Dakota County North-South Corridor
Eagan-Inver Grove Heights
Travel Demand Study

July, 2007

Prepared for

Dakota County

City of Eagan

City of Inver Grove Heights

Prepared by

SRF Consulting Group, Inc.

SRF No. 0065826

Dakota County North-South Corridor
Eagan - Inver Grove Heights
Travel Demand Study

Table of Contents

I.	Executive Summary……	1
II.	Purpose and Background……	6
III.	Potential Framework for Decision Making……	9
IV.	Methodology and Key Assumptions……..	10
V.	Scenarios Analysis and Findings……	13
VI.	Next Steps: Process for Prioritizing and Phasing Investments …….	18

Appendices

Appendix A: Scenario Summary Sheets

Appendix B: Detailed Issues Analysis and Findings

Appendix C: Traffic Forecast Model Methodology and Assumptions

Appendix D: 2030 Traffic Forecasts for Alternatives

Appendix E: Baseline Scenario and Assumed Scenario Improvements

Appendix F: Federal Highway Administration Minnesota Division Guidance for Preparation of an Interstate Access Request

Appendix G: Metropolitan Council Highway Interchange Requests: Evaluation Criteria and Review Procedures

I. EXECUTIVE SUMMARY

The purpose of this study is to develop 2030 traffic forecasts and preliminary analysis for a variety of roadway options in the north-central portion of Dakota County in order to provide input to the County and affected communities in subsequent implementation studies and decision-making processes. While it draws conclusions on the effects of the alternatives, its role to provide a framework and analysis for decision making, but not to make a recommendation on a preferred alternative. Final decisions on recommended alternatives and implementation or funding of those options will be made as part of subsequent studies.

The study is the result of independently-completed transportation/land use studies by the Cities of Eagan and Inver Grove Heights that called attention to the role of TH 3, TH 149 and their respective interchanges with I-494. As a result, this study was conducted to consider a consolidated regional and county perspective broader than the local roadway system needs.

A viable transportation system in this study area has vital regional significance to the region, the County and the local communities due to the confluence of a number of factors. The relationship between the land area and the transportation system can be summarized as follows:

- Eagan and Inver Grove Heights have independently completed studies relating to the future development totaling more than 4,300 acres of undeveloped land adjacent to I-494. The proximity of this land, one of the largest single remaining undeveloped areas on the I-494/694 beltway in the Twin Cities, to the core of the Twin Cities Metropolitan area as well as the airport and downtown St. Paul makes this area very attractive for future development as well as significant opportunity to bring in additional assets to their communities.

- The two sites are expected to generate over 200,000 trips per day when fully developed, and will significantly increase traffic demand in the area, particularly on TH 149 and TH 3 and their interchanges with I-494.

- The development in communities south of the study area, such as Rosemount, Farmington and Northfield will increase through-traffic in the study area on TH 3 and TH 149, roadways which, given sufficient capacity, would serve as a surrogate principal arterial to move longer-distance trips through the study area.

- The regional connections for those regional trips are the same I-494/TH 149 (to the west) and I-494/TH 3 (to the east) interchanges that serve as regional system access for development from the study area.

- The study area is in the vicinity of four principal arterials: I-35E, TH 52, TH 55 and I-494. However, TH 52 and I-35E are east and west of the study area, respectively, and do not have convenient access to the study area. TH 55, while it passes through the study area, lacks a connection to the other principal arterials except in the far southeast quadrant (at TH 52) or to non-interstate principal arterials (TH 5 and TH 110, approximately four miles from the center of the study area). Consequently, I-494 is the most logical point of access to the metropolitan highway system.

- In addition to serving study area traffic, TH 55 serves as a barrier to traffic crossing it at the at-grade intersections and in the TH 149/TH 55 common section. The long-term disposition of these intersections should be reviewed in a more detailed Phase 2 study. The common section of TH 55 and TH 149 is forecast to be severely congested by 2030, even with six through lanes.

This study addresses broader, regional, transportation system impacts for both study areas by outlining a proposed framework for decision making. This framework is grounded by five goals:

1. Improve regional system accessibility and continuity.
2. Improve mobility on major collectors and principal arterials.
3. Maximize system efficiency of county and higher-level facilities.
4. Minimize environmental and community impacts.
5. Provide cost effective solutions

Each goal is accompanied by its respective criteria and key questions, which are detailed in Section III. Based on this framework, the following seven scenarios including a 2030 baseline were considered and analyzed in Section IV.

Scenario 1 – 2030 Baseline

Scenario 2 – Interchange at TH 55 and CSAH 63 plus new TH 3 southern alignment

Scenario 3 – Interchange at I-494 and CSAH 63
Interchange at TH 55 and CSAH 63
New TH 3 southern alignment

Scenario 4 – Interchange at I-494 and CSAH 63
Interchange at TH 55 and CSAH 63
New TH 3 southern alignment
Direct connection between southeast TH 55 and west I-494

Scenario 5 – Interchange at I-494 in new location between CSAH 63 and TH 3
Interchange at TH 55 and CSAH 63
New TH 3 southern alignment
Direct connection between southeast TH 55 and west I-494

Scenario 6 – Interchange at I-494 in new location between CSAH 63 and TH 3
Interchange at TH 55 and CSAH 63
New TH 3 southern alignment
Collector-Distributor road connections between existing TH 3 interchange and interchange at I-494 in new location

Scenario 7 – Interchange at I-494 in new location between CSAH 63 and TH 3
Interchange at TH 55 and CSAH 63
New TH 3 southern alignment
Eliminate existing I-494/TH 3 interchange
Eliminate existing I-494/TH 149 east ramps

Figure 1 describes the key issues, improvements and findings from this study. In this report, "severe congestion" is defined as segments of roadway at level of service F (failing). The high-level traffic analysis resulted in the following scenario findings:

a) The 2030 baseline rated poorly in its ability to provide system connectivity and continuity, reduce congestion and facilitate regional trips on the trunk highway system. As the base case, the environmental and community impacts are neutral and the estimated project construction cost is zero since no improvements are assumed beyond those already programmed and funded.

b) Scenarios 4 and 5 rated highest for providing system connectivity and continuity, reducing congestion and maximizing regional trips on the trunk highway system, but would likely have the highest construction costs and somewhat to very negative environmental and community impacts relative to other scenarios

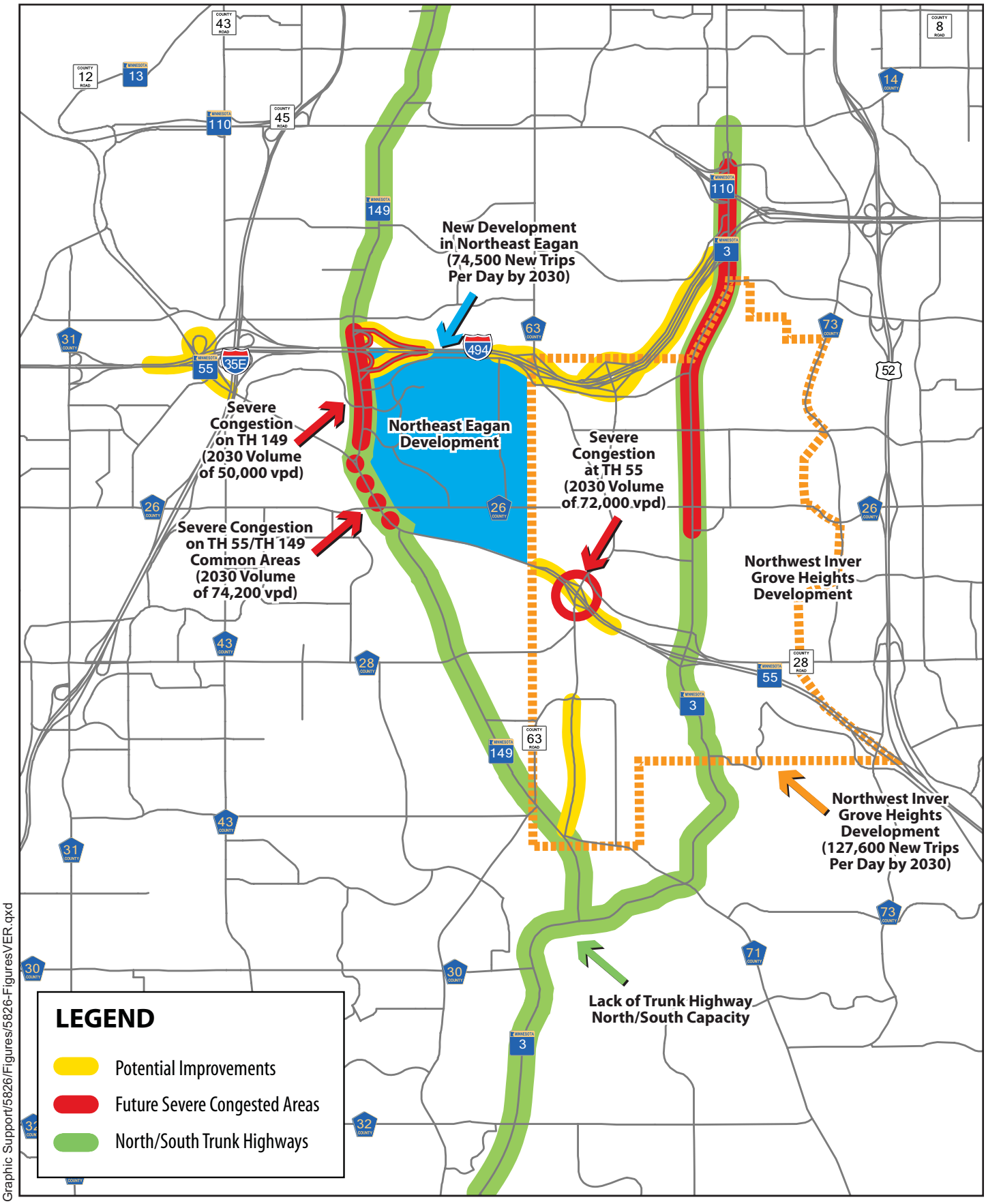
c) Scenarios 6 and 7 also rated positively for providing system connectivity and continuity, reducing congestion and maximizing regional trips on the trunk highway system, but would still have relatively substantial construction costs and negative environmental and community impacts.

