street (east end)	0.7	4-lane urban	\$2,100,000	\$3,570,000	Connectivity (New Roadway)	Carver County
30th Street	30th Street (east end)	CSAH 10	0.4	4-lane urban	\$1,200,000	\$2,040,000	Connectivity (Existing Roadway)	Carver County
New Segment	CSAH 10	Newton Avenue	0.5	2-lane urban	\$1,250,000	\$2,125,000	Connectivity (New Roadway)	Carver County
Unnamed Street	Newton Avenue	Unnamed Street (west end)	0.1	2-lane urban	\$250,000	\$425,000	Connectivity (Existing Roadway)	Carver County
New Segment	Unnamed Street (west end)	TH 25	0.5	2-lane urban	\$1,250,000	\$2,125,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 33	Salem Avenue	1.8	2-lane urban	\$4,500,000	\$7,650,000	Connectivity (New Roadway)	Carver County
New Segment	New Segment (north end)/ TH 25	TH 5	0.2	2-lane urban	\$500,000	\$850,000	Connectivity (New Roadway)	Carver County
Salem Avenue	TH 5	CSAH 50	4.9	2-lane rural	\$8,330,000	\$11,662,000	Connectivity (Existing Roadway)	Carver County
102nd Street	TH 284	CSAH 10	2.6	4-lane urban	\$7,800,000	\$13,260,000	Connectivity (Existing Roadway)	Carver County

\* Includes construction and ROW costs (e.g., right-of-way, acquisition, design, etc.)

Route	Termini		Length (miles)	Roadway Section Type	Estimated Construction Cost	Total Estimated Improvement Cost*	Project Need Addressed	Responsible Agency
	From	To						
<b>Short Range (2008-2020)</b>								
New Segment	TH 5	CSAH 10 (extension)	1.9	4-lane urban	\$5,700,000	\$9,690,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 10 (extension)	Little Avenue	0.3	2-lane urban	\$750,000	\$1,275,000	Connectivity (New Roadway)	Carver County
Little Avenue	0.5 miles north of 102nd Street	102nd Street	0.5	2-lane urban	\$1,250,000	\$2,125,000	Connectivity (Existing Roadway)	Carver County
Airport Road	CSAH 30 ((extension) south of TH 5)	Airport Road (0.2 miles east of Scandia Road)	1.5	4-lane urban	\$4,500,000	\$7,650,000	Connectivity (Existing Roadway)	Carver County
New Segment	Airport Road (.2 miles east of Scandia Road)	Tellers Road	1.4	4-lane urban	\$4,200,000	\$7,140,000	Connectivity (New Roadway)	Carver County
Tellers Road	Abbywood Road	Tellers Road (0.4 miles east of Abbywood Road)	0.5	4-lane urban	\$1,500,000	\$2,550,000	Connectivity (Existing Roadway)	Carver County
New Segment	Tellers Road	CSAH 43	0.6	4-lane urban	\$1,800,000	\$3,060,000	Connectivity (New Roadway)	Carver County
New Segment	TH 5	Laketown Road	1.0	4-lane urban	\$3,000,000	\$5,100,000	Connectivity (New Roadway)	Carver County
Laketown Road	0.7 miles north of Airport Road	CSAH 10 (extension)	0.4	4-lane urban	\$1,200,000	\$2,040,000	Connectivity (Existing Roadway)	Carver County
New Segment	TH 212	CSAH 53	1.1	2-lane urban	\$2,750,000	\$4,675,000	Connectivity (Existing Roadway)	Carver County
82nd Street W	CSAH 13	CSAH 18 (Lyman Boulevard (extension))	1.6	2-lane urban	\$4,000,000	\$6,800,000	Connectivity (Existing Roadway)	Carver County
New Segment	82nd Street W	CSAH 18	0.1	4-lane urban	\$300,000	\$510,000	Connectivity (New Roadway)	Carver County
Marsh Lake Road	CSAH 43	CSAH 11	1.7	4-lane urban	\$5,100,000	\$8,670,000	Connectivity (Existing Roadway)	Carver County
New Segment	CSAH 10	CSAH 43 (.15 miles south of Augusta Road)	1.0	2-lane rural	\$1,700,000	\$2,380,000	Connectivity (New Roadway)	Carver County
Dahlgren Road	CSAH 43	CSAH 11/CR 147	2.2	2-lane urban	\$5,500,000	\$9,350,000	Connectivity (Existing Roadway)	Carver County
New Segment	CSAH 40	CSAH 45	0.7	4-lane urban	\$2,100,000	\$3,570,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 27	CSAH 20	1.6	2-lane urban	\$4,000,000	\$6,800,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 20	CSAH 24	0.8	4-lane urban	\$2,400,000	\$4,080,000	Connectivity (New Roadway)	Carver County

\* Includes construction and ROW costs (e.g., right-of-way, acquisition, design, etc.)

Route	Termini		Length (miles)	Roadway Section Type	Estimated Construction Cost	Total Estimated Improvement Cost*	Project Need Addressed	Responsible Agency
	From	To						
<b>Long Range (2021-2030)</b>								
New Segment	62nd Street	CSAH 33/CSAH 30 intersection	1.0	2-lane urban	\$2,500,000	\$4,250,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 33	70th Street (west of the South Fork Crow River (west end))	1.7	2-lane rural	\$2,890,000	\$4,046,000	Connectivity (New Roadway)	Carver County
70th Street	70th Street (west of the South Fork Crow River (west end))	70th Street (west of the South Fork Crow River (east end))	0.8	2-lane rural	\$1,360,000	\$1,904,000	Connectivity (Existing Roadway)	Carver County
New Segment	70th Street (west of the South Fork Crow River (east end))	70th Street (east of the South Fork Crow River (west end))	0.1	2-lane rural	\$170,000	\$238,000	Connectivity (New Roadway)	Carver County
70th Street	70th Street (east of the South Fork Crow River (west end))	Tacoma Avenue	0.5	2-lane rural	\$850,000	\$1,190,000	Connectivity (Existing Roadway)	Carver County
9th Street NW	Tacoma Avenue	TH 25	1.0	2-lane urban	\$2,500,000	\$4,250,000	Connectivity (Existing Roadway)	Carver County
New Segment	TH 25/North Mayer City Limits	82nd Street	2.7	2-lane urban	\$6,750,000	\$11,475,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 33	CSAH 32	1.0	2-lane rural	\$1,700,000	\$2,380,000	Connectivity (New Roadway)	Carver County
New Segment	102nd Street	CSAH 34	2.1	2-lane rural	\$3,570,000	\$4,998,000	Connectivity (New Roadway)	Carver County
134th Street	TH 5/25	CSAH 31	1.5	2-lane rural	\$2,550,000	\$3,570,000	Connectivity (Existing Roadway)	Carver County
New Segment	CSAH 31	CSAH 33	1.4	2-lane urban	\$3,500,000	\$5,950,000	Connectivity (New Roadway)	Carver County
New Segment	CSAH 32/10	94th Street	0.8	2-lane rural	\$1,360,000	\$1,904,000	Connectivity (New Roadway)	Carver County
Orchard Road	94th Street	TH 5	0.3	2-lane rural	\$510,000	\$714,000	Connectivity (Existing Roadway)	Carver County
102nd Street	TH 5	TH 284	2.9	2-lane rural	\$4,930,000	\$6,902,000	Connectivity (Existing Roadway)	Carver County
Little Avenue	102nd Street	just north of 110th Street	0.8	2-lane rural	\$1,360,000	\$1,904,000	Connectivity (Existing Roadway)	Carver County
New Segment	just north of 110th Street	CR 140	0.5	2-lane rural	\$850,000	\$1,190,000	Connectivity (New Roadway)	Carver County
Market Avenue	CR 140	CSAH 36	1.8	2-lane rural	\$3,060,000	\$4,284,000	Connectivity (Existing Roadway)	Carver County
CSAH 41	CSAH 36	TH 212	0.2	2-lane urban	\$500,000	\$850,000	Connectivity (Existing Roadway)	Carver County
New Segment	CSAH 43 (.3 miles north of CSAH 50)	CSAH 50	0.3	2-lane rural	\$510,000	\$714,000	Connectivity (New Roadway)	Carver County

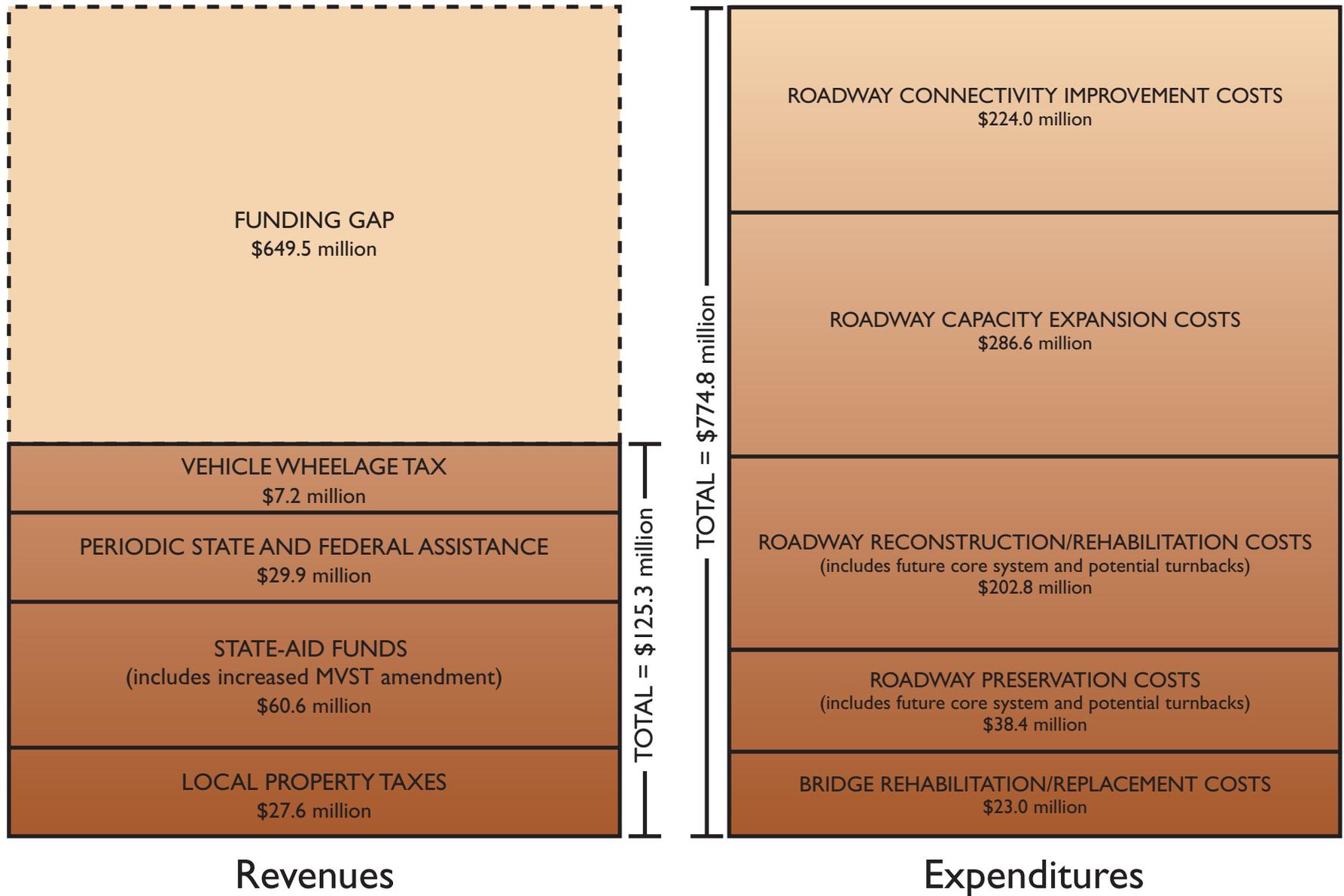
\* Includes construction and ROW costs (e.g., right-of-way, acquisition, design, etc.)

Route	Termini		Length (miles)	Roadway Section Type	Estimated Construction Cost	Total Estimated Improvement Cost*	Project Need Addressed	Responsible Agency
	From	To						
<b>Long Range (2021-2030)</b>								
TH 25	CR 122	TH 25/North Mayer City Limits	4.0	4-lane urban	\$12,000,000	\$20,400,000	2-4 Lane Capacity Expansion	Carver County
CSAH 10/30/32	TH 5	CSAH 10/30 split	2.5	4-lane urban	\$7,500,000	\$12,750,000	2-4 Lane Capacity Expansion	Carver County
CSAH 30	TH 5	north county border	2.6	4-lane urban	\$7,800,000	\$13,260,000	2-4 Lane Capacity Expansion	Carver County
13th Street (extension)	TH 284	Little Avenue	1.5	4-lane urban	\$4,500,000	\$7,650,000	2-4 Lane Capacity Expansion	Carver County
TH 284	north Colonge city limits	CR 153	0.5	4-lane rural	\$1,500,000	\$2,550,000	2-4 Lane Capacity Expansion	Carver County
CSAH 10	102nd Street	CSAH 43	2.2	4-lane rural	\$6,600,000	\$11,220,000	2-4 Lane Capacity Expansion	Carver County
CSAH 10	CSAH 43	CSAH 11	2.1	4-lane urban	\$6,300,000	\$10,710,000	2-4 Lane Capacity Expansion	Carver County
CSAH 11	TH 5	CSAH 43	0.4	4-lane urban	\$1,200,000	\$2,040,000	2-4 Lane Capacity Expansion	Carver County
CSAH 11	CSAH 43	CSAH 10	3.2	4-lane urban	\$9,600,000	\$16,320,000	2-4 Lane Capacity Expansion	Carver County
CSAH 11/CR 147	TH 212	CSAH 40	2.0	4-lane urban	\$6,000,000	\$10,200,000	2-4 Lane Capacity Expansion	Carver County
CSAH 40	CSAH 11/CR 147	CSAH 50	2.9	4-lane urban	\$8,700,000	\$14,790,000	2-4 Lane Capacity Expansion	Carver County
CSAH 45	0.7 miles east of CSAH 40	south county border	3.1	4-lane rural	\$9,300,000	\$15,810,000	2-4 Lane Capacity Expansion	Carver County
CSAH 14 ((extension) Jonathan Boulevard)	CSAH 11	Bavaria Road	1.8	4-lane urban	\$5,400,000	\$9,180,000	2-4 Lane Capacity Expansion	Carver County
CSAH 10	CSAH 11	old TH 212	3.9	4-lane urban	\$11,700,000	\$19,890,000	2-4 Lane Capacity Expansion	Carver County
old TH 212	TH 41	CSAH 40	1.1	4-lane urban	\$3,300,000	\$5,610,000	2-4 Lane Capacity Expansion	Carver County
CSAH 18	TH 41	TH 101	3.0	4-lane urban	\$9,000,000	\$15,300,000	2-4 Lane Capacity Expansion	Carver County
CSAH 14	TH 41	TH 101	3.5	4-lane urban	\$10,500,000	\$17,850,000	2-4 Lane Capacity Expansion	Carver County
old TH 212	TH 41	CSAH 17 (Audubon Road)	1.5	4-lane urban	\$4,500,000	\$7,650,000	2-4 Lane Capacity Expansion	Carver County
old TH 212	CSAH 17 (Audubon Road)	east county border	3.1	4-lane urban	\$9,300,000	\$15,810,000	2-4 Lane Capacity Expansion	Carver County

\* Includes construction and ROW costs (e.g., right-of-way, acquisition, design, etc.)

Route	Termini		Length (miles)	Roadway Section Type	Estimated Construction Cost	Total Estimated Improvement Cost*	Project Need Addressed	Responsible Agency
	From	To						
<b>Long Range (2021-2030)</b>								
CSAH 17 (Audubon Road)	CSAH 18	old TH 212	2.9	4-lane urban	\$8,700,000	\$14,790,000	2-4 Lane Capacity Expansion	Carver County
CSAH 17 (Powers Boulevard)	north county border	78th Street W	2.0	4-lane urban	\$6,000,000	\$10,200,000	2-4 Lane Capacity Expansion	Carver County
TH 101	north county border	TH 5	2.0	4-lane urban	\$6,000,000	\$10,200,000	2-4 Lane Capacity Expansion	Carver County
TH 101	TH 5	78th Street	1.0	4-lane urban	\$3,000,000	\$5,100,000	2-4 Lane Capacity Expansion	Carver County
TH 101	78th Street	south county border	3.4	4-lane urban	\$10,200,000	\$17,340,000	2-4 Lane Capacity Expansion	Carver County

\* Includes construction and ROW costs (e.g., right-of-way, acquisition, design, etc.)



## 7.3 Potential Transportation Funding Sources/Programs

Although the funding picture will likely fluctuate many times over the next 20 years, there are a number of funding programs available to help fund the future transportation improvements needed to meet expected growth.

Potential funding programs available to address the identified gap in future transportation investments include:

### Federal

- **Congressional High Priority Project (HPP) Funding** (*Applicability:* reconstruction, major connectivity routes, relievers for congested routes with state and county designation and appropriate functional classification)
- **Metropolitan Council STP Funds** (*Applicability:* numerous road projects that are functionally classified as ‘A’ minor arterials, as well as trail and transit projects)

### State

- **State Roads of Regional Significance Funds (from biennial bonding bills)** (*Applicability:* construction or reconstruction of county roads that address major system deficiencies, contribute to economic development, or redevelopment efforts) (i.e., CSAH 14)
- **Mn/DOT’s Local Bridge Replacement Program** (*Applicability:* county bridges with low sufficiency ratings)
- **Trunk Highway Corridor Account Loan Program (revolving loan fund)** (*Applicability:* assist in funding of trunk highway improvements, local connections, overpasses, etc.)
- **Mn/DOT’s Comprehensive Highway Safety Plan (CHSP) Central Fund** (*Applicability:* high crash sites or problem areas as identified by the Carver County Road Safety Audit)
- **Mn/DOT Safe-Route-To-School Grant Program** (*Applicability:* infrastructure or non-infrastructure projects for local trail/sidewalk system needs within two miles of schools)
- **Mn/DOT Hazard Elimination (HES) Funds** (*Applicability:* high crash sites with documented serious injury and fatalities)
- **State Aid Annual Allocation** (*Applicability:* local roadways planned to be a part of the future CSAH system) (i.e., segments of Pioneer Trail between CSAH 11 and TH 41)
- **Mn/DOT Turnback Account Funding** (*Applicability:* upgrade future Trunk Highways if transferred to the county) (i.e., TH 101/TH 284)
- **Mn/DOT Local Agreement Program** (*Applicability:* spot transportation issues such as channelization or signal projects on the state system) (i.e., TH 212 connections, intersections and frontage roads)
- **Mn/DOT Access Management Program Funding** (*Applicability:* consolidation of access points or development of access alternatives to help maximize the capacity of TH’s) (i.e., TH 212 connections, intersections and frontage roads)

### Local

- **General Obligation Bond issue** (*Applicability:* major CSAH/CR projects)
- **Carver County’s Cost Participation Policy** (*Applicability:* numerous CSAH or CR projects and possibly township roads/bridges)

- **Special Assessments** (*Applicability:* numerous CSAH or CR's where a direct benefit to adjacent properties can be demonstrated (as allowed under Minnesota Statute 429))
- **Cooperative Agreements** (*Applicability:* trail development, numerous congestion/connectivity projects mutually-desired by cities/townships)
- **County Funds** (*Applicability:* corridor preservation work in growth areas to reserve or secure right-of-way prior to the development inflating the cost of land) (i.e., match with city funds)

Private

- **Negotiated Developer Fee System** (*Applicability:* reconstruction projects, numerous connectivity routes or capacity expansion projects)
- **Infrastructure Fee System** (*Applicability:* new transportation improvement demands created by growth funded through a fee system that allocates a percentage of these fees to the county)
- **Private Sector Participation** (*Applicability:* proposed connectivity linkages and capacity expansion projects)
- **Third-Party Agreements (i.e., city, county or private developer)** (*Applicability:* CSAH/CR improvements that are impacted by the development within a city)

# **APPENDIX A**

## **AGENCY AND PUBLIC COMMENTS AND COUNTY RESPONSES**

Roadway System Plan - Comments and Recommended Responses		
Source of Comment	Comment Received	SRF Recommended Response
Public Comments	Concern about the proposed location of CR 122/24 Extension - too close to Riverpointe Park and Pond and impact on existing development in this area as well as environmental concerns. Request alternate solution be considered before implementation.	Comment noted.
BCBS Design for Health	For additional information on how to incorporate the different aspects of safety-related transportation issues, please see the Safety Information Sheet and the Comprehensive Plan Checklist at the DFH website.	Comment noted.
City of Carver	Page 17: the Transportation map does not show the access roads near TH 212 that were constructed by Mn/DOT to serve several properties. These should be added to the map.	Figures will be revised as requested.
	Page 17: Labels for new TH 212 are visible but the linework is not.	Figures will be revised as requested.
	Page 17: In transition areas, the color coding of the road network does not correspond with the legend.	Figures will be revised as requested.
City of Mayer	Figure 2 in Section 4 is inconsistent with the Mayer Comprehensive Plan. Both the City and County Transportation Plans illustrate westerly extension of West 70th Street to CR 33 with functional class re-designation of the new segment to "A" Minor Arterial (CR 30). The County plan (but not the City plan) calls for existing CR 30 to revert to a functional classification of Major Collector. In addition, that segment of current CR 30 (like TH 25 in downtown if a new alignment is constructed) would be turned back to city ownership. When appropriate, the City may want to seek a meeting with the County to further discuss turnback issues. The City may also wish to request the County adjust the legend of Figure 2 in Section 4 to illustrate the intent of the dashed line as opposed to solid lines.	Comment noted - County and City to coordinate on future turnback routes/issues. The legend of Figure 2 (Future Functional Classification) will be modified to define dashed lines as potential future roadways.
	Figure 4 in Section 4 illustrates the future trunk highway system in Carver County. The City should be aware of the trunk highway designation begin moved from 25 to 33/133. The City may wish to work with the County to proactively inform property owners in the Central Business District of the anticipated changes as a means of curbing the potential for misinformation in terms of impact on traffic volumes and business sale potential.	Comment noted - County and City to coordinate on future turnback routes/issues.
Norwood Young America	Both city and county should revise their future system plans to show the preferred alignment of CSAH 34 as identified in the TH 5 Corridor Study.	The preferred alignment for CSAH 34 as identified in the TH 5 Corridor Study will be added to all applicable figures.
City of Victoria	The Transportation Element of the Plan should acknowledge the TH 5 Corridor Study. Although the proposed realignment for CR 43 is in conceptual stage, the City strongly recommends that the road be placed as far east as possible to ensure developable area on the west side. The City owns approximately 94 acres in that area for future development and would like to be closely involved with the County as more detailed plans for the roadway move forward.	Text acknowledging the TH 5 Corridor Study and its final recommendations will be added to the Plan.

City of Watertown	<p>The City of Watertown has conducted a study for the east loop of the future county road corridor. The City and County have invested time and money into this study and the City will be adopting the route as the "locally preferred route" in the 2030 Comprehensive Plan. As development occurs to the east surrounding this corridor, it is recommended that the County integrate this preferred route as well to preserve key corridor alignment in this area with significant growth pressures.</p>	Comment noted.
	<p>CR 13 in Wright County connecting to CR 10 heading north of the city is classified as major Collector according to Wright County. Please check the classification of the segment.</p>	<p>CR 13 (from CR 25 to the north border) will be changed from a minor collector to a major collector for consistency with Wright County.</p>
	<p>Metropolitan Council has commented on the large number changes to the roadway classifications around Watertown. The City of Watertown has integrated all the changes to the County system into their Transportation Chapter. The changes will need to be forwarded to the TAC-Planning Committee for approval before they can become "official" on the Council's map.</p>	Comment noted.
	<p>With respect to population, households, and employment forecasts, the Metropolitan Development Framework of January 2008 is not accurately reflected in the County TAZ allocation table. The City's numbers should total 7,700 for population, 3,000 for households, and 1,770 for employment. This was a comment made by the Metropolitan Council.</p>	See Metropolitan Council comment #2 and response below.
Scott County	<p>Scott County's 2030 Transportation Plan identified TH 41 as a Principal Arterial in the Future Functional Classification Map due to the proposed river crossing, forecasted traffic needs, and the increasing regional importance of the connection between TH 169 and TH 212. Carver County's Future Functional Classification Map identifies TH 41 as an "A" Minor Arterial. Scott County staff recommends TH 41 be classified as a Principal Arterial from the county border to TH 212 to acknowledge this corridor's importance to the growth of both counties.</p>	<p>TH 41 (south county border to TH 212) will be shown as a Principal Arterial on the Future Functional Classification Map. In addition, the preferred TH 41 river crossing alternative will be shown on this map as well.</p>
Hennepin County	<p>Functional Classification of CR 20 should be changed from a B Minor Arterial to an A Minor Arterial for consistency with Hennepin CR 6.</p>	<p>Future functional classification of CR 20 will be revised from a B Minor Arterial to an A Minor Arterial for consistency with the adjoining Hennepin CR 6.</p>
	<p>The complete Roadway Plan contains a map of the existing Functional Classification that is clear, precise and accurate. The "Future" Classification map contains a number of roadway designations that depart from the Council's official Roadway Functional Classification Map. The County needs to request these changes through the TAC-TAB process.</p>	Comment noted.

Metropolitan Council	<p>While the complete Roadway Plan describes the TAZ forecasting process and includes a map of the TAZ system, there is no TAZ-allocation table provided in the Update. Table 4 (page 21 of the Roadway System Plan) identifies the community and County forecast totals. The numbers do not reflect the January 2008 Regional Development Framework numbers. Council staff does not recommend that the number be updated as the difference in the 2030 forecasts overall, and the impact of a revised dataset would be negligible and would not alter the results.</p>	<p>Comment noted. A TAZ allocation table will be included in the Appendix of the Plan.</p>
Mn/DOT	<p>Figure 5 of the Carver County Future Trunk Highway System: at present, money has not been set aside for the jurisdictional transfer of TH 284 and the designation realignment of TH 25. As budgets allow, Mn/DOT Metro District will continue to consider any jurisdictional transfer proposals and attempt to seize all opportunities that advance the goal of improving the efficiency of managing the highway system.</p>	<p>Comment noted.</p>
	<p>Figure 5, Carver County Recommended Future Access Spacing: it appears that there are numerous inconsistencies with the proposed access spacing and the spacing identified in Mn/DOT's Access Management Manual. Mn/DOT would welcome the opportunity to work with Carver County as Access Management Plan are refined.</p>	<p>Comment noted. The Carver County plan identifies guidelines that are more restrictive (exception/deviation) of private access along minor arterials in developing areas than in rural and/or urban core areas (subject to conditions). This is due to the fact that planning should be able to limit private access in these developing areas versus areas that have already been developed (core urban areas) and/or areas where there is no other supporting street system (rural). Mn/DOT was accepting of this approach but still welcomes the opportunity to coordinate in the future on access management, as needed.</p>
	<p>Carver County places strong important on right of way preservation and enhancement to meet the future roadway capacity needs. As Mn/DOT is currently updating its 2030 Transportation System Plan, it is important for Carver County to continue to work with Mn/DOT to ensure consistency between the Carver County Comprehensive Plan and the Mn/DOT TSP.</p>	<p>Comment noted.</p>

# **APPENDIX B**

## **ROADWAY TRAFFIC CAPACITY PLANNING-LEVEL DAILY THRESHOLDS**

## Roadway Traffic Capacity Planning-Level Daily Thresholds

Facility Type/Cross-Section	Planning Level Daily Capacity Ranges (ADT)	Carver County Daily Capacity (ADT)	Carver County Approaching Capacity (85% of ADT)
Two-lane undivided rural	14,000-15,000	15,000	12,750
Two-lane undivided urban	8,000-10,000	10,000	8,500
Two-lane divided (three-lane)	14,000-17,000	17,000	14,450
Four-lane undivided urban	18,000-22,000	22,000	18,700
Four-lane divided (five-lane)	28,000-32,000	32,000	27,200
Four-lane divided rural	35,000-38,000	38,000	32,300
Four-lane freeway	60,000-80,000	80,000	68,000
Six-lane freeway	90,000-120,000	120,000	102,000

### Definitions:

Undivided – An undivided roadway does not have a raised median separating opposing traffic or left-turn lanes for turning traffic.

Divided – A divided roadway has a raised median separating opposing traffic, left-turn lanes and right-turn lanes.

Rural – A rural design implies higher speeds, fewer cross streets/accesses and cross streets/accesses with low volumes.

Urban – An urban design implies lower speeds, more cross streets/accesses and cross streets/accesses with higher volumes.

Freeway – A freeway is a divided roadway with limited access and no traffic signals or other traffic control.

*The above table provides planning-level capacity thresholds for different roadway cross-sections. These thresholds can be used to identify existing and future capacity problems. However, because of variations in traffic as well as roadway characteristics, which do not always fall neatly into the above categories, capacity/operational issues should be confirmed through other sources if possible.*

# **APPENDIX C**

## **DETAILED BREAKDOWN OF TRANSPORTATION ANALYSIS ZONE (TAZ) INFORMATION**

**Table C-1**  
**Travel Demand Model Assumed Development Totals by County Model TAZ**

Transportation Analysis Zone		2000					2030 Constrained Growth (Regional Control Totals)					2030 Unconstrained Growth				
Regional Model	County Model	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment
125	125.1.1	259	85	10	16	26	326	125	11	32	43	326	125	11	32	43
125	125.1.2	260	86	10	16	26	327	126	11	32	43	327	126	11	32	43
125	125.1.3	259	85	9	16	25	326	125	11	31	42	326	125	11	31	42
125	125.2.1	35	15	5	7	12	39	17	5	11	16	45	19	5	16	21
125	125.2.2	35	15	5	7	12	39	17	5	11	16	45	19	5	16	21
125	125.2.3	255	84	11	15	26	321	124	11	31	42	321	124	11	31	42
126	126.1.1	184	63	8	19	27	298	121	15	54	69	497	172	15	54	69
126	126.1.2	51	17	2	5	7	81	29	2	9	11	81	30	2	9	11
126	126.1.3	62	19	0	0	0	1101	410	1	28	29	1,425	522	1	30	31
126	126.1.4	19	10	0	0	0	488	182	0	12	12	634	231	0	13	13
126	126.1.5	96	32	4	9	13	141	55	5	10	15	218	75	5	10	15
126	126.1.6	57	19	2	6	8	516	240	2	309	311	516	242	2	311	313
126	126.1.7	81	27	3	8	11	775	363	3	459	462	775	363	3	471	474
126	126.1.8	73	24	3	7	10	103	40	3	12	15	155	54	3	12	15
126	126.1.9	27	9	1	3	4	40	16	3	12	15	62	21	3	12	15
126	126.2.1	646	228	36	107	143	1,257	460	37	107	144	1,257	460	37	108	145
126	126.2.2	645	229	36	107	143	1,254	458	37	107	144	1,254	458	37	107	144
126	126.3.1	727	260	40	121	161	1,414	516	44	121	165	1,414	516	44	121	165
126	126.3.2	343	122	19	57	76	667	244	20	57	77	667	244	20	57	77
126	126.4.1	250	82	11	25	36	375	147	15	30	45	590	204	15	30	45
126	126.4.2	271	92	12	27	39	449	170	12	48	60	449	170	12	48	60
126	126.4.3	207	66	9	21	30	313	122	15	35	50	497	172	15	35	50
126	126.5.1	333	119	18	56	74	648	237	23	56	79	648	237	23	56	79
126	126.5.2	335	119	18	56	74	653	238	20	56	76	653	238	20	56	76
126	126.5.3	24	8	1	2	3	259	122	1	156	157	259	122	1	157	158
126	126.5.4	29	10	1	3	4	257	122	1	154	155	257	122	1	155	156
127	127.1	352	138	33	42	75	975	418	76	42	118	1,171	498	79	42	121
127	127.3	242	100	8	13	21	338	148	25	43	68	466	204	46	79	125
127	127.2.1	361	119	0	5	5	524	204	0	25	25	524	204	0	25	25
127	127.2.2	70	29	5	6	11	337	154	8	8	16	690	300	11	10	21
127	127.2.3	34	14	7	11	18	77	34	10	15	25	134	58	13	19	32
127	127.4.1	246	82	0	3	3	2450	888	1	29	30	3,138	1,119	1	30	31
127	127.4.2	202	61	0	0	0	655	250	23	6	29	797	304	24	6	30
127	127.4.3	348	115	0	4	4	506	196	0	25	25	506	196	0	25	25
128	128.3	1,858	728	188	973	1,161	2,727	1,119	558	1810	2368	2,821	1,144	558	1810	2368
128	128.1.1	1,577	618	173	892	1,065	3480	1470	486	1598	2084	3685	1524	486	1598	2084
128	128.1.2	281	110	35	177	212	617	260	90	300	390	653	270	90	300	390
128	128.2.1	197	66	2	26	28	1308	513	3	58	61	1654	641	3	60	63
128	128.2.2	0	0	0	0	0	1681	668	4	74	78	2205	859	4	79	83
128	128.2.3	61	21	0	9	9	435	171	1	19	20	551	214	1	20	21
128	128.2.4	71	24	0	10	10	507	200	1	22	23	643	250	1	23	24
128	128.2.5	230	77	2	30	32	341	132	30	30	60	412	162	36	30	66
128	128.4.1	434	145	5	56	61	751	293	12	224	236	957	373	14	258	272
128	128.4.2	140	47	1	19	20	243	95	3	72	75	309	121	4	83	87
128	128.4.3	149	50	1	20	21	255	100	3	76	79	324	126	4	87	91
128	128.5.1	1,255	492	129	672	801	3,299	1,406	376	2682	3058	3,519	1,464	376	2682	3058

**Table C-1**  
**Travel Demand Model Assumed Development Totals by County Model TAZ**

Transportation Analysis Zone		2000					2030 Constrained Growth (Regional Control Totals)					2030 Unconstrained Growth				
Regional Model	County Model	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment
128	128.5.2	181	71	20	98	118	486	207	57	398	455	519	216	57	398	455
128	128.5.3	254	100	28	132	160	681	291	80	553	633	727	303	80	553	633
128	128.5.4	96	38	9	53	62	248	286	9	202	211	265	301	9	202	211
128	128.5.5	72	28	6	41	47	193	82	21	161	182	206	86	21	161	182
128	128.6.1	938	290	14	98	112	2116	817	41	2037	2078	2243	850	41	2037	2078
128	128.6.2	304	94	4	32	36	676	261	13	644	657	716	271	13	644	657
129	129.5	538	206	53	47	100	1000	400	53	117	170	1000	400	53	117	170
129	129.1.1	6	2	1	0	1	20	9	3	2	5	20	9	3	2	5
129	129.1.2	80	24	1	3	4	191	71	1	16	17	191	71	1	16	17
129	129.1.3	45	14	0	2	2	107	40	1	7	8	107	40	1	7	8
129	129.1.4	37	11	0	2	2	87	33	1	6	7	87	33	1	6	7
129	129.1.5	770	290	15	35	50	2674	1224	32	45	77	2674	1224	32	45	77
129	129.2.1	308	116	19	105	124	1070	490	40	149	189	1070	490	40	149	189
129	129.2.2	279	105	46	332	378	970	444	102	476	578	970	444	102	476	578
129	129.2.3	337	127	68	456	524	1171	535	143	658	801	1171	535	143	659	802
129	129.3.1	1,043	393	53	190	243	3623	1658	103	270	373	3623	1658	103	270	373
129	129.3.2	50	19	30	25	55	174	80	53	30	83	174	80	53	30	83
129	129.3.3	322	121	12	165	177	1119	512	27	242	269	1119	512	27	242	269
129	129.4.1	230	69	4	5	9	546	205	4	41	45	546	205	4	41	45
129	129.4.2	15	5	0	5	5	47	21	13	12	25	47	21	13	12	25
129	129.4.3	312	108	31	29	60	1003	459	31	239	270	1003	459	31	239	270
129	129.4.4	113	34	1	3	4	269	101	2	21	23	269	101	2	21	23
130	130.3	602	197	6	186	192	602	218	10	202	212	602	218	10	202	212
130	130.1.1	251	82	2	78	80	251	91	4	84	88	251	91	4	84	88
130	130.1.2	87	28	0	28	28	87	31	1	29	30	87	31	1	29	30
130	130.2.1	174	58	0	0	0	1624	582	0	0	0	1624	582	0	0	0
130	130.2.2	156	61	0	0	0	1453	605	0	0	0	1453	605	0	0	0
130	130.2.3	125	49	11	50	61	1169	489	50	80	130	1169	489	50	80	130
130	130.2.4	63	25	12	37	49	585	244	50	55	105	585	244	50	55	105
130	130.2.5	60	23	0	0	0	556	233	0	0	0	556	233	0	0	0
130	130.2.6	434	169	25	76	101	4053	1687	100	115	215	4053	1687	100	115	215
131	131.1.1	52	17	0	0	0	205	63	10	20	30	205	63	10	20	30
131	131.1.10	70	23	0	0	0	275	84	10	20	30	275	84	10	20	30
131	131.1.2	11	4	0	0	0	286	110	0	0	0	286	110	0	0	0
131	131.1.3	12	4	0	0	0	520	200	250	500	750	520	200	250	500	750
131	131.1.4	0	0	0	3	3	0	0	800	400	1200	0	0	800	400	1200
131	131.1.5	74	24	0	0	0	291	89	5	20	25	291	89	5	20	25
131	131.1.6	25	8	0	0	0	99	30	5	25	30	99	30	5	25	30
131	131.1.7	69	23	0	0	0	271	139	5	25	30	271	139	5	25	30
131	131.1.8	66	22	0	0	0	260	135	5	25	30	260	135	5	25	30
131	131.1.9	51	17	0	0	0	198	61	4	21	25	198	61	4	21	25
132	132.1.1	462	152	0	0	0	508	165	0	0	0	508	165	0	0	0
132	132.1.2	50	16	0	3	3	55	18	0	3	3	55	18	0	3	3
132	132.2.1	201	72	0	0	0	201	72	0	8	8	201	72	0	8	8
132	132.2.10	29	9	0	0	0	2558	984	50	50	100	2558	984	50	50	100
132	132.2.11	0	0	0	0	0	367	141	0	50	50	367	141	0	50	50

**Table C-1**  
**Travel Demand Model Assumed Development Totals by County Model TAZ**

Transportation Analysis Zone		2000					2030 Constrained Growth (Regional Control Totals)					2030 Unconstrained Growth				
Regional Model	County Model	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment
132	132.2.12	9	3	0	0	0	169	65	15	0	15	169	65	15	0	15
132	132.2.13	19	6	0	0	0	1193	459	0	0	0	1193	459	0	0	0
132	132.2.14	36	12	0	0	0	2447	941	50	150	200	2447	941	50	150	200
132	132.2.15	32	10	0	0	0	2145	825	0	0	0	2145	825	0	0	0
132	132.2.2	21	7	0	0	0	41	14	0	4	4	41	14	0	4	4
132	132.2.3	22	7	0	26	26	1472	566	25	26	51	1472	566	25	26	51
132	132.2.4	13	4	0	15	15	20	7	0	15	15	20	7	0	15	15
132	132.2.5	29	9	0	34	34	1446	556	750	200	950	1446	556	750	200	950
132	132.2.6	31	10	0	0	0	41	14	0	4	4	41	14	0	4	4
132	132.2.7	21	7	0	25	25	1170	450	25	50	75	1170	450	25	50	75
132	132.2.8	13	4	0	0	0	720	277	0	0	0	720	277	0	0	0
132	132.2.9	34	11	0	0	0	1230	473	0	0	0	1230	473	0	0	0
133	133.1	367	121	0	35	35	440	170	3	47	50	440	170	3	48	51
134	134.11	172	43	0	10	10	680	282	0	173	173	751	300	0	173	173
134	134.5	26	9	0	10	10	680	282	0	173	173	50	15	0	10	10
134	134.3.1	153	50	2	9	11	5090	1854	25	25	50	7,531	2,599	367	142	509
134	134.3.2	59	19	3	11	14	1103	401	75	50	125	2,901	1,001	514	171	685
134	134.3.3	2	1	0	1	1	89	37	0	23	23	10	5	30	20	50
134	134.4.1	112	36	0	0	0	4965	1805	50	25	75	4,950	1,800	50	25	75
134	134.4.2	0	0	0	0	0	4814	1754	50	50	100	4,800	1,750	50	50	100
134	134.4.3	41	14	9	26	35	1780	652	475	175	650	1,775	650	475	175	650
134	134.4.4	20	6	11	33	44	827	301	225	650	875	825	300	225	650	875
134	134.4.5	27	9	10	29	39	903	326	275	1450	1725	900	325	275	1,450	1725
134	134.4.6	2	1	0	1	1	953	351	325	125	450	950	350	325	125	450
135	135.1	733	221	82	528	610	903	326	200	528	728	900	325	200	528	728
135	135.2	789	238	0	7	7	1931	702	0	15	15	1,925	700	0	15	15
135	135.3	1,451	438	9	60	69	2282	827	9	60	69	2,275	825	9	60	69
135	135.4	23	7	4	30	34	75	30	5	30	35	75	30	5	30	35
135	135.5	418	279	13	90	103	1178	426	15	100	115	1,175	425	15	100	115
135	135.6	611	184	1	13	14	953	351	5	15	20	950	350	5	15	20
136	136.1	803	296	3	30	33	1399	722	4	45	49	1399	722	4	45	49
136	136.2	355	131	3	20	23	561	278	4	85	89	561	278	4	85	89
136	136.3	704	190	3	24	27	705	321	4	30	34	705	321	4	30	34
136	136.4	309	114	4	103	107	1279	463	4	104	108	1279	463	4	104	108
136	136.5	31	11	3	34	37	56	28	4	50	54	56	28	4	50	54
137	137.1	654	188	5	57	62	800	274	5	57	62	800	274	5	57	62
137	137.2	93	27	5	20	25	320	260	5	20	25	320	260	5	20	25
137	137.3	593	171	5	53	58	1422	783	5	53	58	1422	783	5	53	58
138	138.1	1,266	385	8	30	38	1800	911	9	71	80	1800	911	9	71	80
138	138.2	1,055	410	8	32	40	1500	971	9	76	85	1500	971	9	76	85
138	138.3	0	0	8	55	63	0	0	9	124	133	0	0	9	124	133
139	139.1	3,061	1,150	82	81	163	3061	1150	82	81	163	3061	1150	82	81	163
139	139.2	2,712	1,019	426	414	840	3076	1090	427	414	841	3076	1090	427	414	841
139	139.3	4	1	685	663	1,348	22	8	685	663	1,348	22	8	685	663	1,348
140	140.1	1,383	411	0	31	31	1597	569	0	55	55	1597	569	0	55	55
140	140.2	246	73	0	5	5	448	156	0	11	11	448	156	0	11	11