d) Scenario 3 occupies the middle ground with lower construction costs and is expected be neutral for the other four criteria.

While this Phase 1 study provides a sketch-level identification of the issues and potential solutions, no actual layouts or design work was completed and consequently cost estimates and environmental/community impacts are largely base on professional judgment. As a result, this study is not sufficient for making detailed design and funding decisions. A Phase 2 study or series of studies should be prepared that include the following elements in sufficient detail to identify engineering and environmental constraints and costs, and traffic impacts to meet any regulatory, funding or environmental requirements:

1) A detailed sub-area transportation study that builds on this Phase 1 process, including a screening of alternatives, more detailed analysis of engineering and environmental issues and detailed traffic modeling consistent with federal, state and regional requirements to identify:
   - I-494 access modifications
   - TH 55 access and capacity modifications
   - Overall system function, connectivity, and capacity staging including a potential new north-south connection
   -
2) Preparation of detailed federal, state and/or regional access modification requests and environmental documentation on the preferred options, as needed.

3) Identification of specific funding sources and strategies, including federal, state, county, local and private sources, as well as potential land development staging strategies.



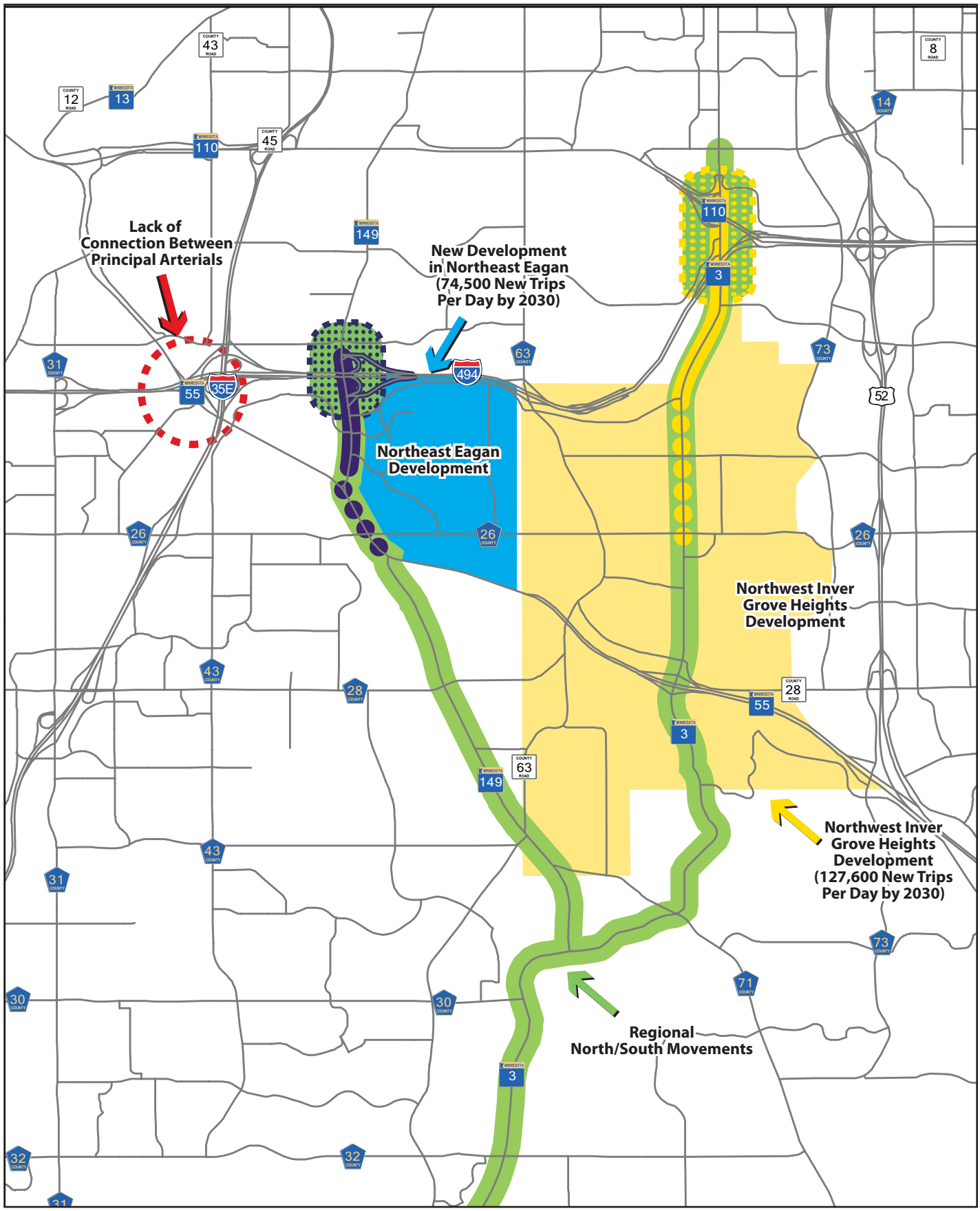
Graphic Support/5826/Figures/5826-FiguresVER.qxd

SRF Consulting Group, Inc.

KEY FINDINGS AND ISSUES MAP

Dakota County North-South Corridor Study
Dakota County, MN

Figure 1



Graphic Support/5826/Figures/5826-Figure 2 VER 071707.qxd

SRF Consulting Group, Inc.

REGIONAL AND LOCAL INTERCHANGE DEMAND

Dakota County North-South Corridor Study
Dakota County, MN

Figure 2

II. PURPOSE AND BACKGROUND

The purpose of this study is to develop 2030 traffic forecasts for a variety of roadway options in the north-central portion of Dakota County in order to provide input to the County and affected communities in subsequent implementation studies and decision-making processes. While it draws conclusions on the effects of the alternatives, its role is not to make a recommendation on a preferred system alternative, but to provide a framework and analysis for decision making as contemplated in these land use studies. Final decisions on recommended alternatives and implementation or funding of those options will be made as part of subsequent studies.

Major transportation/land use studies have been recently completed by the Cities of Eagan and Inver Grove Heights. In Eagan, the Northeast Eagan land use and transportation study has identified development potential in the largest remaining undeveloped area (1,100 acres) of the city. The Northwest Inver Grove Heights Alternative Urban Areawide Study (AUAR) included land use patterns for the 3,180-acre site.