**Table C-1**  
**Travel Demand Model Assumed Development Totals by County Model TAZ**

Transportation Analysis Zone		2000					2030 Constrained Growth (Regional Control Totals)					2030 Unconstrained Growth				
Regional Model	County Model	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment
141	141.1	1,307	485	1	161	162	1813	557	2	161	163	1813	557	2	161	163
141	141.2	1,692	628	27	1,808	1,835	2347	723	27	1,808	1,835	2347	723	27	1,808	1,835
142	142.1	712	197	4	72	76	1529	464	5	906	911	1529	464	5	906	911
142	142.2	1,578	434	13	215	228	2403	731	37	575	612	2403	731	37	575	612
142	142.3	77	22	88	1,590	1,678	118	35	146	2292	2438	118	35	146	2,292	2438
143	143.1.1	413	179	0	185	185	420	200	25	1364	1389	420	200	25	1,364	1389
143	143.1.2	0	0	0	185	185	0	0	19	239	258	0	0	19	239	258
144	144.1	632	184	13	8	21	1921	633	15	164	179	1,921	633	15	164	179
144	144.2	179	52	32	21	53	2220	841	33	149	182	2,220	841	33	149	182
144	144.3	14	4	6	5	11	16	5	6	12	12	16	5	6	6	12
145	145.1	83	29	4	6	10	1354	431	38	648	686	1,354	431	38	648	686
145	145.2	140	48	17	25	42	1800	680	68	719	787	1,800	680	68	719	787
145	145.3	28	10	71	114	185	58	20	72	290	362	58	20	72	290	362
146	146.1	99	32	0	0	0	2100	807	160	633	793	2,100	807	160	633	793
146	146.2	99	32	0	0	0	1855	689	17	81	98	1,855	689	17	81	98
147	147.1	0	0	34	1,911	1,945	0	0	34	1,911	1,945	0	0	199	2,493	2,692
147	147.2.1	386	137	0	0	0	615	263	0	0	0	615	263	0	0	0
147	147.2.2	0	0	9	412	421	0	0	21	560	581	0	0	21	561	582
147	147.2.3	0	0	9	413	422	0	0	89	413	502	0	0	175	413	588
147	147.3.1	25	9	0	0	0	46	21	0	0	0	46	21	0	0	0
147	147.3.2	25	9	0	0	0	31	13	0	0	0	31	13	0	0	0
147	147.3.3	349	124	0	0	0	845	396	0	0	0	845	396	0	0	0
147	147.3.4	182	65	6	299	305	262	109	11	408	419	262	109	11	409	420
147	147.4.1	0	0	0	9	9	0	0	7	9	16	0	0	7	9	16
147	147.4.2	271	96	0	0	0	679	320	0	819	819	679	320	0	820	820
148	148.1	174	55	0	17	17	424	192	7	17	24	424	192	7	17	24
148	148.4	21	10	0	5	5	219	84	0	5	5	759	305	0	5	5
148	148.2.1	0	0	4	371	375	53	29	4	371	375	53	29	15	433	448
148	148.2.2	0	0	17	1,293	1,310	90	50	17	1,293	1,310	90	50	40	1,528	1,568
148	148.2.3	0	0	4	371	375	104	58	4	371	375	104	58	15	433	448
148	148.2.4	0	0	17	1,293	1,310	114	62	17	1,293	1,310	114	62	42	1,522	1,564
148	148.2.5	0	0	4	371	375	36	19	11	437	448	36	19	11	438	449
148	148.3.1	143	47	0	16	16	272	117	8	16	24	272	117	8	16	24
148	148.3.2	143	47	0	17	17	210	83	7	17	24	210	83	7	17	24
148	148.3.3	143	46	0	17	17	397	185	5	17	22	397	185	5	17	22
148	148.3.4	144	46	0	16	16	352	159	0	18	18	352	159	0	19	19
149	149.3	165	56	0	0	0	165	56	30	2034	2064	1,932	690	300	5,300	5600
149	149.1.1	283	96	0	0	0	284	96	0	0	0	562	201	0	0	0
149	149.1.2	71	24	0	0	0	72	24	0	0	0	124	44	0	35	35
149	149.2.1	139	47	0	21	21	847	318	35	24	59	2,506	895	115	50	165
149	149.2.2	139	47	0	16	16	139	47	60	375	435	4,200	1,500	150	1,245	1395
150	150.6	746	273	5	12	17	818	312	9	43	52	818	312	9	44	53
150	150.1.1	0	0	6	7	13	0	0	67	17	84	0	0	67	18	85
150	150.1.2	0	0	3	5	8	0	0	67	633	700	0	0	67	634	701
150	150.2.1	703	257	5	2	7	771	294	28	90	118	771	294	28	91	119
150	150.2.2	2,105	770	0	16	16	2,313	884	1	38	39	2,313	884	1	39	40

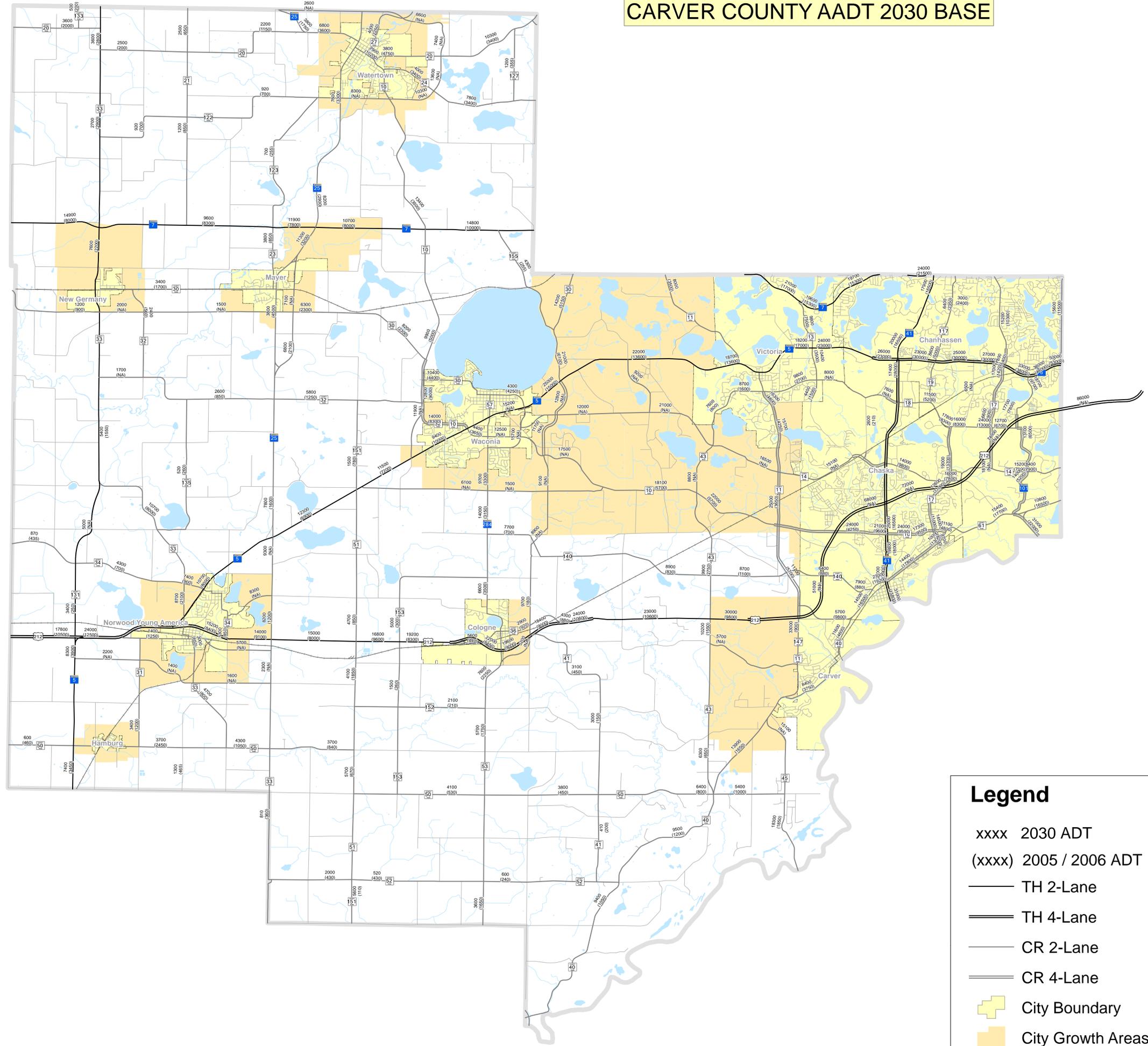
**Table C-1**  
**Travel Demand Model Assumed Development Totals by County Model TAZ**

Transportation Analysis Zone		2000					2030 Constrained Growth (Regional Control Totals)					2030 Unconstrained Growth				
Regional Model	County Model	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment	Population	Households	Retail Employment	Non-retail Employment	Total Employment
150	150.3.1	276	101	0	12	12	303	116	1	15	16	303	116	1	16	17
150	150.3.2	511	187	0	11	11	560	214	3	13	16	560	214	3	14	17
150	150.4.1	120	44	0	0	0	132	50	1	75	76	132	50	1	76	77
150	150.4.2	244	89	0	0	0	267	102	0	3	3	267	102	0	3	3
150	150.4.3	120	44	0	0	0	132	50	0	4	4	132	50	0	4	4
150	150.5.1	501	183	0	9	9	549	209	0	13	13	549	209	0	13	13
150	150.5.2	273	99	0	18	18	299	113	1	26	27	299	113	1	26	27
151	151.1	1,563	541	159	206	365	1,908	730	192	349	541	1,908	730	192	350	542
151	151.2	1,947	674	108	117	225	2,372	907	120	214	334	2,372	907	120	214	334
151	151.3	2,297	795	210	195	405	2,806	1,074	259	343	602	2,806	1,074	259	343	602
152	152.1	256	77	0	0	0	457	187	0	0	0	457	187	0	0	0
152	152.3	309	93	21	217	238	713	314	123	217	340	713	314	123	217	340
152	152.2.1	149	45	6	119	125	411	188	61	119	180	411	188	61	119	180
152	152.2.2	146	44	0	0	0	299	105	0	0	0	1,486	778	0	0	0
153	153.1	873	287	288	609	897	898	301	288	637	925	898	301	288	646	934
153	153.2	1,252	412	18	391	409	1,529	564	143	447	590	1,529	564	143	447	590
154	154.1	628	263	200	215	415	785	375	200	770	970	785	375	200	770	970
155	155.1	34	13	31	49	80	5673	2147	50	50	100	5,673	2,147	50	50	100
155	155.2	122	47	0	11	11	5668	2147	80	20	100	5,668	2,147	80	20	100
156	156.1.1	253	92	18	39	57	1196	460	50	110	160	1196	460	50	110	160
156	156.1.2	380	137	0	0	0	1349	519	0	0	0	1349	519	0	0	0
156	156.1.3	316	115	9	21	30	733	282	9	21	30	733	282	9	21	30
156	156.1.4	19	7	0	0	0	650	250	10	0	10	650	250	10	0	10
156	156.1.5	190	69	18	39	57	190	69	18	39	57	190	69	18	39	57
156	156.2.1	6	2	7	25	32	333	128	7	25	32	333	128	7	25	32
156	156.2.2	101	37	0	0	0	101	37	5	5	10	101	37	5	5	10
1168	133.2	243	83	0	5	5	243	83	0	5	5	243	83	0	5	5
1169	133.3.1	294	98	0	10	10	512	207	1	29	30	512	207	1	29	30
1170	133.3.2	351	112	0	15	15	445	170	1	24	25	445	170	1	24	25
1171	134.1	136	33	1	18	19	1387	489	4	208	212	136	33	5	20	25
1171	134.2	0	0	0	10	10	0	0	0	10	10	0	0	0	10	10
1171	134.6	72	9	0	1	1	374	109	0	6	6	406	116	0	6	6
1171	134.7	72	9	0	1	1	374	109	0	6	6	406	116	0	6	6
1172	134.10	3	1	0	1	1	25	10	30	23	53	25	10	30	25	55
1172	134.8.1	162	38	1	14	15	1897	685	1	80	81	2084	726	1	80	81
1172	134.8.2	131	31	1	11	12	1550	561	1	64	65	1703	594	1	64	65
1172	134.9.1	188	44	1	16	17	2206	797	1	92	93	2424	845	1	92	93
1172	134.9.2	17	4	0	1	1	206	75	0	8	8	227	79	0	8	8
1172	134.9.3	88	21	1	8	9	1034	374	1	44	45	1136	396	1	44	45
Portion of Chanhassen located in Hennepin County																
558	558	0	0	247	178	425	0	0	250	450	700	0	0	250	450	700
561	561	0	0	0	505	505	0	0	0	1000	1000	0	0	0	1,000	1,000

# **APPENDIX D**

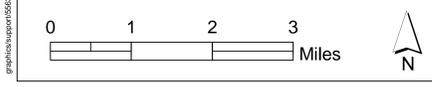
**FUTURE 2030 AADT FORECAST MAPS (5 SCENARIOS)**

# CARVER COUNTY AADT 2030 BASE

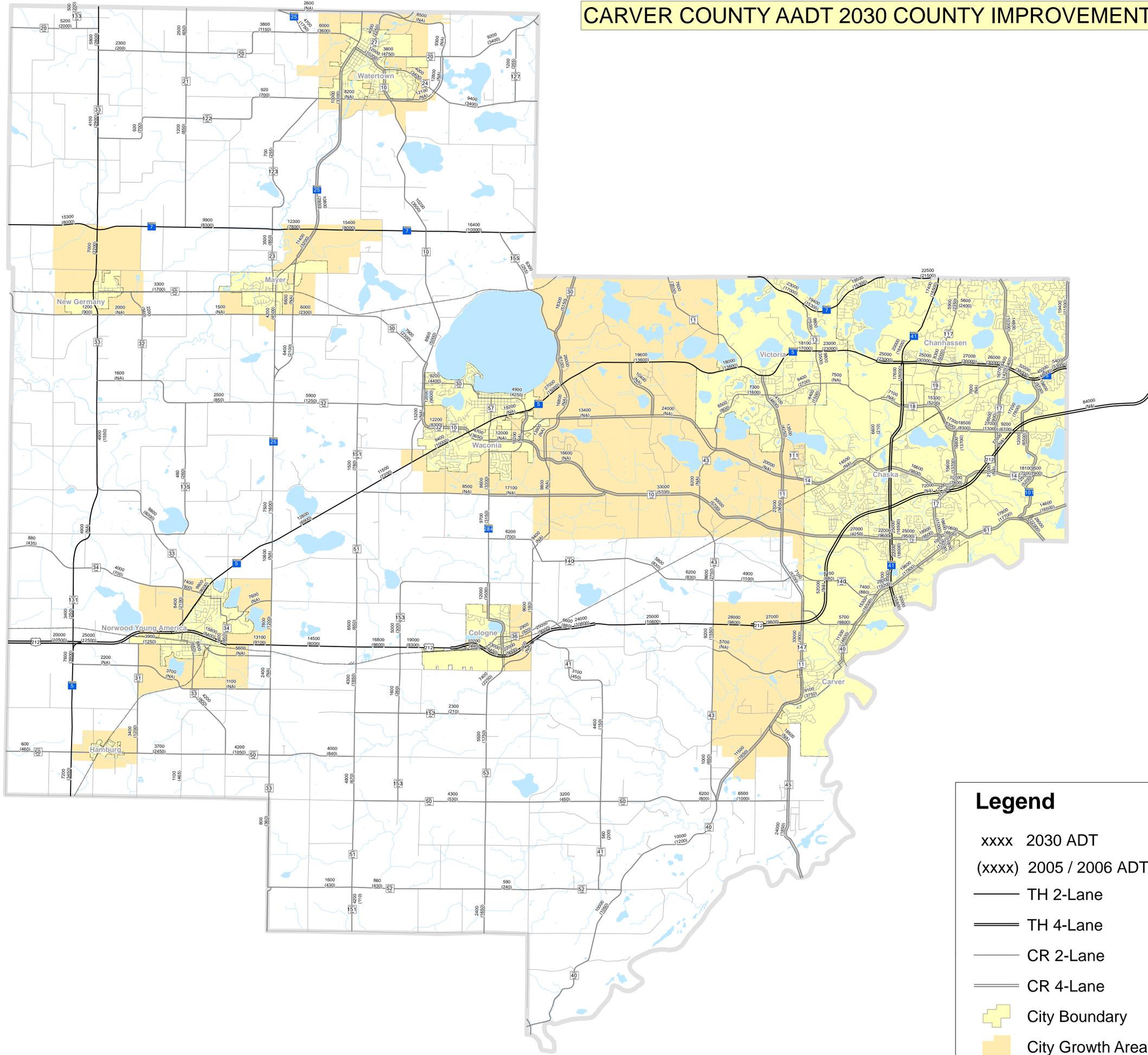


**Legend**

- xxxx 2030 ADT
- (xxxx) 2005 / 2006 ADT
- TH 2-Lane
- == TH 4-Lane
- CR 2-Lane
- == CR 4-Lane
- City Boundary
- City Growth Areas 2030

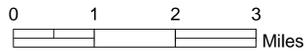


# CARVER COUNTY AADT 2030 COUNTY IMPROVEMENTS

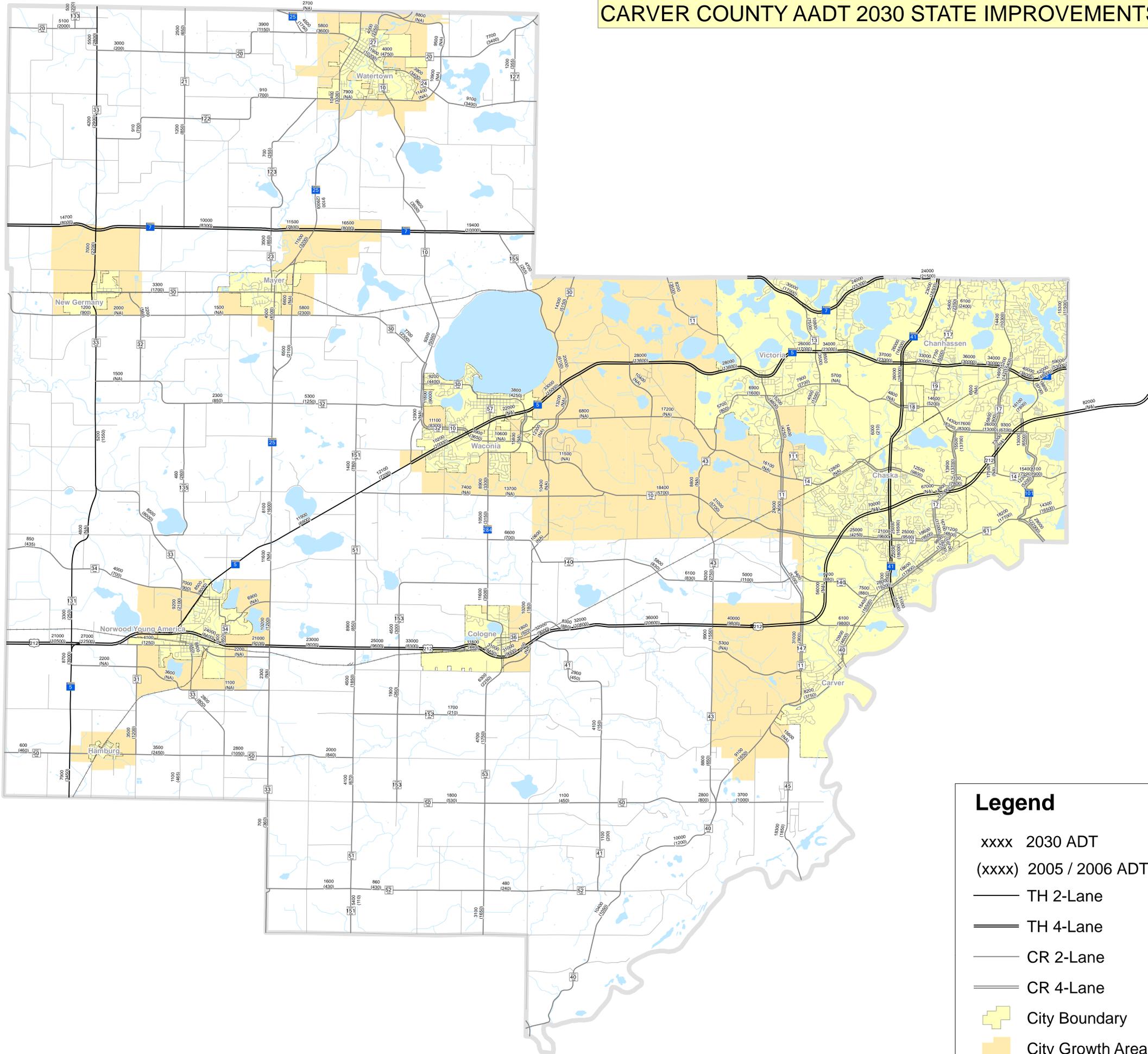


### Legend

- xxxx 2030 ADT
- (xxxx) 2005 / 2006 ADT
- TH 2-Lane
- == TH 4-Lane
- CR 2-Lane
- == CR 4-Lane
- ⬜ City Boundary
- City Growth Areas 2030