The above reports focus primarily on local roadway needs. This study addresses broader, regional, transportation system impacts for both study areas. Final decisions on recommended alternatives and implementation or funding of those options will be made as part of subsequent studies.

The proximity of this land, one of the largest single remaining undeveloped areas on the I-494/694 beltway in the Twin Cities, to the core of the Twin Cities Metropolitan area as well as the airport and downtown St. Paul makes this area very attractive for future development as well as significant opportunity to bring in additional assets to their communities.

The regional connections for the regional trips from the south are the same I-494/TH 149 (to the west) and I-494/TH 3 (to the east) interchanges that serve as primary points of regional system access for development from the study area (depicted in Figure 2). Consequently, as both the study area develops and the portions of Dakota County south of the area develop there will be increasing pressure on the existing interchanges for regional as well as local traffic.

The study area is in the vicinity of four roadways currently classified as principal arterials: I-35E, TH 52, TH 55 and I-494. TH 52 and I-35E are east and west of the study area, respectively, and do not have convenient access to the study area. TH 55, while it passes through the study area, lacks a connection to the other principal arterials except in the far southeast quadrant (at TH 52) or to non-interstate principal arterials (TH 5 and TH 110, approximately four miles from the center of the study area). Consequently, I-494 is the most logical point of access to the metropolitan highway system for most of the land in the study area.

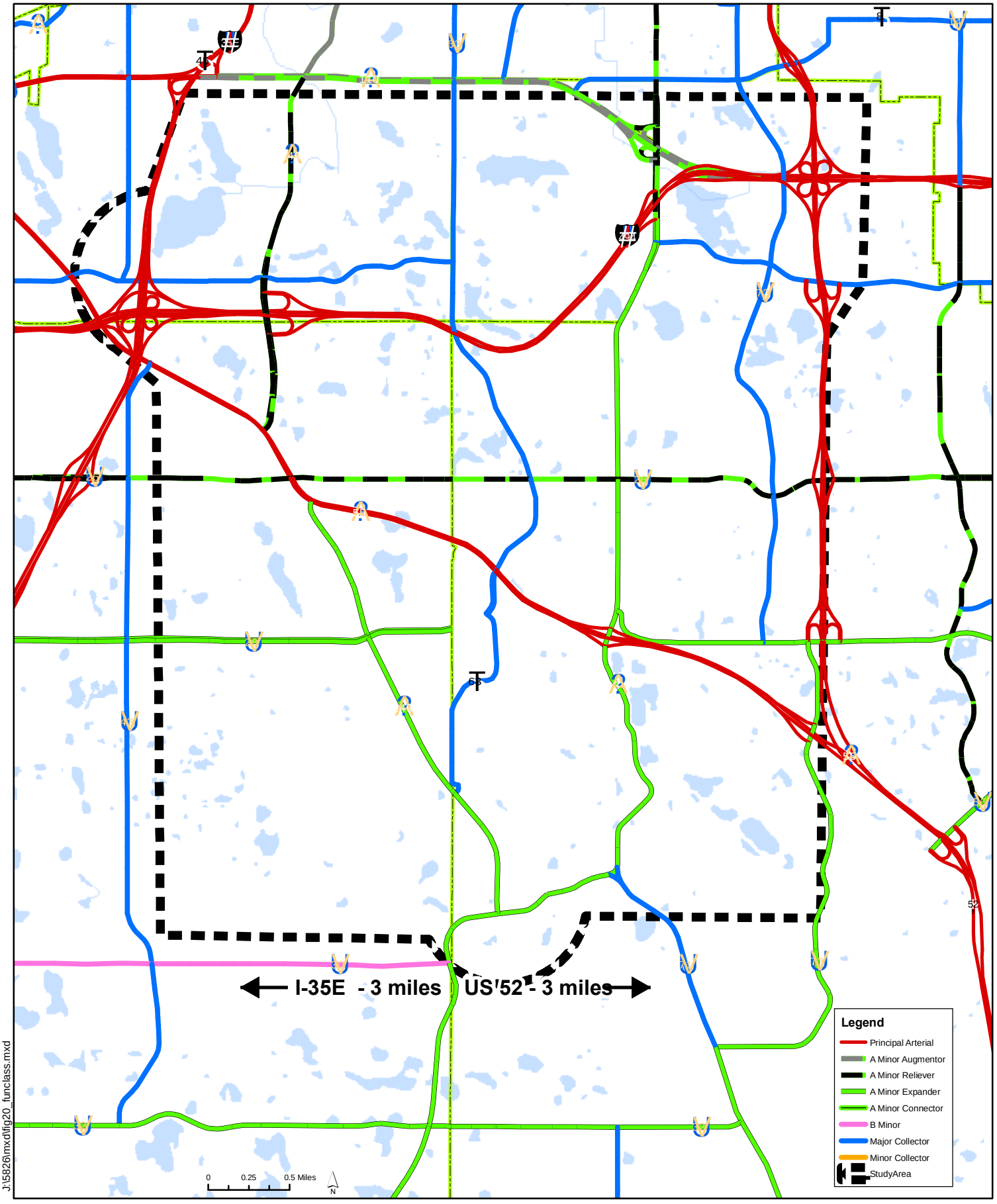
The development in communities south of the study area, such as Rosemount, Farmington and Northfield will increase through-traffic in the study area on TH 3 and TH 149, roadways which, given sufficient capacity, would serve as a surrogate principal arterial to move longer-distance trips.

In addition to serving study area traffic, TH 55 serves as a barrier to traffic crossing it at the at-grade intersections and in the TH 149/TH 55 common section. The long-term disposition of these intersections should be reviewed in the more detailed Phase 2 study. The common section of TH 55 and TH 149 is forecast to be severely congested by 2030, even with six through lanes.

The 1996 Dakota County Transportation Plan identified the need for highway capacity and mobility improvements in Central Dakota County. The focus of the needed study centers on TH 3, a north-south corridor, in the Cities of Eagan and Inver Grove Heights. This area is currently served by Trunk Highway 3, which is a two-lane roadway with some geometric, alignment and cross-section limitations. Mn/DOT's Metro Division Transportation System Plan identifies expansion of TH 3 from two lanes to four lanes between TH 50 to TH 149 as an unfunded need. The Metropolitan Council is currently conducting a Principal Arterial Study to evaluate the needs of the region for additional or expanded principal arterials.

Based on future development and anticipated growth to the south, as well as the Metropolitan Council's functional classification spacing guidelines, there is a potential need for a high-level north-south route (TH 3) to facilitate the north-south travel up into this area. How this north-south route connects to other major routes in the study area has significant regional as well as local implications. The Metropolitan Council classifies roadways by their role in providing access and/or mobility (Figure 3). Principal arterials, generally the freeway system, serve to provide a high level of mobility with limited access in order to serve longer trips. In a developed urban area (which the study will be by 2030), it is appropriate to have principal arterials every 2-4 miles. At the southern end of the study area TH 3 is approximately 3 miles from I-35E or TH 52, thus supporting its tendency to serve as a surrogate principal arterial.

TH 3 and TH 149, along CSAH 26 and 28, are minor arterials in the regional system. The latter two, serve the east-west movements though the study area and providing access to TH 52 and I-35E, the north south principal arterials near the study area.



SRF Consulting Group, Inc.

FUNCTIONAL ROADWAY CLASSIFICATION

DAKOTA COUNTY NORTH-SOUTH CORRIDOR STUDY

Dakota County, MN

Figure 3

III. POTENTIAL FRAMEWORK FOR DECISION MAKING

This study presents a framework for staff and elected decision makers to use as a planning tool to compare the various scenarios to the baseline. This framework, as described in Table 1, provides a high-level comparative analysis based on five transportation goals and criteria.