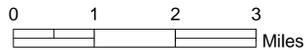


# CARVER COUNTY AADT 2030 STATE IMPROVEMENTS

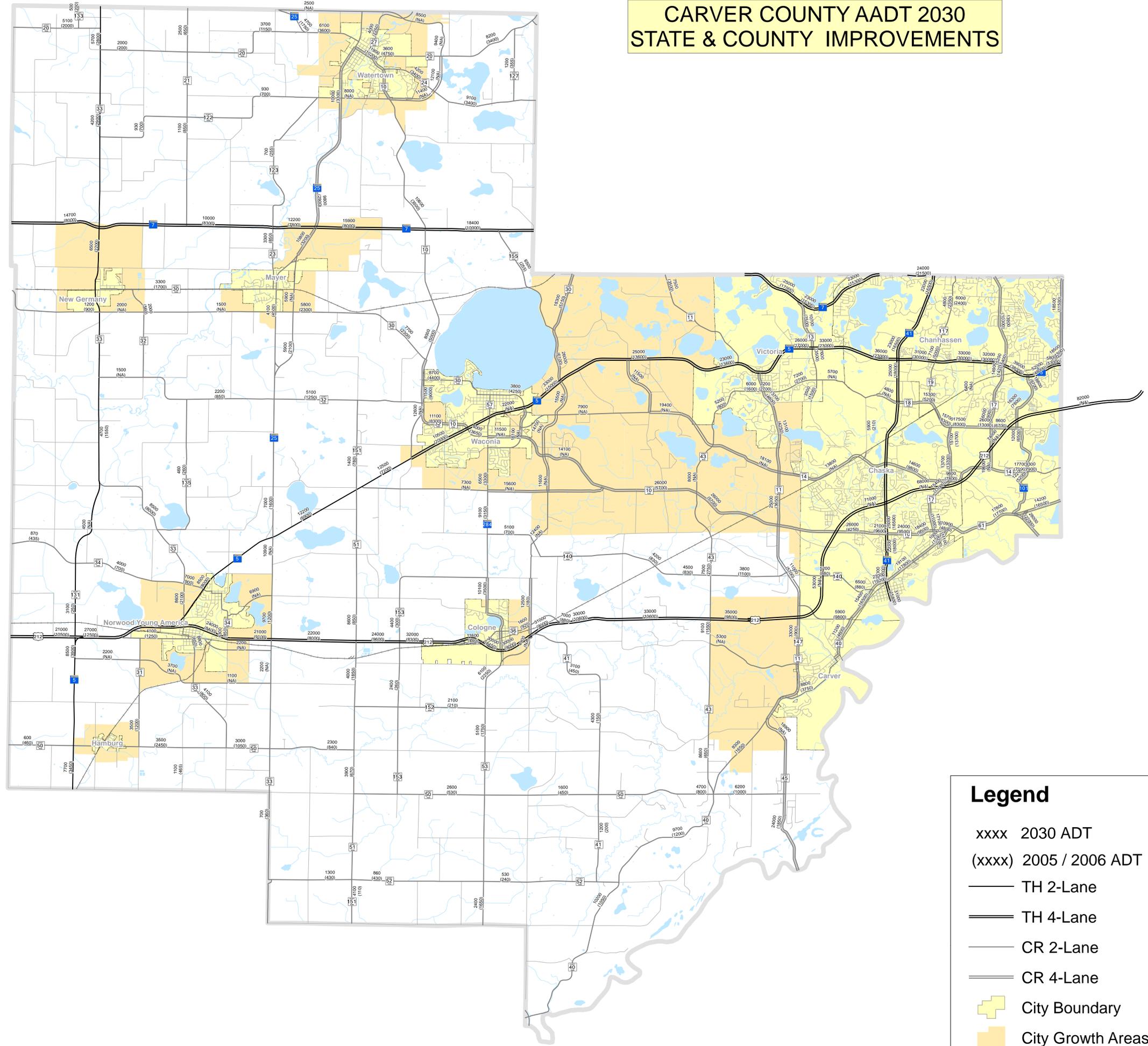


**Legend**

- xxxx 2030 ADT
- (xxxx) 2005 / 2006 ADT
- TH 2-Lane
- == TH 4-Lane
- CR 2-Lane
- == CR 4-Lane
- City Boundary
- City Growth Areas 2030

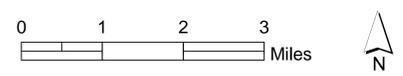


# CARVER COUNTY AADT 2030 STATE & COUNTY IMPROVEMENTS

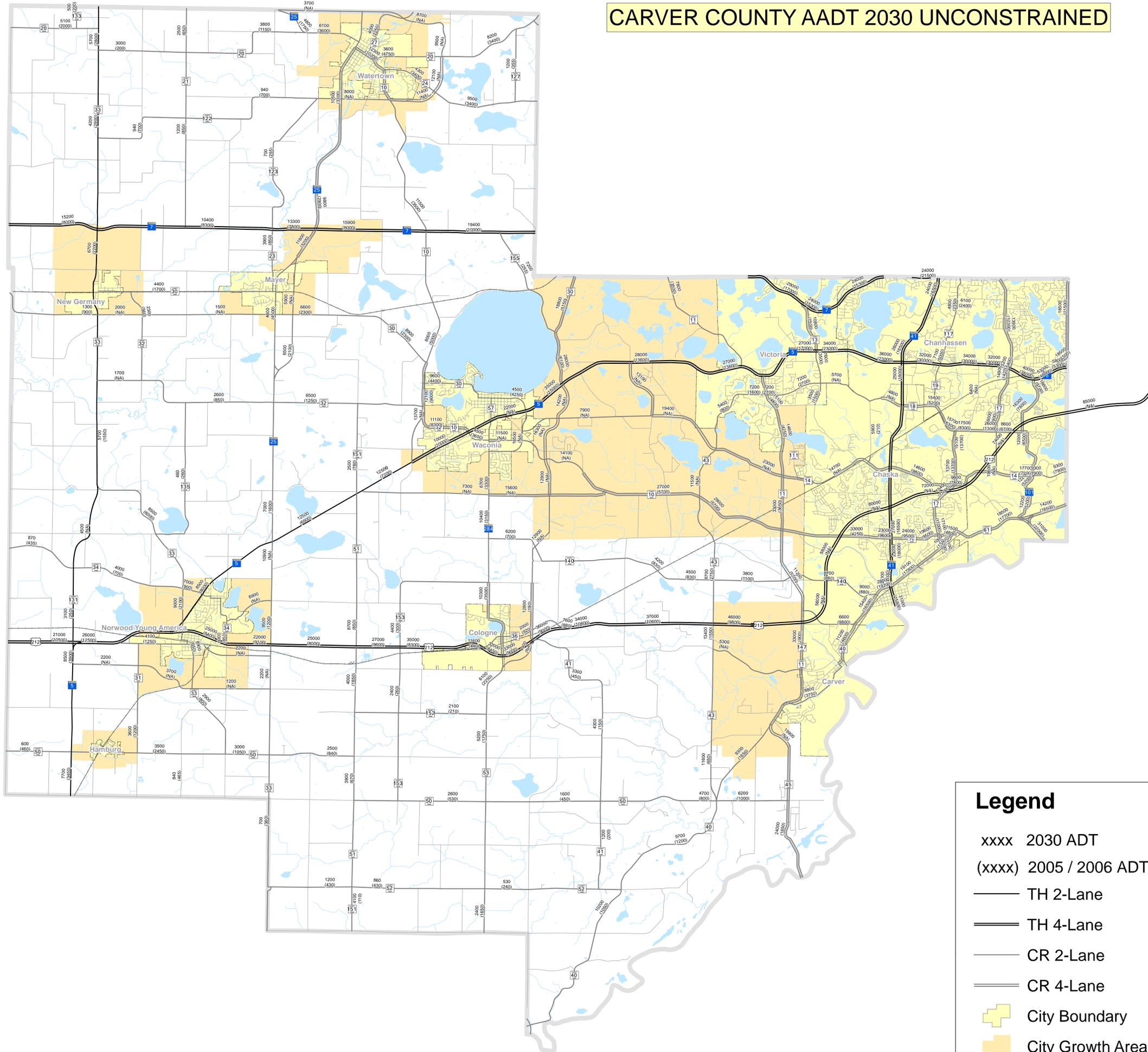


### Legend

- xxxx 2030 ADT
- (xxxx) 2005 / 2006 ADT
- TH 2-Lane
- TH 4-Lane
- CR 2-Lane
- CR 4-Lane
- City Boundary
- City Growth Areas 2030

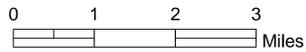


# CARVER COUNTY AADT 2030 UNCONSTRAINED



### Legend

- xxxx 2030 ADT
- (xxxx) 2005 / 2006 ADT
- TH 2-Lane
- == TH 4-Lane
- CR 2-Lane
- == CR 4-Lane
- City Boundary
- City Growth Areas 2030



# **APPENDIX E**

**METROPOLITAN COUNCIL FUNCTIONAL CLASSIFICATION CRITERIA  
(FROM 2030 TRANSPORTATION POLICY PLAN – APPENDIX F)**

**TABLE D-1  
FUNCTIONAL CLASSIFICATION SYSTEM CRITERIA FOR THE TWIN CITIES REGION**

Criterion	Principal Arterial			
	Freeway		Other Principal Arterial	
	Urban	Rural	Urban	Rural
<b>Place Connections</b>	Interconnect the metro centers and regional business concentrations, important transportation terminals and large institutional facilities within the MUSA (see Figure F-1).	Connect the MUSA with urban areas and major cities in Minnesota and other states.	Interconnect the metro centers and regional business concentrations with important transportation terminals and large institutional facilities within the MUSA.	Connect the MUSA with major cities in Minnesota and other states.
<b>Spacing</b>	Fully developed area: 2-3 miles Developing area: 3-6 miles	Permanent Rural and Agricultural Areas: 6-12 miles (radial only).	Fully developed area: 2-3 miles Developing area: 3-6 miles	Permanent Rural and Agricultural Areas: 6-12 miles (radial only)
<b>Management</b>	Maintain at least 40 mph average speed during peak-traffic periods.	Retain ability to meet urban speed objective if and when area urbanizes.	Maintain at least 40 mph average speed during peak-traffic periods.	Retain ability to meet urban speed objective if and when area urbanizes.
<b>System Connections and Access Spacing*</b>	To other interstate freeways, other principal arterials and selected minor arterials. Connections between principal arterials should be of a design type which does not require vehicles to stop. Access at distances of 1-2 miles.	To other interstate freeways, principal arterials, selected minor arterials and major collectors. Access at distances of 2-6 miles.	To interstate freeways, other principal arterials, selected minor arterials and selected collectors. Connections between principal arterials should be of a design type which does not require vehicles to stop. Intersections should be limited to one-half mile with 1-2 miles desired.	To interstate freeways, other principal arterials, selected minor arterials and selected major collectors. Intersections should be limited to several miles.
<b>Trip-Making Service</b>	Trips greater than 8 miles with at least 5 continuous miles on principal arterials. Express transit trips.		Trips greater than 8 miles with at least 5 continuous miles on principal arterials. Express transit trips.	
<b>Mobility vs. Land Access*</b>	Emphasis is placed on mobility rather than land access. No direct land access should be allowed.	Emphasis is placed on mobility rather than land access. No direct land access should be allowed.	Greater emphasis is placed on mobility than on land access. Little or no direct land access within the urban area.	Greater emphasis is placed on mobility than on land access. Little or no direct land access.

\* The key objective is stated under "Management" heading in this table.

**TABLE D-1  
FUNCTIONAL CLASSIFICATION SYSTEM CHARACTERISTICS FOR THE TWIN CITIES REGION**

Characteristics	Principal Arterial			
	Freeway		Other Principal Arterial	
	Urban	Rural	Urban	Rural
<b>System Mileage</b>	Suggested limits for interstate and other principal arterials at 5-10 percent of system.	Suggested limits for interstate and other principal arterials at 2-4 percent of system.	See "Freeway."	See "Freeway."
<b>Percent of Travel - VMT</b>	Suggested limits for interstate and other principal arterials at 40-65 percent of system.	Suggested limits for interstate and other principal arterials at 30-55 percent of system.	See "Freeway."	See "Freeway."
<b>Intersections</b>	Grade separated.	Grade separated.	Grade separated desirable. At a minimum, high-capacity controlled at-grade intersections.	Grade separated desirable. At a minimum, high capacity controlled at-grade intersections.
<b>Parking</b>	None.	None.	None.	None.
<b>Large Trucks</b>	No restrictions.	No restrictions.	No restrictions.	No restrictions.
<b>Management Tools</b>	Ramp metering, Preferential treatment for transit, Interchange spacing.	Interchange spacing.	Ramp metering, preferential treatment for transit, access control, median barriers, traffic signal progression, staging of reconstruction, intersection spacing.	Interchange spacing, access control, intersections spacing.
<b>Vehicles Carried</b>	25,000 - 200,000	5,000 - 50,000	15,000 - 100,000	2,500 - 25,000
<b>Posted Speed Limit</b>	45-55 mph	55-65 mph	40-50 mph	Legal limit
<b>Right-of-Way</b>	300 feet	300 feet	100-300 feet	100-300 feet
<b>Transit Accommodations</b>	Priority access and movement for transit in peak periods where needed.	None	Priority access and movement for transit in peak periods where possible and needed	None

**TABLE D-1  
FUNCTIONAL CLASSIFICATION SYSTEM CRITERIA FOR THE TWIN CITIES REGION**

Criterion	Minor Arterial (“A” or “B”)	
	Urban	Rural
<b>Place Connections</b>	Provide supplementary connections to metro centers and regional business concentrations within the MUSA. Provide interconnection of major traffic generators within the metro centers and regional business concentrations.	Connect the MUSA with cities and towns in Minnesota outside the Twin Cities region. Interconnect rural growth centers inside the Twin Cities region and comparable places near the Twin Cities region.
<b>Spacing</b>	Metro centers and regional business concentrations: ¼ - ¾ mile Fully developed area: ½ miles Developing area: 1-2 miles	Permanent Rural and Agricultural Areas: As needed, in conjunction with the major collectors, to provide adequate interconnection of places identified in “Place Connections” criterion.
<b>System Connections</b>	To most interstate freeways and other principal arterials, other minor arterials and collectors and some local streets.	To most interstate freeways and other principal arterials, other minor arterials and collectors and some local streets.
<b>Trip-Making Service</b>	Medium to short trips (2-6 miles depending on development density) at moderate speeds. Longer trips accessing the principal arterial network. Local and limited-stop transit trips.	
<b>Management</b>	Maintain the following minimum average speed during peak-traffic periods: Metro centers and regional business concentrations: 15 mph Fully developed area: 20 mph Developing area: 30 mph	Retain ability to meet urban speed objective if and when area urbanizes.
<b>Mobility vs. Land Access*</b>	Emphasis on mobility rather than on land access. Direct land access within the MUSA restricted to concentrations of commercial/industrial land uses.	Emphasis on mobility rather than on land access.

\* The key objective is stated under “Management” heading in this table.

**TABLE D-1  
FUNCTIONAL CLASSIFICATION SYSTEM CHARACTERISTICS FOR THE TWIN CITIES REGION**

Characteristics	Minor Arterial (“A” or “B”)	
	Urban	Rural
<b>System Mileage</b>	Suggested limits for principal arterials and minor arterials at 15-25 percent of system.	Suggested limits for principal arterials and minor arterials at 6-12 percent of system.
<b>Percent of Vehicle Miles Traveled</b>	Suggested limits for principal arterials and minor arterials at 65-80 percent of system.	Suggested limits for principal arterials and minor arterials at 45-75 percent of system.
<b>Intersections</b>	Traffic signals and cross street stops.	Cross street stops.
<b>Parking</b>	Restricted as necessary.	Restricted as necessary.
<b>Large Trucks</b>	Restricted as necessary.	Restricted as necessary.
<b>Management Tools</b>	Traffic signal progression and spacing, land access management/control, preferential treatment for transit.	Land access management/control.
<b>Vehicles Carried</b>	5,000-30,000	1,000-10,000
<b>Posted Speed Limit</b>	35-45 mph	Legal limit
<b>Right-of-Way</b>	60-150 feet	60-150 feet
<b>Transit Accommodations</b>	Preferential treatment where needed.	None.

**TABLE D-1  
FUNCTIONAL CLASSIFICATION SYSTEM CRITERIA FOR THE TWIN CITIES REGION**

Criterion	Collector		Local	
	Urban	Rural	Urban	Rural
<b>Place Connections</b>	Interconnect neighborhoods and minor business concentrations within the MUSA. Provide supplementary interconnection of major generators within the metro centers and regional business concentrations.	Provide supplementary interconnection among rural growth centers inside the Twin Cities region and comparable places near the Twin Cities region.	Interconnect blocks within residential neighborhoods and land parcels within commercial/ industrial developments.	
<b>Spacing</b>	Metro centers and regional business concentrations: 1/8-1/2 mile Fully developed area: ¼ - ¾ mile Developing area: ½-1 mile	Permanent Rural and Agricultural Areas: As needed in conjunction with minor arterials, to provide adequate interconnection of places identified in “Place Connections” criterion. In addition, minor collectors should be designated at an average spacing of not less than 4 miles.	As needed to access land uses.	As needed to access land uses.
<b>System Connections and Access Spacing*</b>	Sometimes to interstate freeways and other principal arterials. To minor arterials, other collectors and local streets.	To minor arterials, other collectors and local streets.	To a few minor arterials. To collectors and other local streets.	To a few minor arterials. To collectors and local roads.
<b>Trip-Making Service</b>	Short trips (1-4 miles depending on development density) at low to moderate speeds. Longer trips accessing the arterial network. Local transit trips.		Short trips (under 2 miles) at low speeds. Longer trips accessing the collector or collector and arterial network.	
<b>Mobility vs. Land Access*</b>	Equal emphasis on mobility and land access. Direct land access predominantly to development concentrations.		Emphasis on land access, not on mobility. Direct land access predominantly to residential land uses.	Emphasis on land access not on mobility. Direct land access predominantly to agricultural land uses.

**TABLE D-1  
FUNCTIONAL CLASSIFICATION SYSTEM CHARACTERISTICS FOR THE TWIN CITIES REGION**

Criterion	Collector		Local	
	Urban	Rural	Urban	Rural
<b>System Mileage</b>	Suggested federal limitations: 5-10 percent	Suggested federal limitations: 20-25 percent	Suggested federal limitations: 65-80 percent	Suggested federal limitations: 63-75 percent
<b>Percent of Travel-VMT</b>	Suggested federal limitations: 5-10 percent	Suggested federal limitations: 20-35 percent	Suggested federal limitations: 10-30 percent	Suggested federal limitations: 5-20 percent
<b>Intersections</b>	Four-way stops and some traffic signals.	Local street traffic should be required to stop.	As required.	As required.
<b>Parking</b>	Restricted as necessary.	Unrestricted.	Permitted as necessary.	Permitted as necessary.
<b>Large Trucks</b>	Restricted as necessary.	Restricted as necessary.	Permitted as necessary.	Permitted as necessary.
<b>Management Tools</b>	Number of lanes, traffic signal timing, land access management.	Land access management.	Intersection control, cul-de-sacs, diverters.	As necessary.
<b>Vehicles Carried Daily</b>	1,000-15,000	250-2,500	Less than 1,000	Less than 1,000
<b>Posted Speed Limit</b>	30-40 mph	35-45 mph	Maximum 30 mph	Maximum 30 mph
<b>Right-of-Way</b>	60-100 feet	60-100 feet	50-80 feet	50-80 feet
<b>Transit Accommodations</b>	Cross-sections and geometrics designed for use by regular-route buses.	None.	Normally uses as bus routes only in non-residential areas.	None.

# **APPENDIX F**

## **FUTURE FUNCTIONAL CLASSIFICATION CHANGES BY SUB-AREA**

SUB-AREA 1



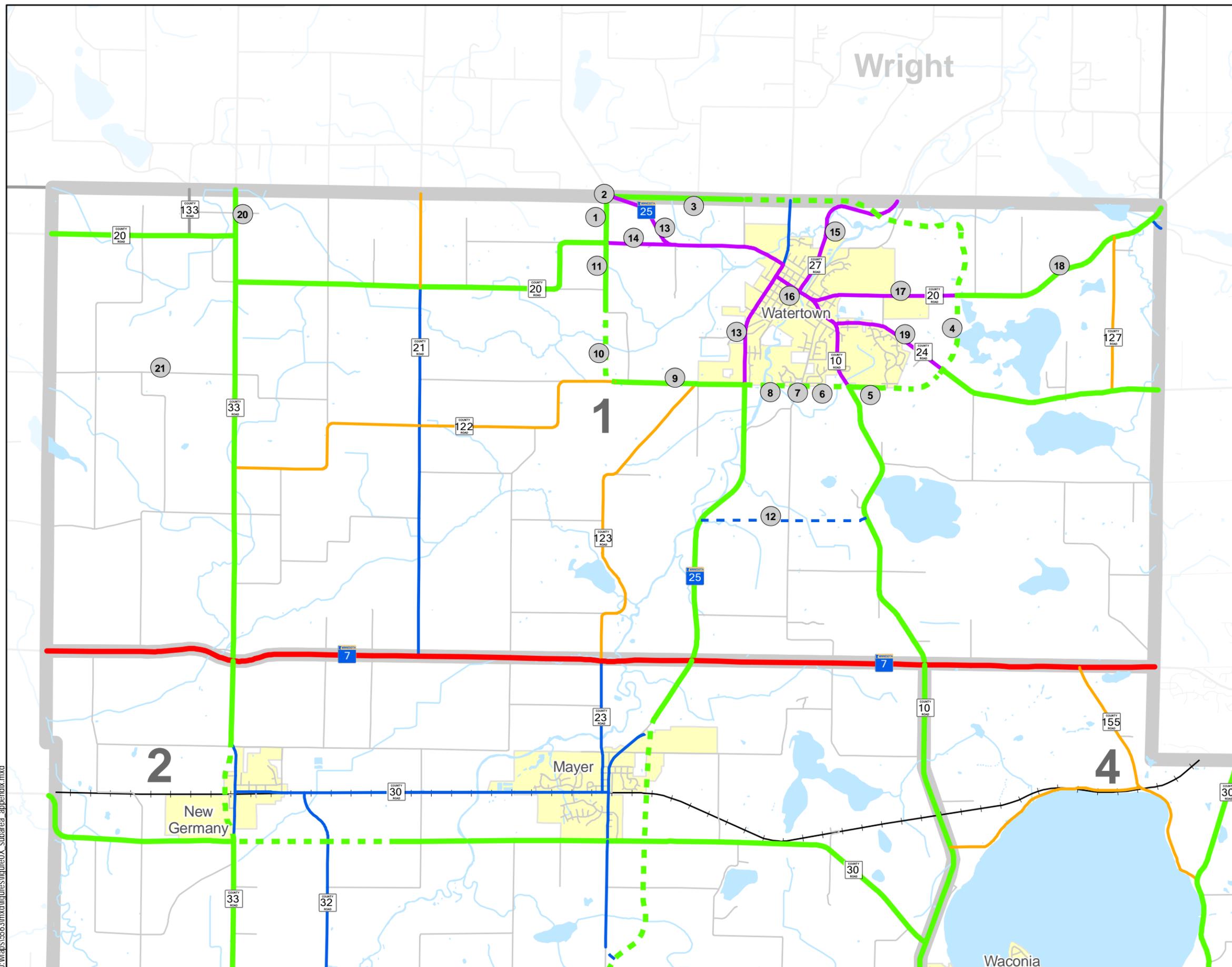
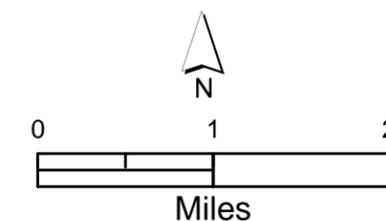
Appendix F

Legend

Future Functional Class

- Principal Arterial (Red line)
- A Minor Arterial (Green line)
- B Minor Arterial (Purple line)
- Major Collector (Blue line)
- Minor Collector (Orange line)
- Local (Grey line)

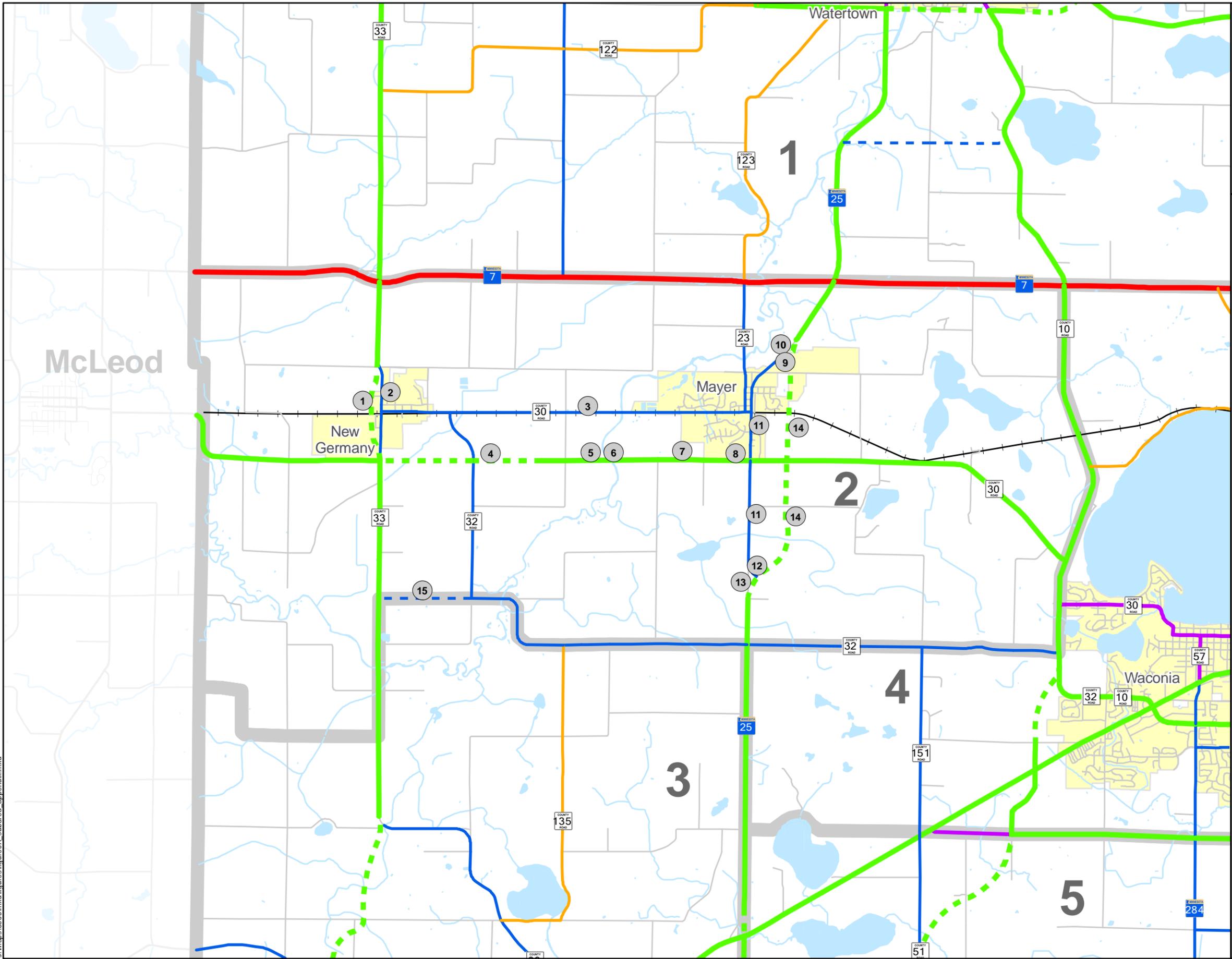
- Railroads (Black line with cross-ticks)
- Sub-Areas (Grey outline)
- Municipal Boundaries (Yellow outline)



**TABLE F-1**  
**Sub-Area 1 Proposed Functional Classification Changes**

Map ID #	Existing Route Number	From	To	Existing Functional Class	Future Functional Class	Rationale For Change
1	Sally Avenue	CSAH 20	new segment (south end of curve)	Local (Township Road)	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
2	New Segment	new segment (south end of curve)	TH 25	-	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
3	Common Street	TH 25	Quarry Avenue	Local (Township Road)	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
4	New Segment	Quarry Avenue	30th Street (east end)	-	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
5	30th Street	30th Street (east end)	CSAH 10	Local (Township Road)	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
6	New Segment	CSAH 10	Newton Avenue	-	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
7	Unnamed Street	Newton Avenue	Unnamed Street (west end)	City Street	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
8	New Segment	Unnamed Street (west end)	TH 25	-	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
9	CR 122	TH 25	new segment (south end of curve)	Minor Collector	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
10	New Segment	CR 122/new segment (south end of curve)	24th Street	-	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
11	Sally Avenue	24th Street	CSAH 20	Local (Township Road)	'A' Minor Arterial	These segments create a future beltway around Watertown which will increase the traffic volumes and limit the access along this route
12 *	New Segment	TH 25	CSAH 10	-	Major Collector	Provides an east/west connection between TH 25 and CSAH 10 (between Watertown and Waconia)
13 *	TH 25	CR 122	Common Street/North County Border	'A' Minor Arterial	'B' Minor Arterial	The new beltway around Watertown will serve the 'A' minor arterial function, thus this route will serve more of a citywide land access function
14 *	CSAH 20	Sally Avenue	TH 25	'A' Minor Arterial	'B' Minor Arterial	The new beltway around Watertown will serve the 'A' minor arterial function, thus this route will serve more of a citywide land access function
15 *	CSAH 27	Territorial Street/CSAH 10	North County Border	'A' Minor Arterial	'B' Minor Arterial	The new beltway around Watertown will serve the 'A' minor arterial function, thus this route will serve more of a citywide land access function
16 *	Territorial Street/CSAH 10	TH 25	30th Street (west end)	'A' Minor Arterial	'B' Minor Arterial	The new beltway around Watertown will serve the 'A' minor arterial function, thus this route will serve more of a citywide land access function
17 *	CSAH 20	Territorial Street/CSAH 10	new segment (future beltway)	'A' Minor Arterial	Local (City Street)	The new beltway around Watertown will serve the 'A' minor arterial function, thus this route will serve more of a citywide land access function
18	CSAH 20	new segment (future beltway)	East County Border	'A' Minor Arterial	'B' Minor Arterial	This segment of CSAH 20 is outside the future beltway, so it will serve a minor arterial function, but as a 'B' minor arterial instead of an 'A' minor arterial
19 *	CSAH 24	CSAH 10	new segment (future beltway)	'A' Minor Arterial	'B' Minor Arterial	The new beltway around Watertown will serve the 'A' minor arterial function, thus this route will serve more of a citywide land access function
20	CR 33	CSAH 20	North County Border	Major Collector	'A' Minor Arterial	This segment is will continue high traffic volume, limited access 'A' Minor Arterial route into Wright County (connecting with Wright County CSAH 8)
21 *	30th Street	West County Border	CSAH 33	Minor Collector	Local (Township Road)	This segment has close spacing with CSAH 20, which is an 'A' Minor Arterial route, so this route will function as a local route, offering land access

\* This is a functional classification change. However, this roadway segment will not be part of the future 2030 CR, CSAH or TH system(s).



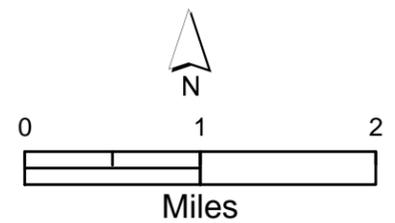
### SUB-AREA 2



### Appendix F

### Legend

- Future Functional Class**
- Principal Arterial
  - A Minor Arterial
  - B Minor Arterial
  - Major Collector
  - Minor Collector
  - Local
  - +— Railroads
  - Sub-Areas
  - Municipal Boundaries



**TABLE F-2**  
**Sub-Area 2 Proposed Functional Classification Changes**

Map ID #	Existing Route Number	From	To	Existing Functional Class	Future Functional Class	Rationale For Change
1	New Segement	62nd Street	CSAH 33/CSAH 30 intersection	-	'A' Minor Arterial	This bypass route around New Germany will carry higher traffic volumes and will have limited
2	CSAH 33	62nd Street	CSAH 33/CSAH 30 intersection	'A' Minor Arterial	Major Collector	The new bypass route will carry the higher traffic volumes, so this route will become the connection between the city and the arterial roadway system
3	CSAH 30	CSAH 33	TH 25	'A' Minor Arterial	Major Collector	The new 'A' Minor Arterial route to the south will replace the function of this route, so this route will serve as the connection between the New Germany and Mayer downtown areas, offering more access
4	New Segement	CSAH 33	70th Street (west of the South Fork Crow River(west end))	-	'A' Minor Arterial	This route will serve as the major east/west route from CSAH 10 to the west county border, carrying the majority of the traffic and will have limited access
5	70th Street	70th Street (west of the South Fork Crow River (west end))	70th Street (west of the South Fork Crow River(east end))	Local (Township Road)	'A' Minor Arterial	This route will serve as the major east/west route from CSAH 10 to the west county border, carrying the majority of the traffic and will have limited access
6	New Segment	CSAH 30 (west of Crow River)	CSAH 30 (east of Crow River)	-	'A' Minor Arterial	This route will serve as the major east/west route from CSAH 10 to the west county border, carrying the majority of the traffic and will have limited access
7	70th Street	70th Street (east of the South Fork Crow River (west end))	Stewart Avenue	Local (Township Road)	'A' Minor Arterial	This route will serve as the major east/west route from CSAH 10 to the west county border, carrying the majority of the traffic and will have limited access
8	9th Street SW	Stewart Avenue	TH 25	Local (City Street)	'A' Minor Arterial	This route will serve as the major east/west route from CSAH 10 to the west county border, carrying the majority of the traffic and will have limited access
9 *	New Segment	TH 25/North Mayer City Limits	New Segment (corridor east of TH 25)	-	Major Collector	This route (intersection realignment) will replace a segment of TH 25 as the connection between the City of Mayer and the new 'A' Minor Arterial segment to the east of city limits
10 *	TH 25	New North/South 'A' Minor Arterial Segment	New East/West Major Collector Segment	Major Collector	Local (Township Road)	This new segment (intersection realignment) will replace a segment this route as the connection between the City of Mayer and the new 'A' Minor Arterial segment to the east of city limits
11 *	TH 25	New Segment/North Mayer City Limits	.36 miles north of 82nd Street	'A' Minor Arterial	Major Collector	The new 'A' Minor Arterial route (bypass) around the City of Mayer to the east will carry the majority of the traffic, so this route will now function as a major collector
12 *	New Segment	.36 miles north of 82nd Street	.17 miles east/New Segment	-	Major Collector	The new 'A' Minor Arterial route (bypass) around the City of Mayer to the east will carry the majority of the traffic, so this route will now function as a major collector
13 *	TH 25	.36 miles north of 82nd Street	82nd Street	'A' Minor Arterial	Local (Township Road)	The new intersection alignment will offer the connection to TH 25, so this segment will function as a local route
14	New Segement	TH 25/North Mayer City Limits	82nd Street	-	'A' Minor Arterial	This segment offers a 'A' Minor Arterial route (bypass) around the City of Mayer, so traffic not going into downtown Mayer will be able to continue on a north/south route with higher speeds and limited access
15	New Segement	CSAH 33	CSAH 32	-	Major Collector	This new segment will connect with CSAH 32 and provide a connection to CSAH 33 which is a major north/south 'A' Minor Arterial route

\* This is a functional classification change. However, this roadway segment will not be part of the future 2030 CR, CSAH or TH system(s).

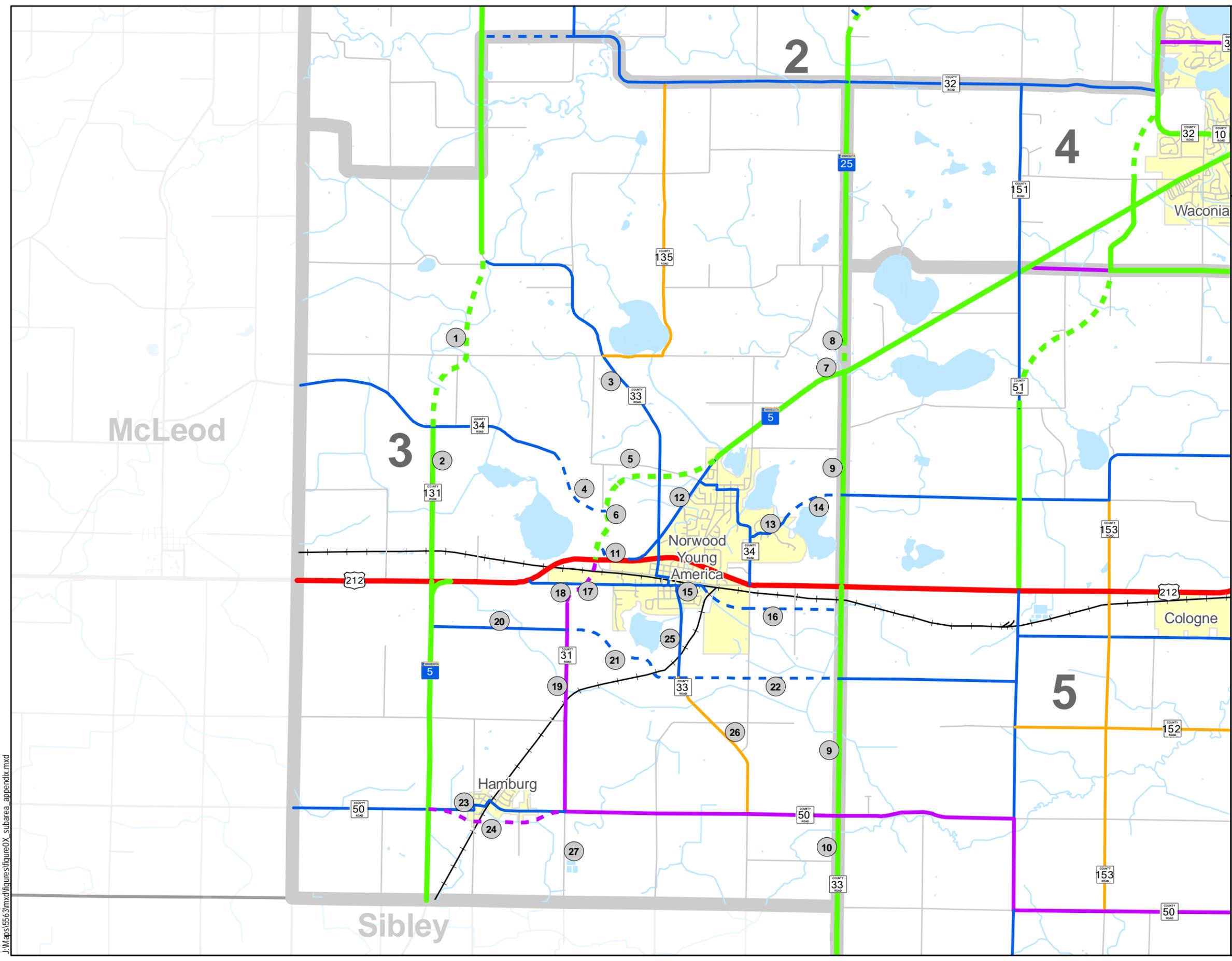
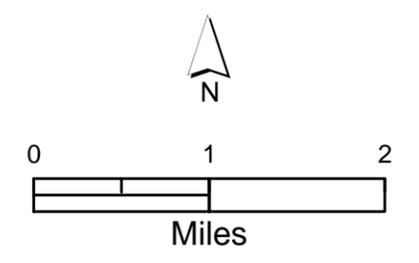
SUB-AREA 3



Appendix F

Legend

- Future Functional Class**
- Principal Arterial
  - A Minor Arterial
  - B Minor Arterial
  - Major Collector
  - Minor Collector
  - Local
  - Railroads
  - Sub-Areas
  - Municipal Boundaries

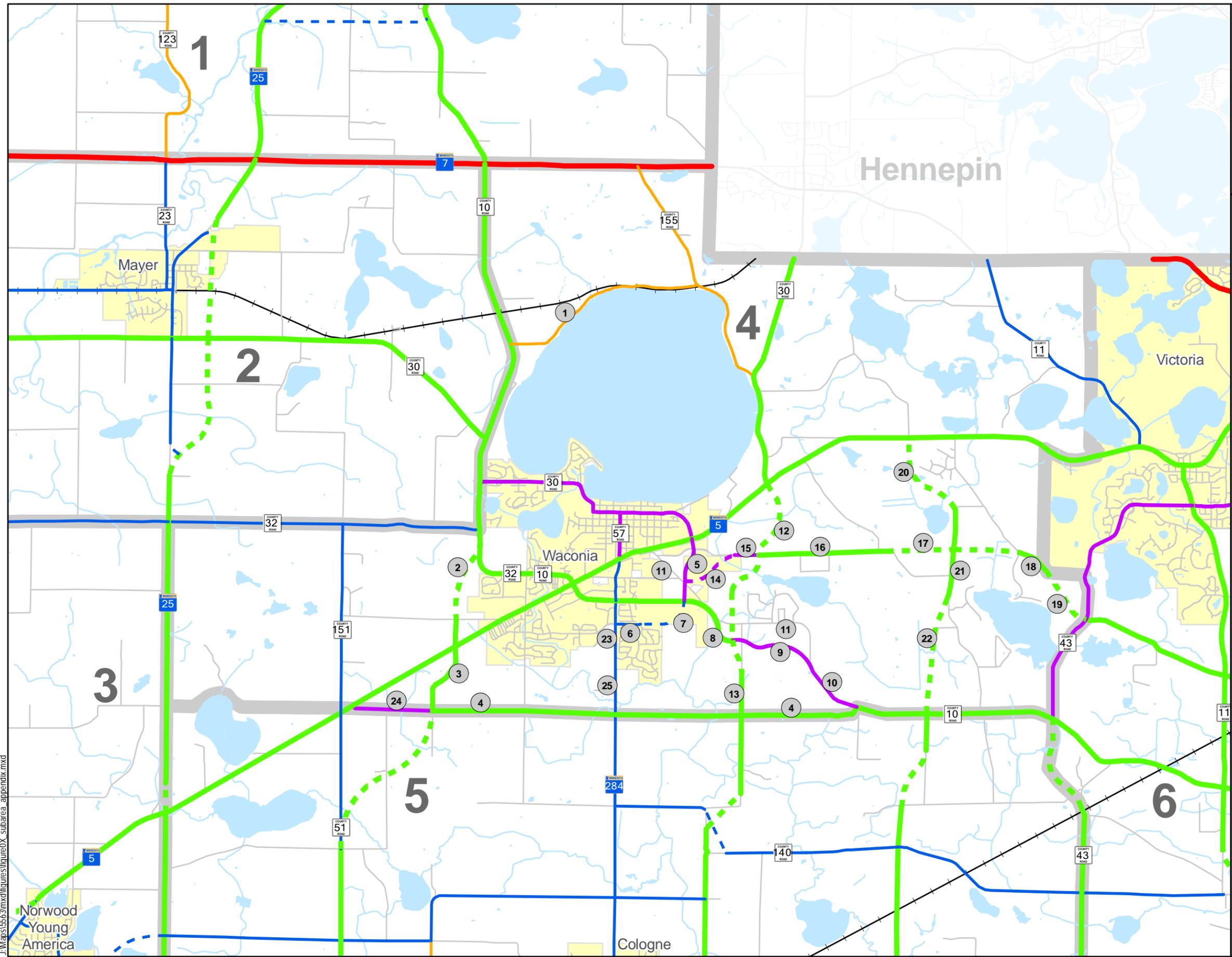


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**TABLE F-3**  
**Sub-Area 3 Proposed Functional Classification Changes**