Table 1: Framework Goals and Criteria

Goals	Criteria
1. **Improves Regional System Connectivity**	**Provides System Connectivity** – Does the scenario provide the appropriate level of access to the regional transportation system given the spacing of interchange access and location of future growth? Does the scenario provide route continuity and reasonable arterial spacing for an urbanizing area?
2. **Improves Mobility** on Major Collectors and Principal Arterials	**Reduces Congestion** – Does the scenario reduce segment and interchange overloads on major collectors and principal arterials?
3. **Maximizes System Efficiency** of County and Higher-Level Facilities	**Accommodates Regional Trips on Trunk Highway System** – Does the scenario provide adequate capacity on the trunk highways system to accommodate the growth of regional trips? Does the scenario efficiently provide for the movement of people and goods by minimizing vehicle miles and/or vehicle hours of travel (VMT, VHT) as compared to the base alternative?
4. **Minimizes Environmental and Community Impacts**	**Environmental and Community Impacts** – To what extent does the scenario result in environmental and community impacts? This is a high-level qualitative assessment considering addition of new roadways, proximity to natural resources, displacement of residences or businesses and potential noise and air quality impacts of proposed scenarios. More detailed environmental analysis to determine the impacts on surrounding natural and community features would occur in a future study phase consistent with federal and state requirements.
5. **Cost Effective**	**Magnitude of Project Costs** – What is the range for the scenario's project costs? Based on forecast volumes, what is the level of investment needed to accommodate forecast volumes?

The five goals, criteria and associated guiding questions will be used in the following chapters as relative measures to compare various scenarios to the baseline.

IV. METHODOLOGY AND KEY ASSUMPTIONS

A. Study Methodology

This study uses a methodology that combines the advantages of the Metropolitan Council travel demand model (updated travel behavior and long-term horizon years) with the advantages of the Dakota County traffic model (more detailed roadway and land use information). Land use assumptions, discussed below were a combination of the Council forecasts plus additional information provided by the county and communities (see Appendix C for additional information on study methodology).

The Dakota County model has a more refined level of geography than the Metropolitan Council's regional model. While the Council's model can be reasonably used to provide overall travel patterns and allocation of traffic at a regional level, the refinement within the Dakota County model does a better job of allocating the travel to the collector and arterial roadway system.

The forecasts were developed using two sets of travel demand modeling assumptions that may need to further review and refinement as part of any roadway development process:

- In some communities the development exceeds levels approved by the Council in its approved regional development framework. The Metropolitan Council and Minnesota Department of Transportation may require reconciliation of any development forecasts prior to project development approvals. This is typically done through comprehensive plan amendments or changes in the modeled development assumptions to reflect approved levels.

- Forecasts were developed using "unconstrained" highway system capacity (up to a maximum of three lanes per direction) in the study area in order to capture the potential demand. However, project-level forecasts typically assume only the existing, programmed and planned improvements to be in place, except for the project(s) under consideration. The roadway system is thus modeled to reflect traffic bottlenecks and diversions resulting from capacity shortages. The Metropolitan Council and Minnesota Department of Transportation may require that this difference be reconciled prior to project development approvals.

B. Summary of Development Assumptions

Year 2030 development assumptions were based on the Metropolitan Council's regional development framework (as updated March 8, 2006) with the following major exceptions (see Appendix C for additional information on development assumptions):

- The Northwest Inver Grove Heights area is assumed developed consistent with the Inver Grove Heights Northwest Expansion Area Alternative Urban Areawide Review (AUAR) prepared for the City in 2005. The development assumed in that study included 7,090 housing units, 1,675 thousand square feet (KSF) of retail land use and 2,130 KSF of non-retail land uses.

- The Northeast Eagan Areawide Study, prepared for the City in 2005, included an additional 410 thousand square feet (KSF) of retail land use and 5,330 KSF of non-retail land use, resulting in nearly 9,000 additional jobs in that portion of the city.

- Development is assumed in Lakeville and Empire Township at levels above the Metropolitan Council's published forecasts based on consultation with county and city staffs regarding current and anticipated developments that may be addressed as part of the comprehensive planning process. This accelerated level of development, above and beyond the Metropolitan Council's published forecasts, puts additional pressure on roadways within the study area. In particularly it adds trips to TH 3 and connections to I-494 that are destined toward the international airport, St Paul, Minneapolis or other parts of the core metropolitan area.

- Additional development is assumed in Rosemount, consistent with comprehensive plan application to the Metropolitan Council. Rosemount is actively planning the development of the area in the vicinity of Akron Avenue and County 42 to TH 52, and prepared a comprehensive plan amendment in 2005 and an AUAR in 2006. No explicit assumptions have been made for the redevelopment of the University of Minnesota research farm area in Rosemount, consequently no new development is assumed in that area beyond that included in current plans.

C. Summary of Roadway Assumptions

Regional roadway improvements included funded projects from the 2005 Metropolitan Council Transportation Policy Plan and Mn/DOT Metro Division Transportation System Plan. The most significant improvements included are the completion of the new Wakota Bridge, additional capacity on TH 149 from TH 55 to Wescott Road, expansion of I-494 in Bloomington and additional capacity on I-35E from TH 110 to TH 13. Mn/DOT identifies expansion of TH 3 in Dakota County as an unfunded need.

Dakota County roadway improvements were included from the County's 2025 traffic model, including new roadway connections and collector roadways.

Other local improvements were assumed based on traffic studies used in the AUARs for Eagan and Inver Grove Heights. These assumptions are included in the baseline assumptions for all alternatives, with the most significant improvements as follows:

- Extension of 65th Street East from TH 3 to CSAH 63 in northern Inver Grove Heights

- A north-south collector generally in the vicinity of the Inver Grove Height-Eagan boundary between Lone Oak Road and I-494 boundary.

- County Road 28 "Phase 2" (80th Street East)connection between TH 3 and CSAH 63 immediately north of TH 55.

- A collector connection between CSAH 63 and TH 3 south of I-494 in northern Inver Grove Heights

- In some instances the alignments for these roadways have not been specifically identified and are conceptually represented in the model.

D. Summary of General Travel Characteristics

A feasibility study of potential improvements to make Robert Street a transit corridor for bus rapid transit or light rail transit is currently underway. Improvements to transform Robert Street to a transitway coupled with orienting land uses to support efficient and effective transit service could reduce, but would not eliminate congestion in the study area in 2030. Since transit enhancement in the Robert Street corridor are currently being study and not funded in the Metro 10-Year Plan or the Metro District 2030 Transportation System Plan, these improvements are not included in forecast model.

The assumed development of northeast (NE) Eagan and northwest (NW) Inver Grove Heights is forecast to generate a total of nearly 206,000 daily trips (see Table 2). These totals differ from the reported trips in the AUARs because they are calculated using a different method, as described in Appendix C. For example, the NW Inver Grove Heights AUAR estimated approximately 152,200 daily trips and the NE Eagan study estimated 74,500 daily trips before applying discount factors for "pass-by" and diverted trips. The estimated totals are within one standard deviation of the estimated trips using ITE data (see Appendix C for additional information on general travel characteristics).

Table 2: Trip Generation Origin/Destination Patterns

	Northeast Eagan	Northwest Inver Grove Heights	Total Study Area
Trips within own study area	1,300	10,000	11,300
(Percent of Total)	*(2%)*	*(8%)*	*(5%)*
Trips between NE Eagan and NW Inver Grove Heights	4,100	4,100	8,200
(Percent of Total)	*(5%)*	*(3%)*	*(4%)*
Beyond Study Area	70,800	115,500	186,300
(Percent of Total)	*(93%)*	*(89%)*	*(91%)*
Total	76,200	129,600	205,800
(Percent of Total)	*(100%)*	*(100%)*	*(100%)*

Virtually none of the NE Eagan trips remain within that study area (two percent), while eight percent of the NW Inver Grove Heights stays in the study area. This can be attributed to the greater mix of land uses in that portion of the study area, with a blend of residential and commercial/industrial uses. An estimated 8,200 trips per day would travel between the two portions of the study area. Approximately 91 percent of the total trips generated by the study area have one end outside of both areas.

V. SCENARIOS ANALYSIS AND FINDINGS

A. Scenarios Considered

A total of seven scenarios were considered in this study, including a 2030 baseline and six major improvement scenarios. Traffic forecasts and analysis was conducted for 11 initial alternatives, but four of the alternatives were stand-alone project improvements components (also referred to below and in Figure 4) and are not considered scenarios in this report. Additional traffic forecast data and information for the four components alternatives that combine to form the scenarios can be found in Appendix D and E.

The 2030 baseline consists of planned and programmed improvements on the Dakota County roadway system as well as planned and programmed improvements to Eagan and Inver Grove Heights roadways (i.e., roadways consistent with their adopted plans or the above-mentioned transportation studies). Additional information related to the 2030 baseline scenario can be found in Appendix D and E.

Each of the six major improvement scenarios were designed to affect one or more of the key traffic issues in the study area. Scenarios consisted of one or more major project improvements to the roadway system. While certain design assumptions had to be made in order to perform the modeling work, the design assumptions will be subject to environmental and engineering reviews.

The key major project improvement components of each scenario are described below and highlighted in Figure 4.

A. Add an interchange at I-494 and County State Aid Highway (CSAH) 63, also known as Argenta Trail and Delaware Avenue.

B. Add an interchange at I-494 in a new location between CSAH 63 and the existing Trunk Highway (TH) 3 interchange.

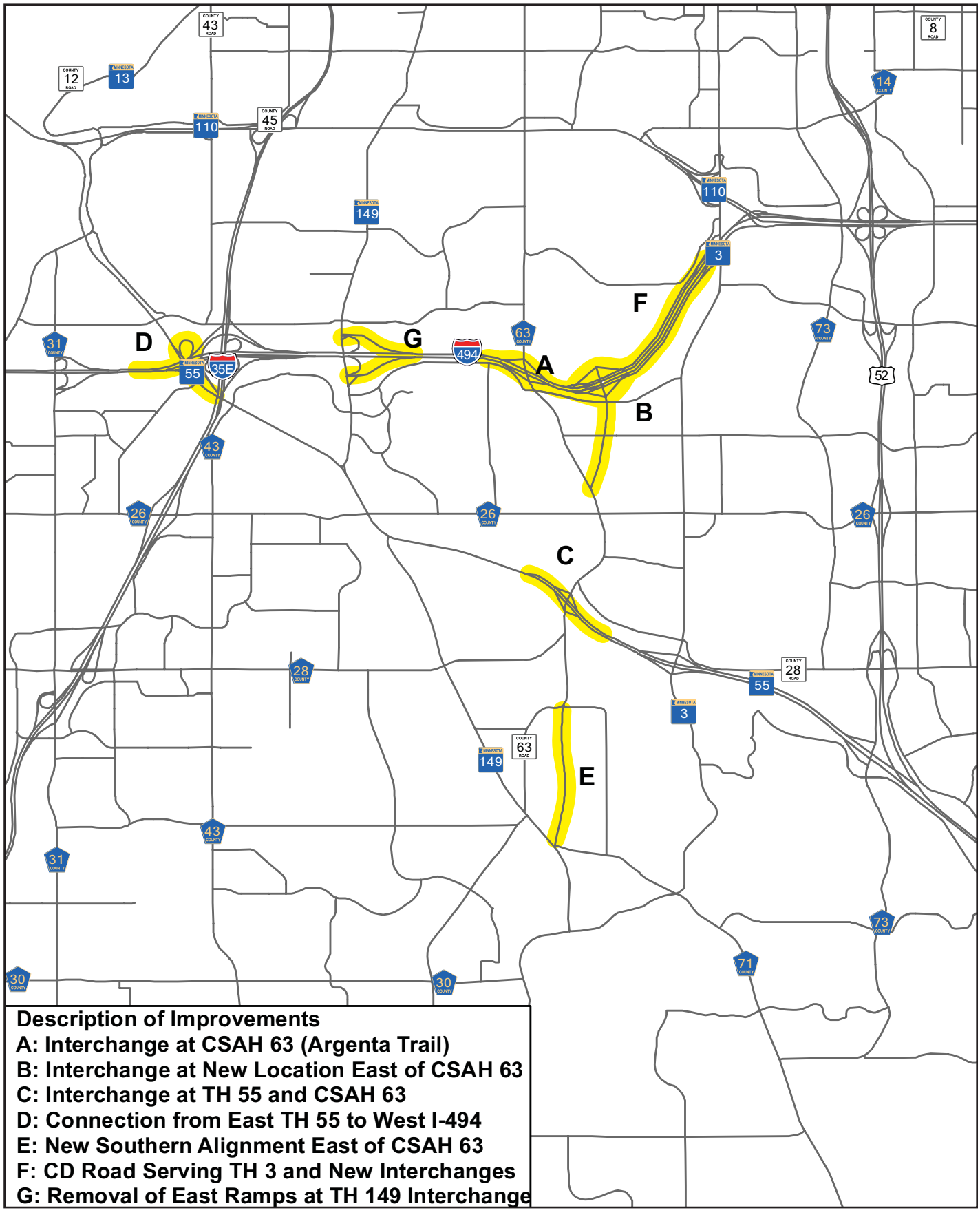
C. Replacement of the intersection at TH 55 and CSAH 63 with an interchange.

D. Add new direct connections between TH 55 to/from the southeast with I-494 to/from the west.

E. Add a new connection and capacity to TH 3 east of CSAH 63 in the section between TH 55 and TH 149.

F. Add collector-distributor (C-D) roads serving TH 3 and new I-494 Interchange in new location.

G. Remove east ramps at TH 149 interchange.



Description of Improvements
A: Interchange at CSAH 63 (Argenta Trail)
B: Interchange at New Location East of CSAH 63
C: Interchange at TH 55 and CSAH 63
D: Connection from East TH 55 to West I-494
E: New Southern Alignment East of CSAH 63
F: CD Road Serving TH 3 and New Interchanges
G: Removal of East Ramps at TH 149 Interchange

Graphic Support/5826/Figures/5826-FiguresVER.qxd

SRF Consulting Group, Inc.

IMPROVEMENTS CONSIDERED IN STUDY AREA

Dakota County North-South Corridor Study
Dakota County, MN

Figure 4

The combination of these components make up six scenarios that include improvements above and beyond those assumed in the 2030 baseline scenario. Thus, including the 2030 baseline, the seven considered scenarios are as follows:

- Scenario 1 – 2030 Baseline
- Scenario 2 (C + E) – Interchange at TH 55 and CSAH 63 **plus** new TH 3 southern alignment
- Scenario 3 (A + C + E) – Interchange at I-494 and CSAH 63 **plus** Interchange at TH 55 and CSAH 63 **plus** new TH 3 southern alignment
- Scenario 4 (A + C + E + D) – Interchange at I-494 and CSAH 63 **plus** Interchange at TH 55 and CSAH 63 **plus** new TH 3 southern alignment **plus** direct connection between southeast TH 55 and west I-494
- Scenario 5 (B + C + E + D) – Interchange at I-494 in new location between CSAH 63 and TH 3 **plus** Interchange at TH 55 and CSAH 63 **plus** new TH 3 southern alignment **plus** direct connection between southeast TH 55 and west I-494
- Scenario 6 (B + C + E + F) – Interchange at I-494 in new location between CSAH 63 and TH 3 **plus** Interchange at TH 55 and CSAH 63 **plus** new TH 3 southern alignment **plus** C-D road connections between existing TH 3 interchange and interchange at I-494 in new location
- Scenario 7 (B + C + E – G) – Interchange at I-494 in new location between CSAH 63 and TH 3 **plus** Interchange at TH 55 and CSAH 63 **plus** new TH 3 southern alignment **minus** existing I-494/TH 3 interchange **minus** existing I-494/TH 149 east ramps

Table 3 provides a graphical description of the composition of each scenario and their relative component differences.

Table 3: Composition of Scenarios

Scenario 1	**2030 BASELINE**						
Improvement Scenarios	**Components**						
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
	I-494/ CSAH 63 Interchange	New I-494 Interchange Location	TH 55/ CSAH 63 Interchange	I-494/ TH 55 Direct Connections	New TH 3 Alignment	I-494 CD System	Close TH 149/ I-494 East Ramps and TH 3/I-494 West Ramps
2			✓		✓		
3	✓		✓		✓		
4	✓		✓	✓	✓		
5		✓	✓	✓	✓		
6		✓	✓		✓	✓	
7		✓	✓		✓		✓

B. Scenario Analysis and Key Findings

The analysis and evaluation of considered scenarios is summarized in Table 4 using the criteria outlined in the framework for decision-making. Each scenario is rated relative to the 2030 baseline scenario (i.e., Scenario 1). Some of the improvements assumed can be considered independently of each other, thus a preferred alternative may consist of portions of different scenarios rather than any one of those identified in this study. Summary pages and more detail information for each of the seven scenarios can be found in Appendix A. In addition, individual analysis for the major considered improvements affecting access to I-494 (i.e. Improvements A, B and D in Figure 4) are also included to provide additional context.

This high-level scenario analysis resulted in the following key findings. More detailed analysis and findings related to specific transportation issues can be found in Appendix A and B.