Map ID #	Existing Route Number	From	To	Existing Functional Class	Future Functional Class	Rationale For Change
1	New Segment	102nd Street	CSAH 34	-	'A' Minor Arterial	This new segment will combine with existing roadways to provide a continuous north/south 'A' Minor Arterial route in the western portion of the county
2	CR 131	CSAH 34	TH 212	Minor Collector	'A' Minor Arterial	This route will become part of a major north/south 'A' Minor Arterial route in the western portion of the county
3	CSAH 33	102nd Street	TH 212	'A' Minor Arterial	Major Collector	The 'A' Minor Arterial route will be shifted to the west, so this route will serve as a connection between the NYA downtown area and the 'A' Minor Arterial system
4	New Segment	Urban Avenue	New Segment (east of Utopia Avenue)	-	Major Collector	This new segment will replace the current CSAH 34 alignment to offer a direct connection to the TH 5 realignment/bypass around NYA
5 *	CSAH 34	Urban Avenue	TH 5	Major Collector	Local (Township Road)	The realignment of TH 5 will make this segment function as a local road in the future because of its multiple intersections with other existing roadways and the rest of its route through downtown NYA
6	New Segment	North NYA City Limits/TH 5	TH 212	-	'A' Minor Arterial	This new segment will offer a bypass route around NYA, allowing for higher speeds and limited access
7	TH 25	New Segment (north end)	TH 5	'A' Minor Arterial	Local (Township Road)	This segment will be replaced by a new 'A' Minor Arterial segment that offers a better intersection alignment to TH 5 and straighter north/south roadway alignment
8	New Segment	New Segment (north end)/TH 25	TH 5	-	'A' Minor Arterial	This new segment serves as an intersection realignment with TH 5, and will serve the 'A' Minor Arterial function
9	Salem Avenue	TH 5	CSAH 50	Local (Township Road)	'A' Minor Arterial	This route will become part of a major north/south 'A' Minor Arterial route through the county, allowing for higher speeds and limiting access
10	CSAH 33	CSAH 50	158th Street	Minor Collector	'A' Minor Arterial	This route will become part of a major north/south 'A' Minor Arterial route through the county, allowing for higher speeds and limiting access
11 *	New Segment	New Segment (west end)	TH 5	-	Major Collector	This new segment will serve as a frontage road connection from existing TH 5 to the new TH 5 bypass alignment, eliminating the current intersection of existing TH 5 with TH 212
12 *	TH 5	North NYA City Limits	New Segment (east end)/TH 212	'A' Minor Arterial	Major Collector	The realignment of TH 5 will make this segment function more as a local access road because of its proximity to the residential areas of NYA
13 *	Preserve Boulevard	CR 134	Preserve Boulevard (east end)	Local (City Street)	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the north side
14 *	New Segment	Preserve Boulevard (east end)	TH 25	-	Major Collector	This new segment continues the higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the north side
15 *	Elm Street E	CSAH 33	Elm Street E (east end)	Local (City Street)	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
16 *	New Segment	Elm Street E (east end)	Salem Avenue	-	Major Collector	This new segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
17	New Segment	TH 212	CSAH 31	-	'B' Minor Arterial	This new segment creates a realignment of a portion of CR 31 and continues CR 31 north/south to create an intersection with TH 212
18 *	CSAH 31	CSAH 31 (east/west)	.23 miles south of CSAH 31 (east/west )	Major Collector	Local (Township Road)	The new realignment of CR 31 will serve the arterial function, so this route will be downgraded to function as a local road
19	CSAH 31	New Segment/.23 miles south of CSAH 31 (east/west)	CSAH 50	Major Collector	'B' Minor Arterial	TH 5 to the west is an 'A' Minor Arterial route and CSAH 33 to the east is a collector, so based on spacing this roadway will be upgraded to function as a 'B' Minor Arterial and emphasize mobility
20	134th Street	TH 5	CSAH 31 (north/south)	Local (Township Road)	Major Collector	This new segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
21	New Segment	CSAH 31 (north/south)	CSAH 33	-	Major Collector	This new segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
22	New Segment	CSAH 33	Salem Avenue	-	Major Collector	This new segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
23 *	CSAH 50	TH 5	CSAH 31	'B' Minor Arterial	Major Collector	The new CSAH 50 realignment/bypass around Hamburg will serve as the 'B' Minor Arterial segment, so because this segment runs through downtown Hamburg, it will function more as an local access route
24	New Segment	TH 5	CSAH 31	-	'B' Minor Arterial	This new segment will create a realignment/bypass of CSAH 50 around Hamburg to empahsize mobility over land access
25 *	CSAH 33	TH 212	New Segment/.23 miles south of CSAH 31/Elm Street	'B' Minor Arterial	Major Collector	CSAH 31, which is a more direct north/south roadway, will serve the 'B' Minor Arterial function
26	CSAH 33	New Segment/.23 miles south of CSAH 31/Elm Street	CSAH 50	'B' Minor Arterial	Minor Collector	CSAH 31, which is a more direct north/south roadway, will serve the 'B' Minor Arterial function
27 *	Vera Avenue	CSAH 50	South County Border	Minor Collector	Local (Township Road)	This roadway has low traffic volumes and close spacing with TH 5 to the west and CSAH 33 to the east

\* This is a functional classification change. However, this roadway segment will not be part of the future 2030 CR, CSAH or TH system(s).



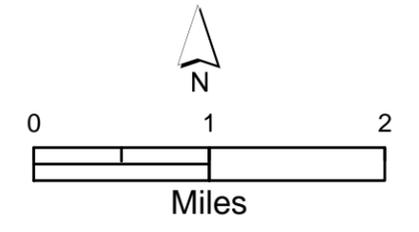
SUB-AREA 4



Appendix F

**Legend**

- Future Functional Class**
- Principal Arterial
  - A Minor Arterial
  - B Minor Arterial
  - Major Collector
  - Minor Collector
  - Local
  - +— Railroads
  - Sub-Areas
  - Municipal Boundaries

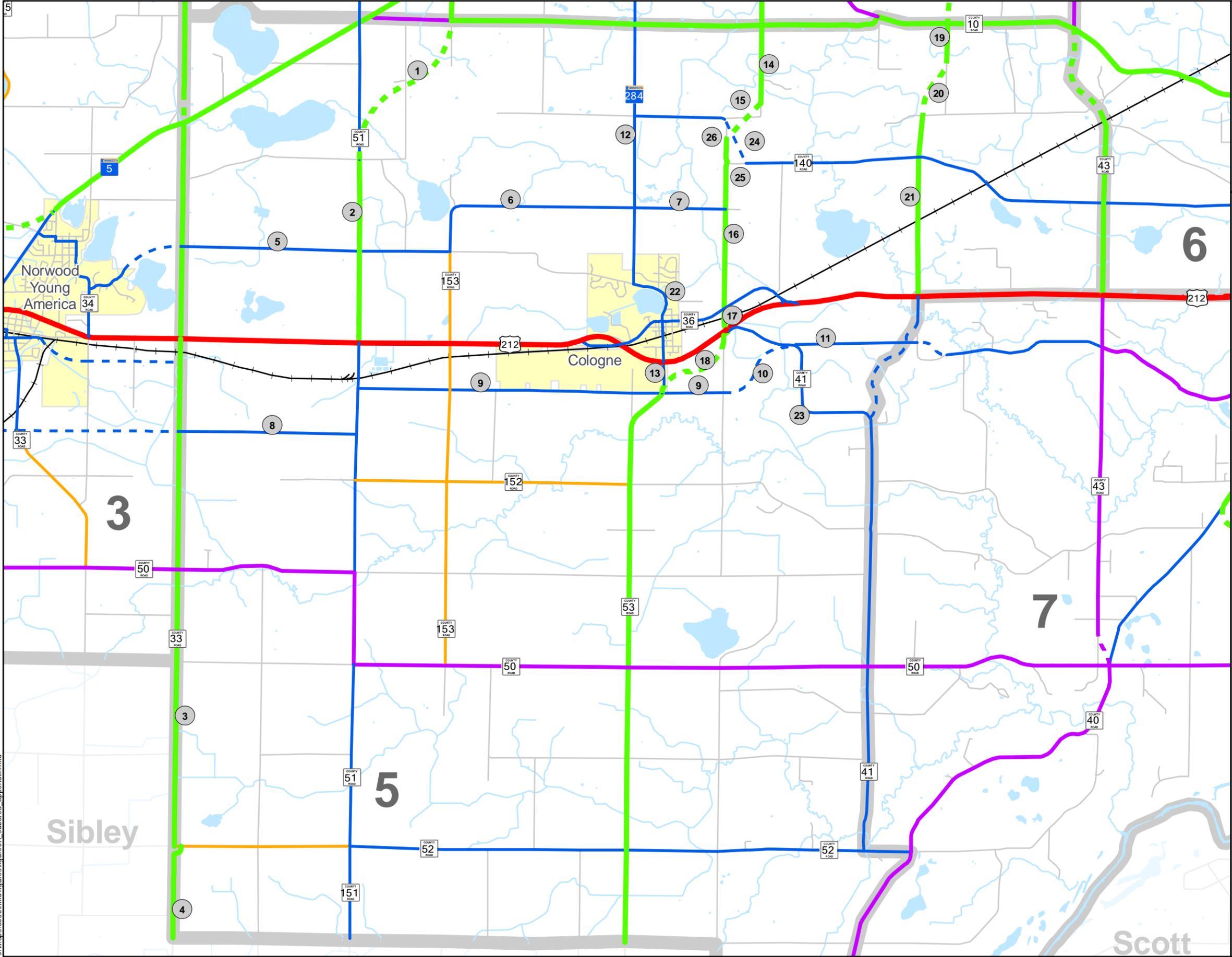


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**TABLE F-4**  
**Sub-Area 4 Proposed Functional Classification Changes**

Map ID #	Existing Route Number	From	To	Existing Functional Class	Future Functional Class	Rationale For Change
1 *	North Shore Road	CSAH 10	CR 155	Local (Township Road)	Minor Collector	This route will carry the majority of the traffic along the north side of Lake Waconia
2	New Segment	CSAH 32/10	94th Street	-	'A' Minor Arterial	This new segment will combine with others to create a north/south 'A' Minor Arterial route west of Waconia, which extends from Watertown to TH 212
3	Orchard Road	94th Street	102nd Street	Local (Township Road)	'A' Minor Arterial	This segment will combine with others to create a north/south 'A' Minor Arterial route west of Waconia, which extends from Watertown to TH 212
4	102nd Street	Orchard Road	CSAH 10	Local (Township Road)	'A' Minor Arterial	This segment of 102nd Street will function as a major east/west route (including the portion of CSAH 10) between TH 7 and TH 212, justifying the upgrade to the 'A' Minor Arterial functional classification
5 *	Unnamed Street	TH 5	No Name Street	'A' Minor Arterial	'B' Minor Arterial	This segment is part of a beltway around the eastern part of Waconia
6 *	15th Street E	TH 284	15th Street E (east end)	Local (City Street)	Major Collector	This segment is part of a beltway around the eastern part of Waconia, however this segment will offer more residential access because it is within Waconia city limits, justifying the collector functional classification
7 *	New Segment	15th Street (east end)	CSAH 10	-	Major Collector	This new segment is part of a beltway around the eastern part of Waconia, however this segment will offer more residential access because it connects with 15th Street which is within Waconia city limits
8	CSAH 10/32 extension	CSAH 10/32 extension (just west of CSAH 10)	New Segment (west of Little Avenue)	-	'A' Minor Arterial	This segment will combine with others to realign CR/CSAH 10, shifting it south, following/extending CSAH 10/32 which is already an 'A' Minor Arterial route
9 *	CSAH 10 extension	New Segment (west of Little Avenue)	CSAH 10	-	'B' Minor Arterial	This new segment realigns CSAH 10 to the south, and has close spacing with the new 'A' Minor Arterial route to the south (102nd Street), so it will function as a 'B' Minor Arterial route
10 *	CSAH 10	New Segment/CSAH 10	102nd Street	'A' Minor Arterial	'B' Minor Arterial	This segment will lose the 'A' Minor Arterial functional classification because its has close spacing with the new 'A' Minor Arterial route to the south (102nd Street) which offers a more direct east/west route, so it will function as a 'B' Minor Arterial
11 *	CR 10/CSAH 10	TH 5	New Segment/CSAH 10	'A' Minor Arterial	Local (Township Road)	The segment of CR 10/CSAH 10 will be realigned to the south to offer better continuity with the future roadway network, so this segment will function as a local road offering more residential access
12	New Segment	TH 5	Little Avenue	-	'A' Minor Arterial	This new segment will combine with others to create an important, high volume, continuous north/south 'A' Minor Arterial route through the middle of the county
13	Little Avenue	New Segment (.5 miles north of 102nd Avenue)	102nd Street	Local (Township Road)	'A' Minor Arterial	This segment will combine with others to create an important, high volume, continuous north/south 'A' Minor Arterial route through the middle of the county
14 *	New Segment	Unnamed Street	Airport Road	-	'B' Minor Arterial	This new segment will combine with others to offer a east/west Minor Arterial route, however, because this segment ends at the future east beltway route around Waconia which is classified as a 'B' Minor Arterial route, and has close spacing to higher volume east/west 'A' Minor Arterial routes, this segment will function as a 'B' Minor Arterial
15 *	Airport Road	New Segment (0.9 miles east of CR 10)	New Segment (1.15 miles east of CR 10)	Local (Township Road)	'B' Minor Arterial	This segment will combine with others to offer a east/west Minor Arterial route, however, because this segment ends at the future east beltway route around Waconia which is classified as a 'B' Minor Arterial route, and has close spacing to higher volume east/west 'A' Minor Arterial routes, this segment will function as a 'B' Minor Arterial
16	Airport Road	New Segment (1.15 miles east of CR 10)	.16 miles east of Scandia Road	Local (Township Road)	'A' Minor Arterial	This segment is an extension of the two 'B' Minor Arterial segments above, and will connect/ combine with CSAH 14 to create a major east/west 'A' Minor Arterial route from the Waconia east beltway to the eastern county line that will carry high volumes of traffic into and out of the more developed/developing areas in the eastern portion of the county
17	New Segment	Airport Road	Tellers Road	-	'A' Minor Arterial	This new segment is an extension of the two 'B' Minor Arterial segments above, and will connect/ combine with CSAH 14 to create a major east/west 'A' Minor Arterial route from the Waconia east beltway to the eastern county line that will carry high volumes of traffic into and out of the more developed/developing areas in the eastern portion of the county
18	Tellers Road	Abbywood Road	.42 miles east of Abbywood Road	Local (Township Road)	'A' Minor Arterial	This segment is an extension of the two 'B' Minor Arterial segments above, and will connect/ combine with CSAH 14 to create a major east/west 'A' Minor Arterial route from the Waconia east beltway to the eastern county line that will carry high volumes of traffic into and out of the more developed/developing areas in the eastern portion of the county
19	New Segment	.42 miles east of Abbywood Road	CSAH 43	-	'A' Minor Arterial	This new segment is an extension of the two 'B' Minor Arterial segments above, and will connect/ combine with CSAH 14 to create a major east/west 'A' Minor Arterial route from the Waconia east beltway to the eastern county line that will carry high volumes of traffic into and out of the more developed/developing areas in the eastern portion of the county
20	New Segment	TH 5	Laketown Road	-	'A' Minor Arterial	This new segment will combine with others to offer a high volume, limited access north/south 'A' Minor Arterial route between two major east/west roadways (TH 5 and TH 212)
21	Laketown Road	Laketown Road (.33 miles west of Tellers Road)	.33 miles south of Airport Road	Local (Township Road)	'A' Minor Arterial	This new segment will combine with others to offer a high volume, limited access north/south 'A' Minor Arterial route between two major east/west roadways (TH 5 and TH 212)
22	New Segment	Laketown Road	CSAH 10	-	'A' Minor Arterial	This new segment will combine with others to offer a high volume, limited access north/south 'A' Minor Arterial route between two major east/west roadways (TH 5 and TH 212)
23 *	TH 284	TH 5	South Waconia City Limits	'A' Minor Arterial	Major Collector	The functional classification of TH 284 will be downgraded to a Major Collector in the future because it is a direct connection between the downtown areas of Waconia and Cologne and has reduced speeds. The 'A' Minor Arterial function will be served by the new north/south routes to the east and west of TH 284
24 *	102nd Street	TH 5	Orchard Road	Local (Township Road)	'B' Minor Arterial	This segment of 102nd Street connects two 'A' Minor Arterial routes and will be upgraded to a 'B' Minor Arterial because it will become a higher volume route in the future
25	TH 284	South Waconia City Limits	102nd Street	'A' Minor Arterial	Major Collector	The functional classification of TH 284 will be downgraded to a Major Collector in the future because it is a direct connection between the downtown areas of Waconia and Cologne and has reduced speeds. The 'A' Minor Arterial function will be served by the new north/south routes to the east and west of TH 284

\* This is a functional classification change. However, this roadway segment will not be part of the future 2030 CR, CSAH or TH system(s).



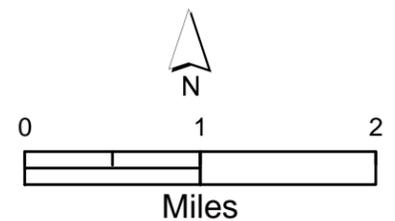
SUB-AREA 5



Appendix F

**Legend**

- Future Functional Class**
- Principal Arterial
  - A Minor Arterial
  - B Minor Arterial
  - Major Collector
  - Minor Collector
  - Local
  - Railroads
  - Sub-Areas
  - Municipal Boundaries



**TABLE F-5  
Sub-Area 5 Proposed Functional Classification Changes**

Map ID #	Existing Route Number	From	To	Existing Functional Class	Future Functional Class	Rationale For Change
1	New Segment	102nd Street	114th Street	-	'A' Minor Arterial	This new segment will combine with others to create a north/south 'A' Minor Arterial route west of Waconia, which extends from Watertown to TH 212
2	CSAH 51	114th Street	TH 212	Major Collector	'A' Minor Arterial	This segment will combine with others to create a high volume, limited access, major north/south 'A' Minor Arterial route which extends from Watertown down to TH 212
3	CSAH 33	158th Street	CSAH 52	Minor Collector	'A' Minor Arterial	This segment will become part of a major north/south 'A' Minor Arterial route through the county, allowing for higher speeds and limiting access
4	CSAH 33	CSAH 52	South County Border	Minor Collector	'A' Minor Arterial	This segment will become part of a major north/south 'A' Minor Arterial route through the county, allowing for higher speeds and limiting access
5	122nd Street	Salem Avenue	CR 153	Local (Township Road)	Major Collector	This segment combines with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the north side
6	CR 153	122nd Street	TH 284	Minor Collector	Major Collector	This segment combines with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the north side
7	118th Street	TH 284	Market Avenue	Local (Township Road)	Major Collector	This segment combines with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the north side
8	138th Street	Salem Avenue	CSAH 51	Local (Township Road)	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
9	134th Street	CSAH 51	Market Avenue	Local (Township Road)	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
10	New Segment	Market Avenue	CSAH 41	-	Major Collector	This new segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
11	130th Street	CSAH 41	New Segment (XX miles west of Kelly Avenue)	Local (Township Road)	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
12	TH 284	102nd Street	North Cologne City Limits	'A' Minor Arterial	Major Collector	The functional classification of TH 284 will be downgraded to a Major Collector in the future because it is a direct connection between the downtown areas of Waconia and Cologne and has reduced speeds. The 'A' Minor Arterial function will be served by the new north/south routes to the east and west of TH 284
13 *	CSAH 53	TH 212	134th Street	'A' Minor Arterial	Major Collector	The functional classification of CSAH 53 will be downgraded to a Major Collector in the future because it is a direct connection between the downtown areas of Waconia and Cologne and has reduced speeds. The 'A' Minor Arterial function will be served by the new north/south routes to the east and west of TH 284/CSAH 53
14	Little Avenue	102nd Street	just north of 110th Street	Local (Township Road)	'A' Minor Arterial	This segment will combine with others to create an important, high volume, continuous north/south 'A' Minor Arterial route through the middle of the county
15	New Segment	just north of 110th Street	CR 140	-	'A' Minor Arterial	This new segment will combine with others to create an important, high volume, continuous north/south 'A' Minor Arterial route through the middle of the county
16	Market Avenue	CR 140	CSAH 36	Local (Township Road)	'A' Minor Arterial	This segment will combine with others to create an important, high volume, continuous north/south 'A' Minor Arterial route through the middle of the county
17	CSAH 41	CSAH 36	TH 212	Major Collector	'A' Minor Arterial	This segment will combine with others to create an important, high volume, continuous north/south 'A' Minor Arterial route through the middle of the county
18	New Segment	Market Avenue	CSAH 53	-	'A' Minor Arterial	This new segment will combine with others to create an important, high volume, continuous north/south 'A' Minor Arterial route through the middle of the county
19	Juniper Avenue	CSAH 10	.43 miles south of CSAH 10	Local (Township Road)	'A' Minor Arterial	This segment will combine with others to offer a high volume, limited access north/south 'A' Minor Arterial route between two major east/west roadways (TH 5 and TH 212)
20	New Segment	Juniper Avenue	Augusta Road	-	'A' Minor Arterial	This new segment will combine with others to offer a high volume, limited access north/south 'A' Minor Arterial route between two major east/west roadways (TH 5 and TH 212)
21	Kelly Avenue	Augusta Road	TH 212	Local (Township Road)	'A' Minor Arterial	This segment will combine with others to offer a high volume, limited access north/south 'A' Minor Arterial route between two major east/west roadways (TH 5 and TH 212)
22 *	TH 284	North Cologne City Limits	TH 212	'A' Minor Arterial	Major Collector	The functional classification of TH 284 will be downgraded to a Major Collector in the future because it is a direct connection between the downtown areas of Waconia and Cologne and has reduced speeds. The 'A' Minor Arterial function will be served by the new north/south routes to the east and west of TH 284
23 *	CSAH 41	130th Street	CSAH 41/new segment intersection	Major Collector	Local (Township Road)	The new TH 212 frontage road and connection/realignment of CSAH 41 to Kelley Avenue will create a more continuous, more limited access north/south corridor, so this segment of CSAH 41 will emphasize access and function more as a local road
24	New Segment	CR 140	CR 140/110th Street intersection	-	Major Collector	This new segment is the east/west realignment of the new CR 140 and Little/Market Avenues intersection
25 *	CR 140	Market Avenue	.2 miles east of Market Avenue	Major Collector	Local (Township Road)	The intersection realignment of CR 140 and Little/Market Avenues will become the Major Collector route
26 *	CR 140	110th Street intersection	.1 miles south/new segment intersection	Major Collector	Local (Township Road)	The intersection realignment of CR 140 and Little/Market Avenues will become the Major Collector route

\* This is a functional classification change. However, this roadway segment will not be part of the future 2030 CR, CSAH or TH system(s).