1. Land development will increase traffic volumes and result in capacity deficiencies on TH 149 and TH 3, especially, at their junctions with I-494.

2. Demand on the TH 3 and TH 149 corridor entering the study area from the south, is expected to exceed the capacity of the roadway due to growth in communities such as Farmington and Northfield.

3. Traffic flow to and along TH 55, a principal arterial, through the study area is negatively affected by the at-grade traffic signals, particularly at CSAH 63 (Argenta Trail).

4. The common section of TH 55 and TH 149 will be severely congested by 2030.

5. The 2030 baseline rates poorly in its ability to provide system connectivity, reduce congestion and maximizes regional trips on the trunk highway system. As the base case, the environmental and community impacts are neutral and the estimated project construction cost is zero.

6. Scenarios 4 and 5 rate highest for providing system connectivity and continuity, reducing congestion and maximizing regional trips on the trunk highway system, but had the highest estimated construction costs and somewhat to very negative environmental and community impacts.

7. Scenarios 6 and 7 also rate positively for providing system connectivity, reducing congestion and maximizing regional trips on the trunk highway system, but would still have relatively substantial construction costs and negative environmental and community impacts.

8. Scenario 3 occupies the middle ground with lower construction costs, but also more neutral benefits and other impacts.

Table 4: Scenario Analysis of Key Issues

	Scenarios						
	2030 Baseline	**2**	**3**	**4**	**5**	**6**	**7**
Criteria		TH 55/ CSAH 63 Interchange New TH 3 Alignment	I-494/ CSAH 63 Interchange TH 55/ CSAH 63 Interchange New TH 3 Alignment	I-494/ CSAH 63 Interchange TH 55/ CSAH 63 Interchange I-494/ TH 55 Direct Connections New TH 3 Alignment	New I-494 Interchange Location TH 55/ CSAH 63 Interchange I-494/ TH 55 Direct Connections New TH 3 Alignment	New I-494 Interchange Location TH 55/ CSAH 63 Interchange New TH 3 Alignment I-494 CD System	New I-494 Interchange Location TH 55/ CSAH 63 Interchange New TH 3 Alignment Close TH 149/ I-494 East Ramps and TH 3/I-494 West Ramps
Provides System Connectivity and Continuity	- -	-	O	++	++	+	+
Reduces Congestion	- -	-	O	++	++	+	+
Accommodates Regional Trips on Trunk Highway System	- -	-	O	++	++	+	+
Environmental and Community Impacts	O	O	O	-	- -	- -	-
Magnitude of Project Costs (above 2030 baseline) **	O	Lowest	Lowest	Highest	Highest	Medium	Medium

Key
(+ +) achieves criteria
(+) somewhat positive impact
(O) neutral
(-) somewhat negative effect
(- -) does not adequately address criteria

** Construction cost ranges vary significantly by project. These magnitudes are meant to provide only a relative guidance to distinguish among the scenarios. These cost estimates do not include additional capacity improvements on existing roadways. Only preliminary construction cost estimates for the components in Table 3 are included.

VI. NEXT STEPS: PROCESS FOR PRIORITIZING AND PHASING INVESTMENTS

The purpose of this study was to develop 2030 traffic forecasts and analysis for a variety of roadway options in the north-central portion of Dakota County. This information could be used to provide input to the County and affected communities in subsequent implementation studies and decision-making processes. While it draws out findings on the effect of the six improvement alternatives, it is not intended to make a recommendation on a preferred system alternative. It does provide a framework and analysis for decision making to understand the dynamic and at times competing factors at play.

The proposed improvements that comprise scenarios 2 thru 6 are not currently programmed in the Metro 2030 Transportation System Plan. In a climate of scarce funding for new transportation projects, it is incumbent upon the County and Cities to think about creative and innovative funding sources. These could include and are not limited to development fees, special assessments, wheelage fees and special-use sales tax increment.

While this Phase 1 study provides a sketch-level identification of the issues and potential solutions, no actual layouts or design work was completed and consequently cost estimates and environmental/community impacts are largely base on professional judgment. As a result, this study is not sufficient for making detailed design and funding decisions.

One area of consideration for the study would be that in order to compete for federal and state funding traffic forecasts would have to be based on development levels consistent with regionally approved forecasts, and constrained roadway assumptions consistent with planned and programmed improvements. These directives are required for federal and regional funding as well as environmental regulations. Consideration of ultimate and unconstrained development or capacity is appropriate as a scenario or sensitivity test of post-2030 needs or design longevity.

A. Decision-making Process and Organization

The organization of the next phase of the study and type of process is very similar to the one this Phase 1 North-South Study with some enhancements. The next phase needs a lead agency, similar to the current one (most likely the Dakota County given the multi-jurisdictional nature of the study area). It needs a Technical Advisory Committee (TAC) to review information and guide the study (the current composition of the group is good; including participation of communities north of I-494). It also needs a process to communicate with elected leaders and the public (through open houses and/or public forums) as this will be a decision-making process. Finally, it needs to have some legal standing to provide communities with a way to move forward with the results. As such, it needs to follow the necessary state and federal rules.

FHWA's access policy requires that one prove that the current access and/or systems with appropriate enhancements can't safely accommodate future traffic demands and modifying access will not create operational and/or safety issues (especially on the interstate). This usually requires that local communities make all reasonable efforts to accommodate short- to medium-length trips on their arterial and collector systems (i.e., they have committed to improve these systems to provide local continuity and connectivity). In addition, one must show that the proposed access changes and corresponding system changes fit within the overall plan for the community and the region. The FHWA's eight access criteria are included as Appendix F.

The Metropolitan Council's *Evaluation Criteria and Review Procedures for Highway Interchange Requests* is included as Appendix G. The procedures further outline the expectations placed on local units of government to demonstrate that anew interchange or additional interchange capacity is required.

B. Outline of Tasks in Follow-up Study

The following tasks should be included in the second phase of study. This study can be expected to take up to 30 months to complete, depending on the extent of the issues involved. The first four tasks include a detailed study of the transportation system in the study area and screening of alternatives. This portion of the study may take up to 12 months (although many of the processes in place for this phase 1 study would be already in place). The second set of tasks include formal review and documentation that could take from 12-18 months.

Task 1: Determine Scope of Study Area

A key component of the interstate access modification process is to specifically define the geographic extent of the project. This task would involve meeting with Mn/DOT and FHWA to review the scope and extent of model limits (identify where peak hour forecasts need to be produced – define limits of operational CORSIM model). Technical analysis for access changes can be resource intensive and it is desirable to limit the effort to only the necessary roadway system.

Task 2: Detailed System Planning Study

Typically an upfront detailed system planning study with a formal evaluation process and public/agency involvement is conducted prior to going through an official environmental study to complete the layout, access request and environmental documentation.

Building on this phase 1 study and other previous concept work done in the area (e.g., the NE Eagan Study, NW Inver Grove Heights AUAR, etc.) and input from the TAC, this study would develop a base system plan (plan assuming no access changes to I-494, but local system improvements) as well as a 2030 system plan for the study area (the 2030 system plan could have multiple options). The system plan would focus on system planning principles such as roadway continuity, connectivity, as well as minimizing

physical and environmental impacts. Network and access concepts would be screened in more detail to flush out what concepts may or may not be feasible from a conceptual design standpoint (by discussing these concepts with communities, Metropolitan Council, Mn/DOT and FHWA to understand their acceptability from a geometric and access spacing perspective).

The Metropolitan Council's Principal Arterial Study may also provide a source of information on the potential changes in roadway roles in the study area.

The primary outcome of this study will be to identify preferred alternatives for the following areas in sufficient detail to proceed into access modification, environmental review and/or funding processes:

- I-494 access modifications
- TH 55 access and capacity modifications
- Overall system function, connectivity, and capacity staging including a potential new north-south connection

Task 3: Modify Previous Traffic Forecasts Work

As part of the detailed system planning study, and for the purposes of the Interchange Access Modification process, the travel demand model must be run as a capacity-constrained model and use approved development assumptions and background roadway assumptions. The travel demand modeling previously conducted was set up to make the transition to "constrained" operation without significant modifications. However, prior to initiating the study a final verification of background development assumptions should be made. In this task, for local and regional roadways, as well as trip length and select link information for defining users of particular interchanges or facilities. Develop forecasts that will be consistent for year of opening, ten year, design year, and build/no-build daily, a.m. and p.m. peak periods (for input into traffic operations model and air quality) for study area.

Task 4: Planning-level evaluation of alternatives

Evaluate system alternatives based on whether they meet the transportation purpose and need. Criteria to include such things and minimizing overloads of ramps, minimizing overloads of links, minimizing VMT and VHT, minimizing short freeway trips, avoiding location defining impacts (environmental review – fatal flaws), and local support. Upon completion of the evaluation, a preferred alternative or a group of alternatives typically would be carried forward into a more detailed operational analysis (CORSIM model analysis). Information from this planning portion of the study would be provided to each community and the county for use in their comprehensive plan updates.

Task 5: Detailed traffic operations analysis

Using the forecasts developed in Task 3 above, analyze year of opening, design year, and build/no-build conditions for the proposed roadway network. Identify operational issues and make recommendations for refinements of design. The level of detail needed for the

traffic analysis will vary, depending on of locations of improvements (interstate versus local road system). This work is required as part of the Interstate Access Modification Request and Environmental Documentation described later.

Task 6: Prepare geometric layout for stakeholder approval

Develop concept layouts for the preferred roadway network. For interstate and trunk highway improvements, develop layout suitable to obtain Mn/DOT Staff Approval. For local and county highway connections, develop layouts suitable to obtain county and local approval. This will involve coordination with all stakeholders to obtain approval. This work is required as part of the Interstate Access Modification Request and Environmental Documentation described later.

Task 7: Prepare and submit Interstate Access Modification Request

Based on traffic forecast, traffic operations analysis and layout, prepare and submit Interstate Access Modification Request for Mn/DOT, FHWA, and Metropolitan Council approval. This document is required when proposing modifications to existing access or proposing new access to the interstate system. It also demonstrates to Mn/DOT and FHWA the need and validity of the proposed improvements.

Task 8: Prepare Environmental Documentation

In order to have an access request approved an official environmental document must be completed. The determination on the type of environmental documentation will be based on two components, how the proposed roadway network is going to phased/implemented and if any of the proposed improvements are going to be federally funded. The following is a list of state and federal criteria that will need to be followed:

State of Minnesota Requirements

- Proposed roadway corridors on new alignment of one-mile or greater requires an Environmental Assessment Worksheet (EAW).
- New access to an interstate requires an EAW.

Federal Requirements

- Proposed roadway corridors on new alignment require an EIS, if federally funded. (Depending on circumstances, it may only require an Environmental Assessment.
- New access to an interstate requires an EA.

For the TH 3 new alignment, an EAW would be required by the state depending on the length of new alignment. An EIS (or EA) would be required to meet federal requirements. Typically for a new access to I-494 an EAW would be required by the state and an EA to meet federal requirements.

It should be noted that typically an upfront detailed system planning study with a formal evaluation process and public/agency involvement is done (tasks 1-4) prior to going through an official environmental study to complete the layout, access request and environmental documentation.

An additional consideration, separate or as part of the above would be to develop a broad funding strategy to identify and pursue sources of funding. Sources of funding should be considered from all levels, but will be limited by competing priorities. For example, Mn/DOT has identified TH 3 as needing additional capacity in its Transportation System Plan, but funding does not currently exist to meet that need. Other funding sources exist at the county, local and private levels that might be better able reflect either the value added of the increased accessibility. For example, development fees and benefit assessments are options at a local level.

The final consideration for the subsequent phase of study would be to develop a phasing or staging plan for both roadway improvements and land development. Roadway improvements, once preferred alignments and designs are selected, could be constructed generally when traffic has increased to the level warranting the improvement and/or funding has been secured. Development phasing should take into account the location and intensity relative to the transportation infrastructure – more intense development may need to be delayed until new capacity has been constructed.

APPENDIX A:
Scenario Summary Sheets

Scenario 1: Baseline with Planned/Programmed 2030 Improvements

Description
Scenario 1, also call the 2030 baseline, includes only improvements currently planned and/or programmed by 2030. The capacity in the study area used for the traffic assignment was unconstrained. This results in traffic forecasts that represent demand volumes for each roadway, rather than traffic that is distributed according to existing roadway capacities. The traffic volumes identified in this forecast are used to identify roadways that are expected to be over capacity in year 2030. Locations expected to be over capacity will be discussed under the improvement alternatives to evaluate whether analyzed improvements help to mitigate the congested areas.

Magnitude of Project Costs (i.e. conceptual construction cost estimate): O
As the baseline for comparison with the following 6 "improvement" scenarios, the conceptual construction cost estimate is assumed to be O. The estimated construction costs for the subsequent scenarios are in addition to those already planned by 2030.

(See Table E-1 on page 60)

Provides System Connectivity (- -)
Provides constrained connectivity for new development in NE Eagan and NW Inver Grove Heights from the south. Does not improve access for regional trips between east TH 55 and west I-494, which continue to rely on the I-494/TH 149 interchange. The I-494/TH 149 interchange would service trips from I-494 to the new development since no other access is provided, which would overload these ramps.

Reduces Congestion (- -)
Demand on a significant number of roadways is expected to exceed capacity by 2030. The most severe congestion levels are expected at the following locations.

- I-494/TH 149 WB On Ramp and EB Off Ramp
- TH 55 and TH 149 Common Section
- TH 3 North of Upper 55th Street

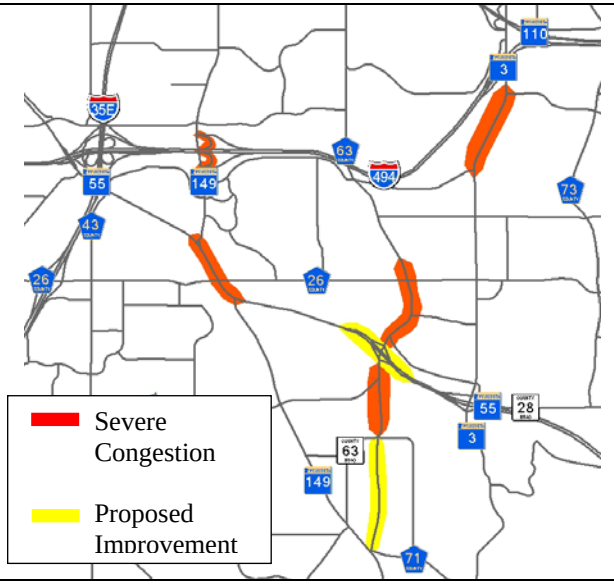
Accommodates Regional Trips on Trunk Highway System (- -)
High levels of congestion anticipated on regional facilities is likely to result in trips diverted onto the local system.

Environmental and Community Impacts (O)
Environmental impacts are not expected since no additional roadway construction beyond currently planned and/or programmed improvements are included.

Scenario 2: Interchange on TH 55 at CSAH 63 and New Southern Alignment

Description
Scenario 2 includes a new interchange on TH 55 at CR 63 (Argenta Trail) and a new southern alignment east of existing CR 63. The primary purpose of these improvements is to relieve congestion at the intersection of TH 55 and CR 63, which is expected to be over capacity by year 2030. Currently, this is an at-grade intersection and traffic volumes are expected to increase on CR 63 to access the new development as well as on TH 55. The new southern alignment is intended to create a new corridor from south TH 3 to north CR 63 and avoid route circuity on Jefferson Trail and existing CR 63.

Magnitude of Project Costs (i.e. conceptual construction cost estimate): LOW
This does not include costs for project development, right of way, design, noise walls, or capacity improvement not listed on Table 3.



Provides System Connectivity (-)
Provides connectivity for new development in NE Eagan and NW Inver Grove Heights from the south. Does not improve access for regional trips between east TH 55 and west I-494, which continue to rely on the I-494/TH 149 interchange. The I-494/TH 149 interchange also serves trips from I-494 to the new development since no other access is provided.

Reduces Congestion (-)
Improves but does not eliminate congestion in 2030. Demand on the following segments is expected to exceed capacity.