SUB-AREA 6



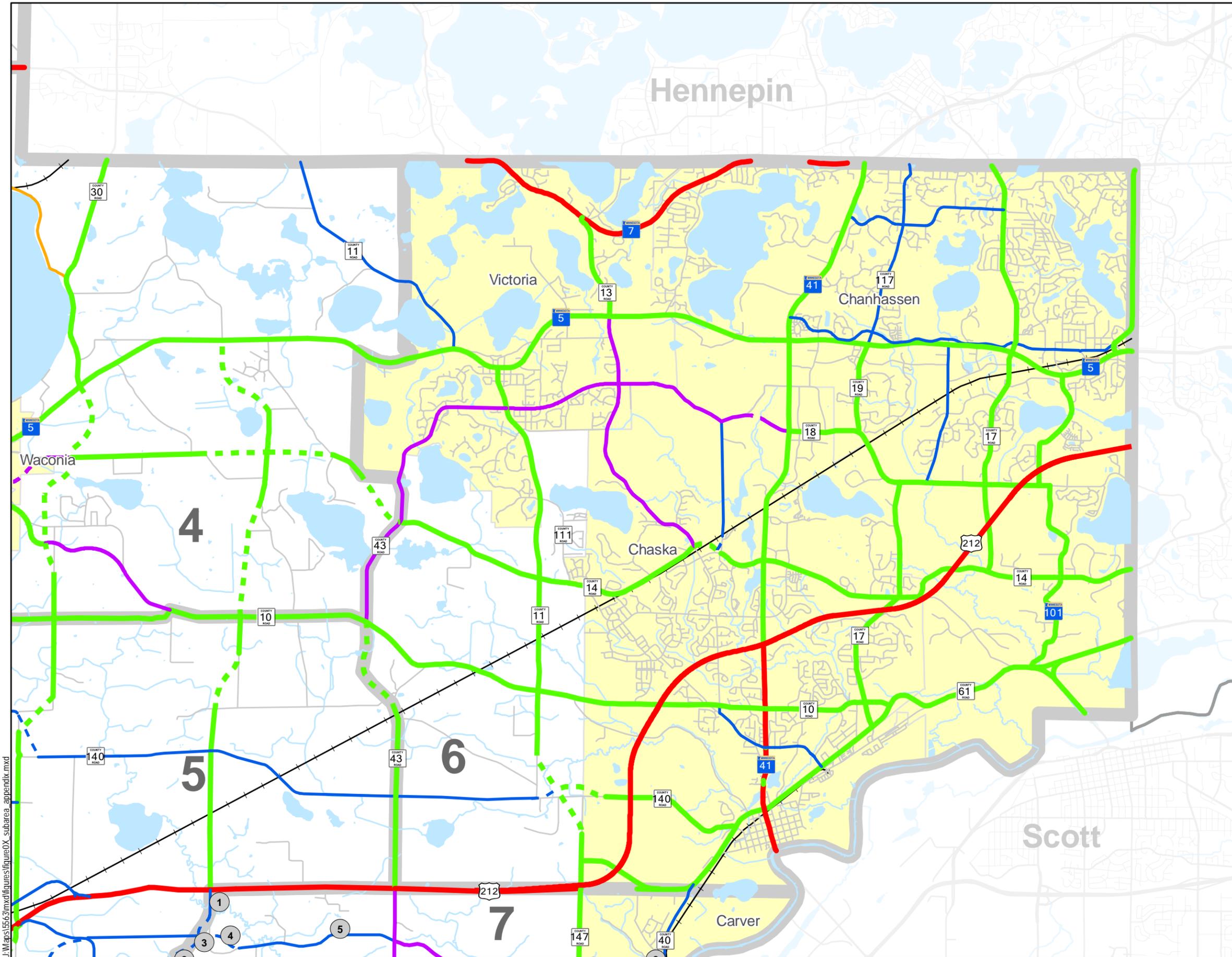
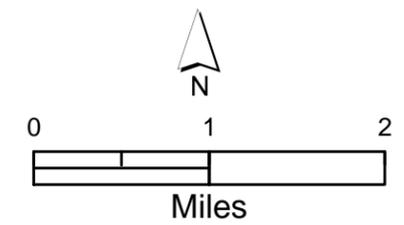
Appendix F

Legend

Future Functional Class

- Principal Arterial
- A Minor Arterial
- B Minor Arterial
- Major Collector
- Minor Collector

- Local
- Railroads
- Sub-Areas
- Municipal Boundaries

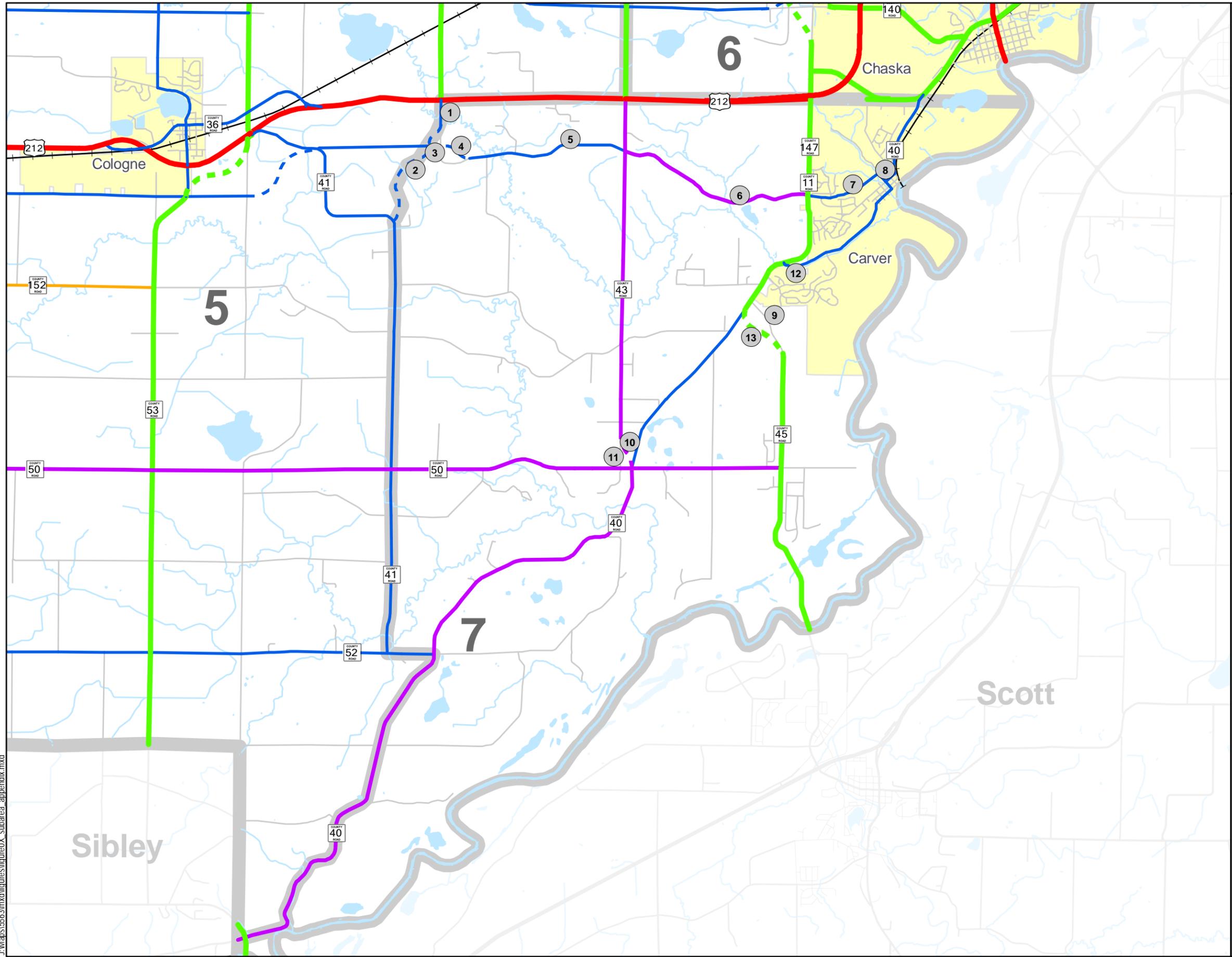


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**TABLE F-6  
Sub-Area 6 Proposed Functional Classification Changes**

Map ID #	Existing Route Number	From	To	Existing Functional Class	Future Functional Class	Rationale For Change
1 *	Smithtown Road	TH 7	North County Border	Major Collector	Local (City Street)	This road will function as a local road in the future, emphasizing residential access over mobility
2	Marsh Lake Road	CSAH 43	CSAH 11	Local (Township Road)	'A' Minor Arterial	This segment will connect/ combine with CSAH 14 to create a major east/west 'A' Minor Arterial route from the Waconia east beltway to the eastern county line that will carry high volumes of traffic into and out of the more developed/developing areas in the eastern portion of the county
3	New Segment	CSAH 10	CSAH 43 (.15 miles south of Augusta Road)	-	'A' Minor Arterial	This new segment is a realignment of CSAH 43 and will combine with others to create an important limited access north/south 'A' Minor Arterial functional classification route between CSAH 10 and TH 212
4	CSAH 43	CSAH 43 (.15 miles south of Augusta Road)	TH 212	'B' Minor Arterial	'A' Minor Arterial	This segment of CSAH 43 will be upgraded to 'A' Minor Arterial functional classification in the future because it will serve as an important limited access north/south route between CSAH 10 and TH 212
5 *	CSAH 43	CSAH 10	CSAH 43 (.17 miles south of Augusta Road)	'B' Minor Arterial	Local (Township Road)	The new CSAH 43 alignment will serve the arterial function, so this segment will emphasize residential access
6 *	CSAH 11	New Segment (.35 miles north of Hampshire Road)	CR 140	'A' Minor Arterial	Local (Township Road)	The CSAH 11 realignment will serve the arterial function, so this segment will emphasize residential access
7	New Segment	CSAH 11 (.35 miles north of Hampshire Road)	CSAH 11/CSAH 147 (.4 miles south of CR 140)	-	'A' Minor Arterial	This new segment is a realignment of CSAH 11 and offers a direct connection to CSAH 11/CR 147 to the east, and combines with other segments to create a high volume, limited access 'A' Minor Arterial route from TH 5 to the south county border
8 *	CSAH 11/CSAH 147	CSAH 11 west intersection	CSAH 11 east intersection	'A' Minor Arterial	Local (Township Road)	This segment of CR 140 will emphasize residential access, the new alignment and 'A' Minor Arterial functional classification will be shifted to the north to create a better intersection with CSAH 11
9 *	CR 140	CSAH 11 east intersection	.25 miles east of CSAH 11 east intersection	Major Collector	Local (Township Road)	This segment of CR 140 will emphasize residential access, the new alignment and Major Collector functional classification will be shifted to the north to create a better intersection with CSAH 11
10	New Segment	CSAH 11/CR 140	New Segment (.25 miles east of CSAH 11/CR 140)	-	Major Collector	This new segment is a realignment of CR 140 to create a better intersection with CSAH 11 and serves the 'A' Minor Arterial functional classification
11	New Segment	New Segment (.25 miles east of CSAH 11/CR 140)	CR 140 (.25 miles east of CSAH 11 east intersection)	-	'A' Minor Arterial	This new segment is a realignment of CR 140 to create a better intersection with CSAH 11 and serves the 'A' Minor Arterial functional classification
12	CR 140	.25 miles east of CSAH 11 east intersection	old TH 212	Major Collector	'A' Minor Arterial	This segment of CR 140 will serve as a high volume, limited access east/west route connecting old TH 212 to CSAH 11 and the continuous north/south 'A' Minor Arterial route through the county
13	New Segment	82nd Street W	CSAH 18	-	'B' Minor Arterial	This new segment provides a connection between two 'B' Minor Arterial segments
14 *	McKnight Road	82nd Street W	Pioneer Trail	Local (City Street)	Major Collector	This segment will function as a higher volume roadway in the future, thus the Major Collector functional classification
15 *	Victoria Drive	CSAH 10	TH 41	Local (City Street)	Major Collector	This segment will combine with Crosstown Boulevard to create a higher volume roadway in the future, providing a connection between CSAH 10 and old TH 212
16 *	Crosstown Boulevard	TH 41	old TH 212	Local (City Street)	Major Collector	This segment will combine with Victoria Drive to create a higher volume roadway in the future, providing a connection between CSAH 10 and old TH 212
17 *	Audubon Road	TH 5	CSAH 18	Local (City Street)	Major Collector	This segment will provide a higher volume, more limited access north/south route under the Major Collector functional classification between two 'A' Minor Arterial segments
18	old TH 212 (CSAH 61) realignment	CR 41	old TH 212	-	'A' Minor Arterial	This segment is a realignment of old TH 212 to the north to create a better intersection with the new TH 212 alignment
19 *	Bavaria Road	CSAH 18	CSAH 14	Major Collector	'B' Minor Arterial	Bavaria Road is an important north/south roadway, but has close spacing with two, more continuous 'A' Minor Arterials, CSAH 11 to the west and TH 41 to the east
20 *	Lake Lucy Road	TH 41	CSAH 17	Local (City Street)	Major Collector	This roadway will be an important city street within the City of Chanhassen
21 *	78th Street W	TH 41	TH 101	Local (City Street)	Major Collector	This roadway will be an important city street within the City of Chanhassen
22 *	New Segment	.17 miles north of Pioneer Trail (CSAH 14)	Pioneer Trail (CSAH 14)	-	Major Collector	This segment creates a better alignment of McKnight Road at the intersection with the Pioneer Trail (CSAH 14) extension
23 *	CSAH 11/CSAH 147	CR 140	.35 miles south of CR 140	'A' Minor Arterial	Local (Township Road)	The realignment of CSAH 11/CR 147 will serve the 'A' Minor Arterial function

\* This is a functional classification change. However, this roadway segment will not be part of the future 2030 CR, CSAH or TH system(s).



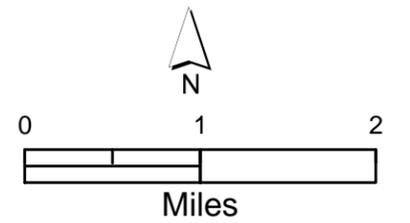
SUB-AREA 7



Appendix F

**Legend**

- Future Functional Class**
- Principal Arterial
  - A Minor Arterial
  - B Minor Arterial
  - Major Collector
  - Minor Collector
  - Local
  - Railroads
  - Sub-Areas
  - Municipal Boundaries



**TABLE F-7**  
**Sub-Area 7 Proposed Functional Classification Changes**

Map ID #	Existing Route Number	From	To	Existing Functional Class	Future Functional Class	Rationale For Change
1	Kelly Avenue	TH 212	New Segment/.25 miles south	Local (Township Road)	Major Collector	This segment of Kelly Avenue will combine with a new segment to offer an extension of a higher volume north/south route, which starts at TH 5, on the south side of TH 212
2	New Segment	Kelly Avenue	CSAH 41	-	Major Collector	This new segment offers an extension of a higher volume north/south route, which starts at TH 5, on the south side of TH 212
3	130th Street	New Segment (.12 miles west of Kelly Avenue)	Kelly Avenue	Local (Township Road)	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
4	New Segment	Kelly Avenue	Dahlgren Road	-	Major Collector	This new segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
5	Dahlgren Road	.2 miles west of Juliet Road	CSAH 43	Local (Township Road)	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
6 *	Dahlgren Road	CSAH 43	CSAH 147/CSAH 11	Minor Collector	'B' Minor Arterial	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
7 *	6th Street W	CR 147/CSAH 11	Broadway Street N	Minor Collector	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
8 *	Broadway Street N	6th Street W	4th Street E	Minor Collector	Major Collector	This segment will combine with others to create a higher traffic volume, more limited access east/west frontage road paralleling TH 212 on the south side
9 *	CSAH 45	CSAH 40	New Segment/.7 miles south	'A' Minor Arterial	Local (Township Road)	The new CSAH 45 alignment will serve the 'A' Minor Arterial function, so this route will emphasize access
10	New Segment	CSAH 43	CSAH 40/CSAH 50	-	'B' Minor Arterial	This new segment is a realignment of CSAH 43 (which will be a 'B' Minor Arterial) and provides a direct intersection/connection with CSAH 40 which is also a 'B' Minor Arterial
11 *	CSAH 43	.35 miles north of CSAH 50	CSAH 50	'B' Minor Arterial	Local (Township Road)	The new CSAH 43 alignment provides a better intersection with CSAH 40, so the emphasis of this segment will be residential access
12	CSAH 40	CSAH 147/CSAH 11	West Carver City Limits	'A' Minor Arterial	Major Collector	The portion of CSAH 40 within Carver city limits will function as a Major Collector with lower speeds and an emphasis on residential access
13	New Segment	CSAH 40	CSAH 45	-	'A' Minor Arterial	This new segment is a realignment of CSAH 45 and will serve the 'A' Minor Arterial function, combining with other segments to create an 'A' Minor Arterial, higher volume, limited access north/south route extending from TH 5 to the south county border

\* This is a functional classification change. However, this roadway segment will not be part of the future 2030 CR, CSAH or TH system(s).

# **APPENDIX G**

## **ACCESS SPACING FOR EXCEPTIONS AND DEVIATIONS**

As indicated in Section 6.2, access management guidelines have been developed for the county. Because there are some instances where the proposed access guidelines cannot be met, agencies will need guidance on how to address these circumstances. Table G-1 below defines three types of private access. The types vary from low-volume residential/field access to high-volume commercial entrances. Agencies should recognize that high-volume access tends to be more problematic, and therefore should be given more scrutiny in the review process.

**TABLE G-1**  
**Private Access Category**

Access Type	Land Use	Access Description
1	Residential/Agricultural/Field Access	For access to single-family dwellings, multi-family dwellings of 3 or fewer dwelling units, agricultural land and field entrances
2	Low-Volume Private Entrances	Small commercial, industrial and institutional developments and small residential complexes and subdivisions (less than 100 trips per day).
3	High-Volume Private Entrances	Large commercial, industrial and institutional development, shopping centers, industrial and office parks, colleges and large residential complexes and subdivisions (more than 100 trips per day).

*Note: A trip is a one-way movement. Typically 100 trips per day means 50 vehicles are entering an access and 50 vehicles are exiting an access.*

Tables F-2 and F-3 list additional considerations that should be taken into account when private access is requested, but fails to meet the access spacing guidelines. These considerations should be reviewed by Carver County staff and a judgment made as to whether the access meets the conditions specified. If the access request meets the criteria and/or conditions, the request should be approved; however, if it does not it should be treated as an exception/deviation and be taken to the county engineer for a decision. It should be noted that for minor arterials in developing areas, all private access must be treated as an exception/deviation and be reviewed by the agencies' engineer and approved by the elected officials that have jurisdiction over that facility.

Tables F-2 and F-3 should be used by local agencies when evaluating the appropriate access that is permitted "Subject to Conditions" and access that is allowed only by "Exception and Deviation", as noted in the Carver County Access Management Guidelines (see Table 11 in Section 6.2).

For facilities that are identified as jurisdictional transfer candidates, it is recommended that agencies obtain concurrence from the “transfer to” agency for all access modifications that fail to meet the proposed guidelines.

**TABLE G-2**  
**Guidelines for Private Access that is “Subject to Conditions” on Rural Collectors**

PRIVATE ACCESS TYPE 1	PRIVATE ACCESS TYPE 2	PRIVATE ACCESS TYPE 3
<ol style="list-style-type: none"> <li>1. Access control has not been acquired and the affected property retains the right of access.</li> <li>2. Reasonably convenient and suitable access is not available or attainable from the local street network or by shared entrance with an adjacent parcel. If a property abuts two or more public roads, access should be provided from the lower-category roadway.</li> <li>3. An analysis of future traffic conditions indicates the entrance will not create a high-risk conflict condition.</li> <li>4. Only one entrance per parcel should be provided. An additional entrance may be permitted if it is determined that the property cannot otherwise be reasonable developed or utilized and/or that such access would maintain or improve the safety and operation of the roadway. Multiple entrances should be spaced to meet minimum stopping sight distances.</li> <li>5. The entrance should not be located within the functional area of an intersection or within the turn lanes to another private entrance.</li> <li>6. On existing and planned divided roadways, the access should limited to right-in/right-out.</li> <li>7. Spacing between entrances should be consistent with the stopping sight distances for posted speeds. If possible, the entrance should be located on the property line to promote shared access with adjacent future development.</li> <li>8. The entrance should meet intersection sight distance requirements.</li> </ol>	<p style="text-align: center;">See Type 1</p>	<p>Type 3 entrances are not recommended and will be approved only as an exception</p>

**TABLE G-3**  
**Guidelines for Private Access that is “Subject to Conditions” for Rural Fully Developed Urban Minor Arterials and Developing / Fully Developed Urban Collectors**

<b>PRIVATE ACCESS TYPE 1</b>	<b>PRIVATE ACCESS TYPE 2</b>	<b>PRIVATE ACCESS TYPE 3</b>
<ol style="list-style-type: none"> <li>1. Reasonably convenient and suitable access is not available or attainable from the local street network or by shared entrance with an adjacent parcel. If a property abuts two or more public roads, access should be provided from the lower category roadway.</li> <li>2. Only one entrance per parcel should be provided. An additional entrance may be permitted if it is determined that the property cannot otherwise be reasonably developed or utilized and that such additional access will not negatively impact the safety and operations of the roadway.</li> <li>3. The entrance should not be located within the functional area of the intersection or within the turn lanes to another private entrance.</li> <li>4. The entrance should be located on the property to meet intersection sight distances for posted speed.</li> <li>5. On existing and planned divided roadways, the access should be limited to right-in / right-out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reasonably convenient and suitable access is not available or attainable from the local street network or by shared entrance with an adjacent parcel. If a property abuts two or more public roads, access should be provided from the lower category roadway.</li> <li>2. Only one entrance per parcel should be provided. An additional entrance may be permitted if it is determined that the property cannot otherwise be reasonably developed or utilized and that such additional access will not negatively impact the safety and operations of the roadway. Multiple entrances should be spaced to meet minimum stopping sight distances.</li> <li>3. The entrance should not be located within the functional area of an intersection or within the turn lanes to another private entrance.</li> <li>4. On existing and planned divided roadways, the access should be limited to right-in/right-out.</li> <li>5. Spacing between entrances should be consistent with the stopping sight distance for the posted speed.</li> <li>6. The entrance should be located on the property to meet intersection sight distance requirements.</li> <li>7. The entrance should not create the need for a signal.</li> <li>8. Turn lanes should be provided.</li> </ol>	<p>See Type 2</p>

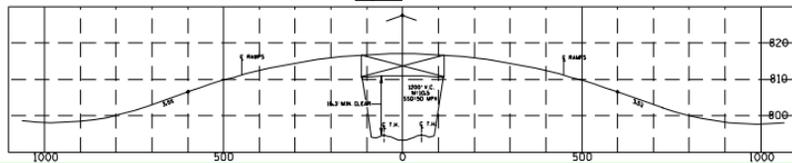
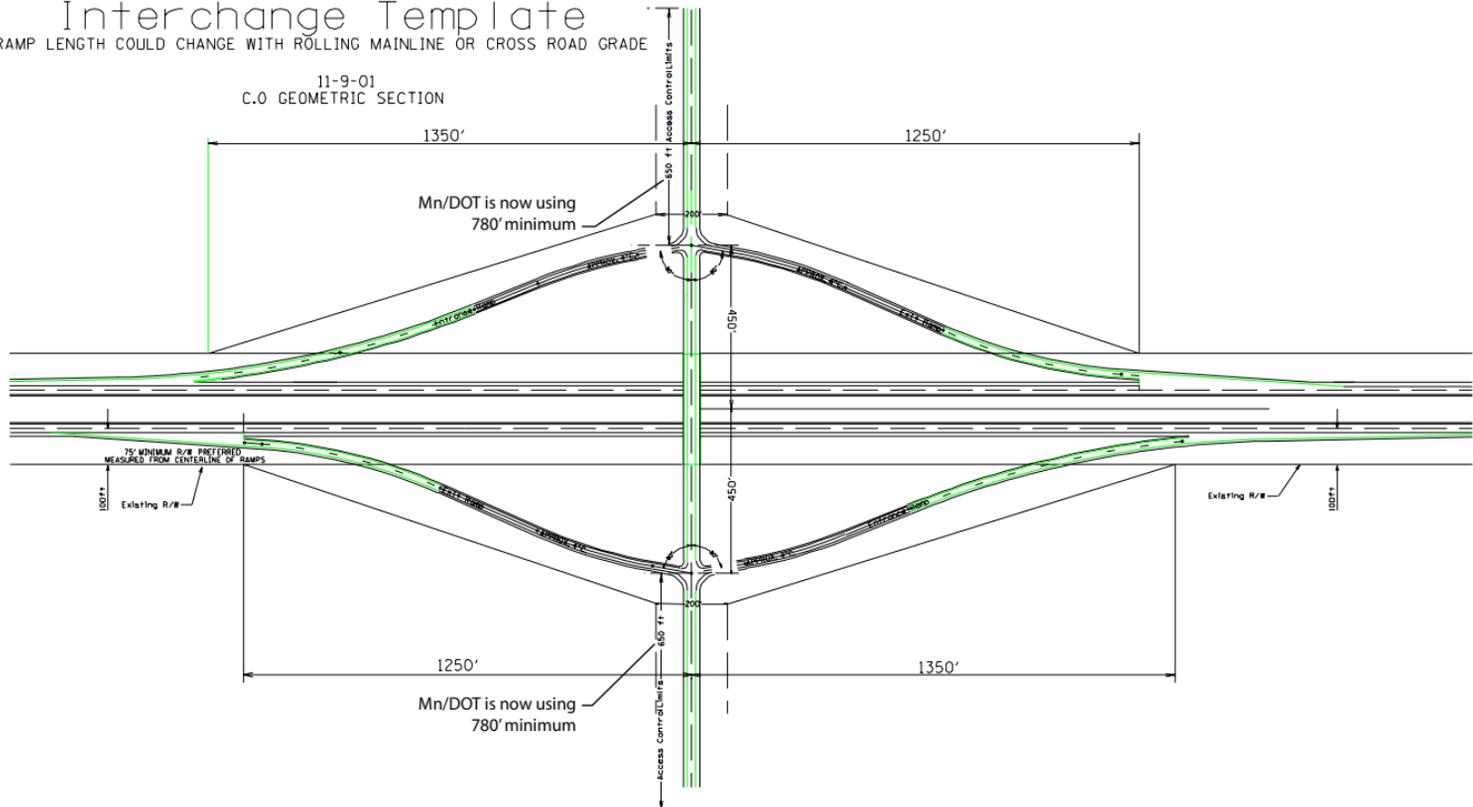
# **APPENDIX H**

## **TYPICAL INTERCHANGE LAYOUTS (FOOTPRINTS)**

# Interchange Template

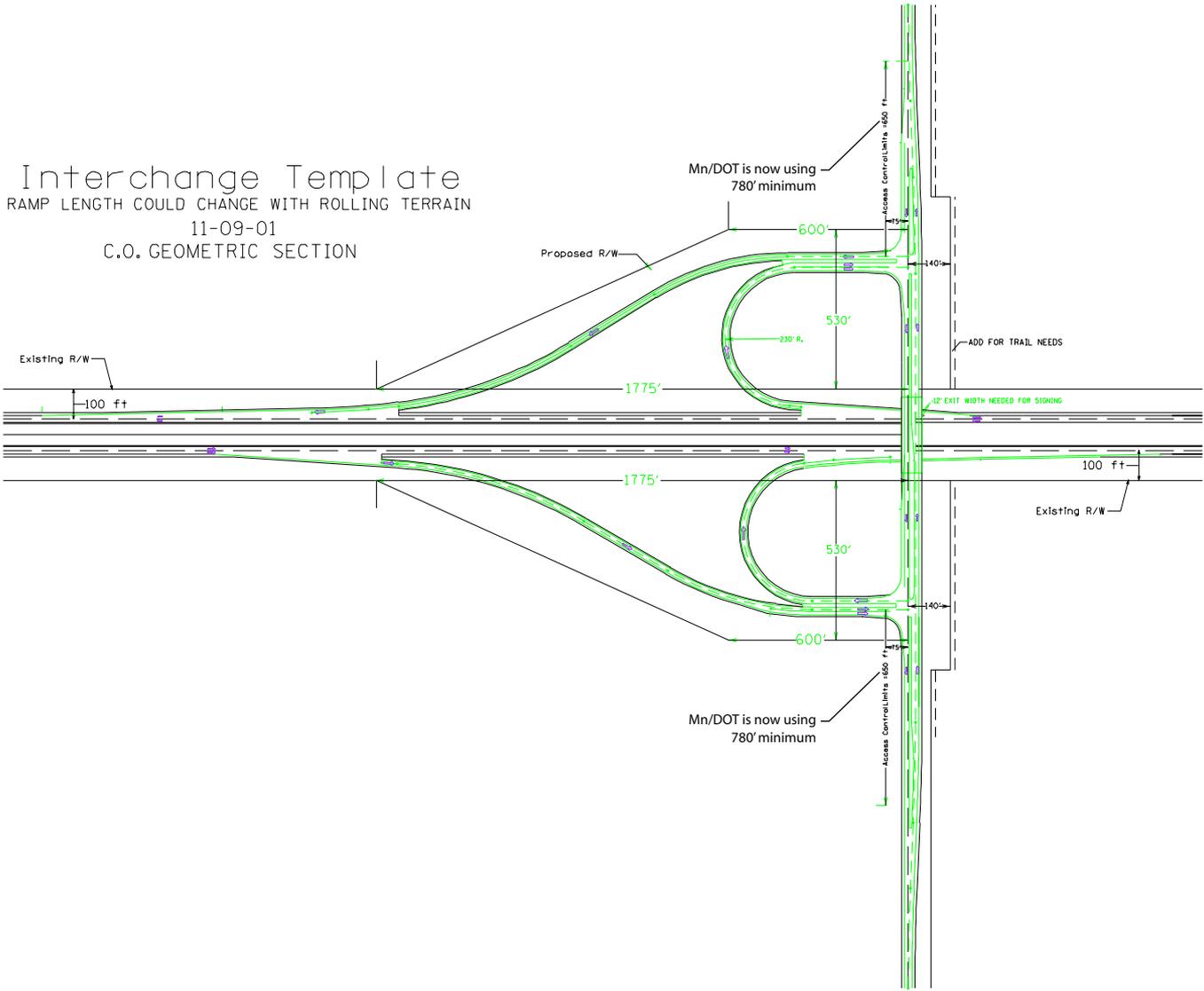
RAMP LENGTH COULD CHANGE WITH ROLLING MAINLINE OR CROSS ROAD GRADE

11-9-01  
C.O GEOMETRIC SECTION



# Interchange Template

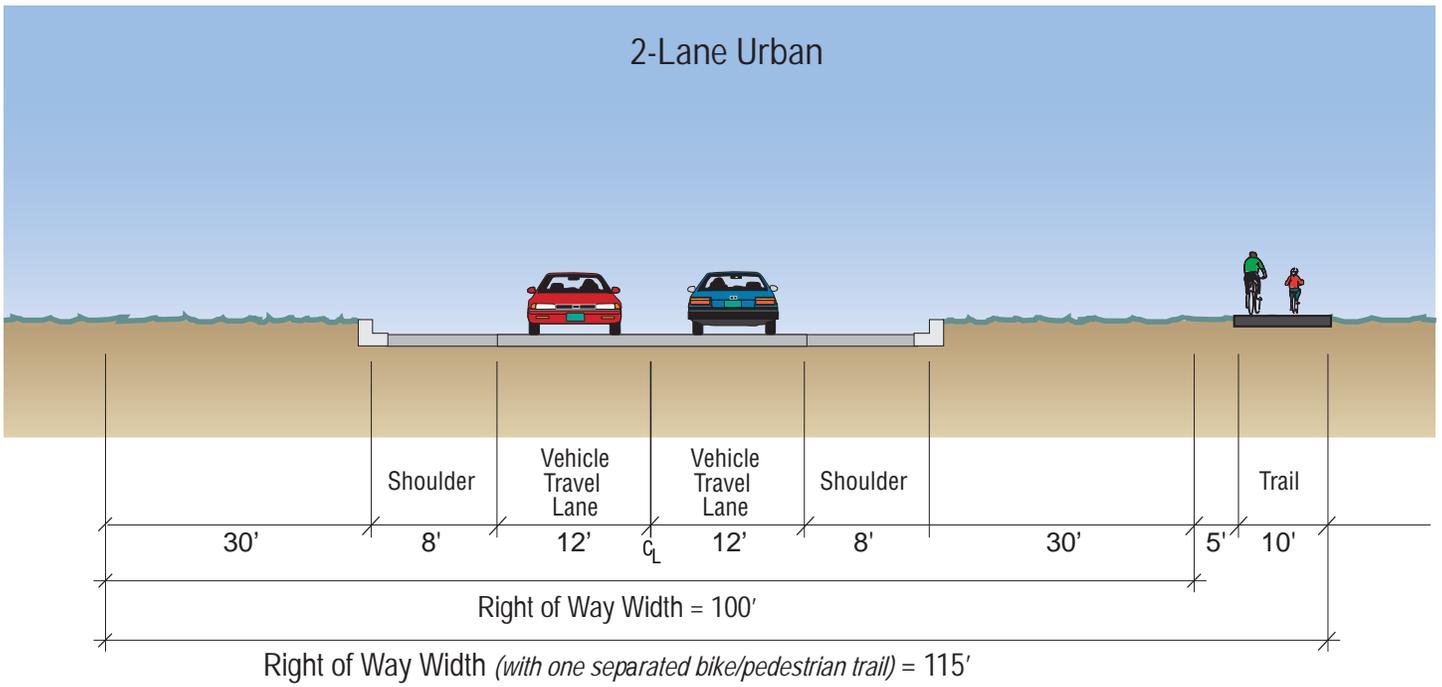
RAMP LENGTH COULD CHANGE WITH ROLLING TERRAIN  
11-09-01  
C.O. GEOMETRIC SECTION



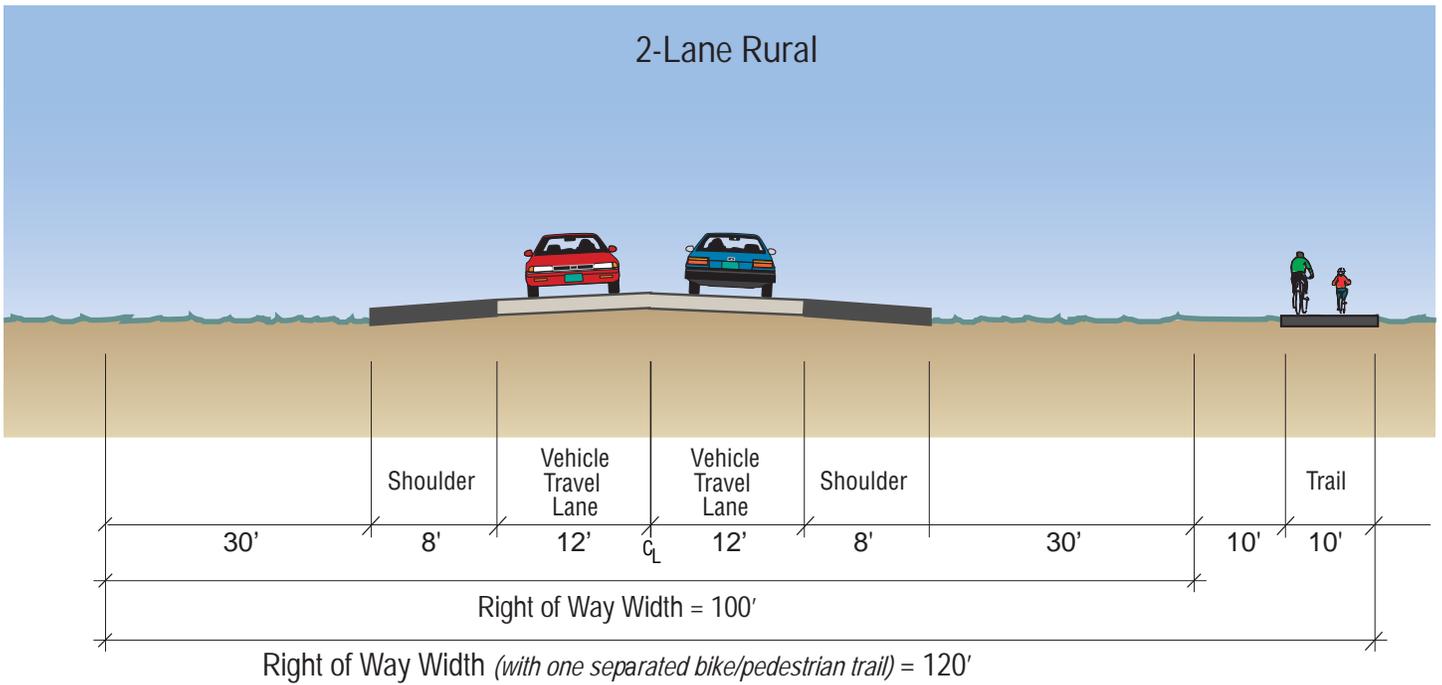
# **APPENDIX I**

## **TYPICAL 2-LANE AND 4-LANE ROADWAY CROSS-SECTIONS**

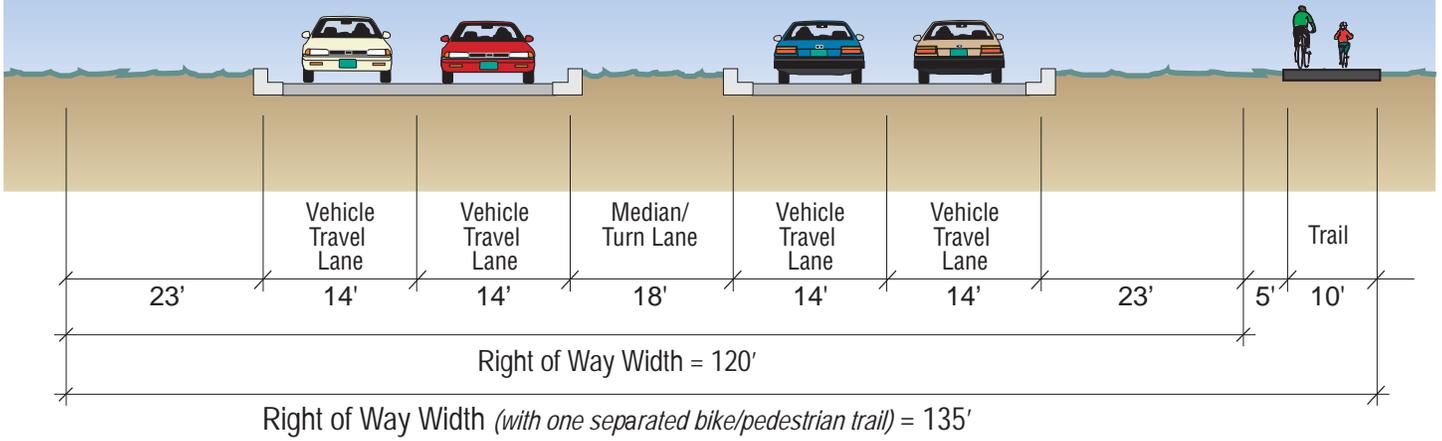
## 2-Lane Urban



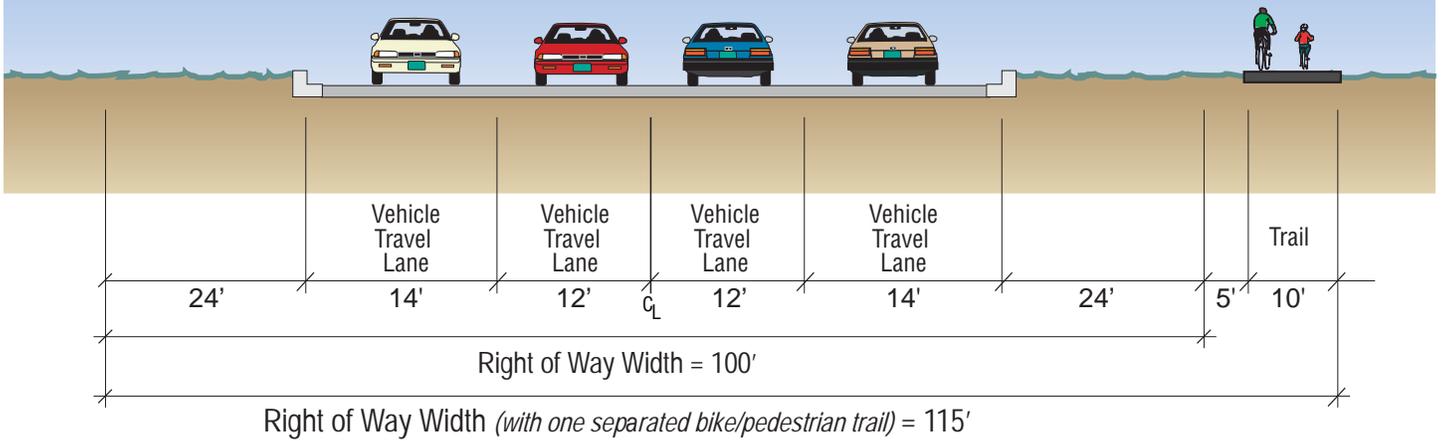
## 2-Lane Rural



### 4-Lane Divided Urban



### 4-Lane Undivided Urban



### 4-Lane Divided Rural