- I-494/TH 149 WB On Ramp and EB Off Ramp
- TH 55 and TH 149 Common Section
- CR 63 near TH 55

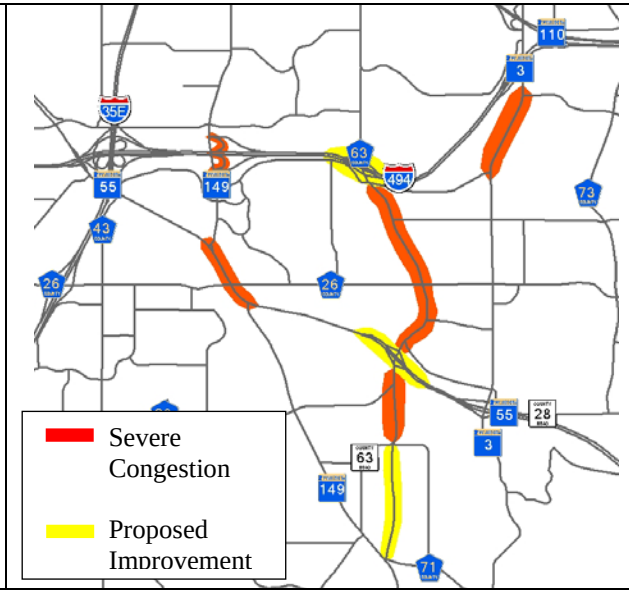
Accommodates Regional Trips on Trunk Highway System (-)
Trips from the south to the new development area are expected to use the new southern alignment and CR 63. This will result in few regional trips diverted to local roadways.

Environmental and Community Impacts (O)
Construction of a new interchange on TH 55 at CR 63 will result in some environmental impacts but less than new construction outside of existing right-of-way. The new southern alignment is expected to result in some environment impacts from road construction on currently undeveloped land.

Scenario 3: Interchanges on I-494 at CSAH 63 and on TH 55 at CSAH 63 and New Southern Alignment

Description
Scenario 3 includes a new interchange on I-494 and CSAH 63, a new interchange on TH 55 at CR 63 (Argenta Trail) and a new southern alignment east of existing CR 63. The primary purpose of these improvements is to develop a north-south corridor through the development area with access to I-494 and to south TH 3. This is intended to relieve congestion at the I-494/TH 149 and the intersection of TH 55 and CR 63, both of which are expected to be over capacity by year 2030. The new southern alignment is intended to create a new corridor from south TH 3 to north CR 63 and avoid route circuity on Jefferson Trail and existing CR 63.

Magnitude of Project Costs (i.e. conceptual construction cost estimate): LOW
This does not include costs for project development, right of way, design, noise walls, or capacity improvement not listed on Table 3.



Provides System Connectivity (O)
Provides connectivity for new development in NE Eagan and NW Inver Grove Heights from I-494 and from the south. Does not improve access for regional trips between east TH 55 and west I-494, which continue to rely on the I-494/TH 149 interchange.

Reduces Congestion (O)
Improves but does not eliminate congestion in 2030. Demand on the following segments is expected to exceed capacity.

- I-494/TH 149 WB On Ramp and EB Off Ramp
- TH 55 and TH 149 Common Section
- CR 63 near TH 55 and north to I-494

Accommodates Regional Trips on Trunk Highway System (O)
Trips from the south to the new development area are expected to use the new southern alignment and CR 63. Trips from I-494 are expected to use the CSAH 63 interchange rather than the TH 149 interchange. This will result in few regional trips diverted to local roadways. The east TH 55 to west I-494 movement is not addressed by these improvements, and must continue to rely on the TH 149 interchange.

Environmental and Community Impacts (O)
Construction of a new interchanges I-494 at CSAH 63 and on TH 55 at CR 63 will result in some environmental impacts but less than new construction outside of existing right-of-way. The new southern alignment is expected to result in some environment impacts from road construction on currently undeveloped land.

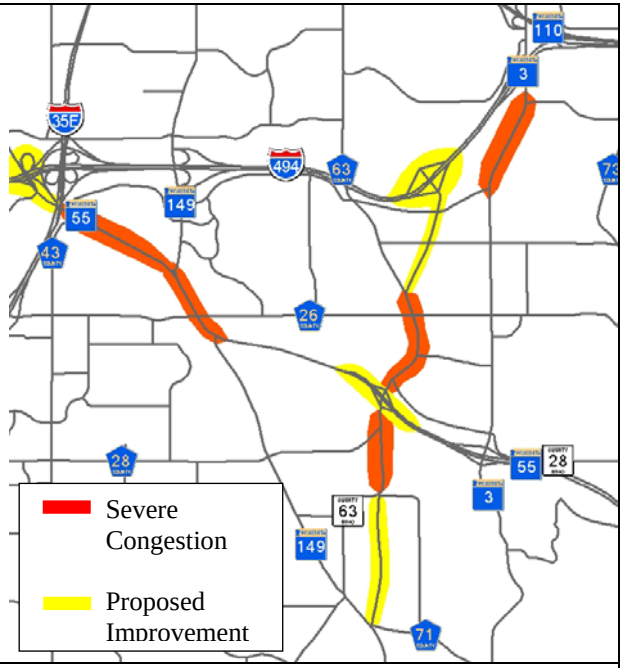
Scenario 4: Interchange at I-494 in new location between CSAH 63 and TH 3

Description

Scenario 4 includes a new interchange on I-494 between CR 63 (Delaware Avenue/Argenta Trail) and TH 3, an interchange at TH 55 and CR 63, and a new southern alignment. Direct connections between I-494 and TH 55 are also included. The primary purpose of these improvements is to develop a north-south corridor through the study area and provide access to the new development in northeast Eagan and northwest Inver Grove Heights. Together these should serve the regional north-south movements through the study area, and provide relief to the I-494/ TH 149 interchange, which is expected to be over capacity by year 2030. Currently, there is no interchange on I-494 between TH 149 and TH 3 and trips to and from the new development on I-494 will need to use one of these existing interchanges. The connections at I-494 and TH 55 are expected to serve the regional east-west movements and provide additional relief to the I-494/TH 149 interchange.

Magnitude of Project Costs (i.e. conceptual construction cost estimate): HIGH

This does not include costs for project development, right of way, design, noise walls, or capacity improvement not listed on Table 3.



Provides System Connectivity (+ +)

Provides connectivity for new development in NE Eagan and NW Inver Grove commercial areas to I-494. Addresses regional trips between east TH 55 and west I-494, and reduces congestion at the I-494/TH 149 interchange.

Reduces Congestion (+ +)

Improves but does not eliminate congestion in 2030. Demand on the following segments is expected to exceed capacity.

- I-494/New Interchange EB On Ramp and WB Off Ramp
- TH 55 through TH 149 Common Section and to I-494
- CR 63 between new connection and TH 55

Accommodates Regional Trips on Trunk Highway System (+ +)

Regional trips through the north-south corridor are no longer expected to be diverted to local roadways. East-west trips from TH 55 to I-494 are now served by the direct connection and no longer need to rely on the I-494/TH 149 interchange.

Environmental and Community Impacts (-)

Construction of a new interchange and roadway east of CR 63 will result in greater environmental impacts than improvements located within existing right-of-way.

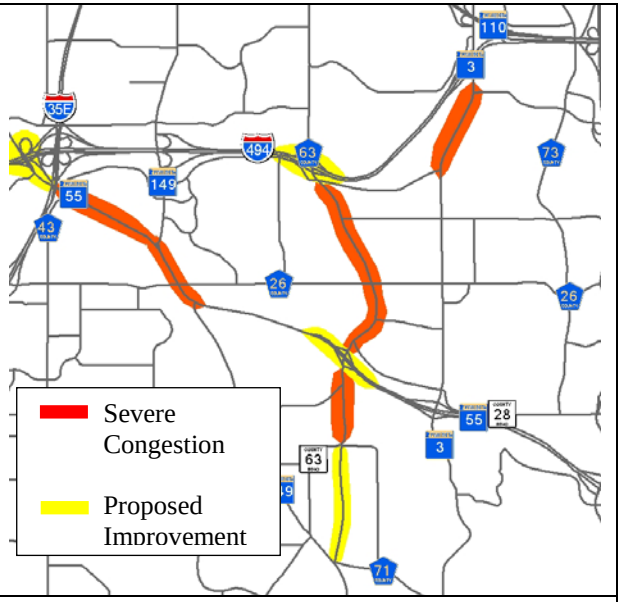
Scenario 5:Direct Connection between West I-494 and East TH 55 Interchanges on I-494 at CSAH 63 and on TH 55 at CSAH 63 and New Southern Alignment

Description

Scenario 5 includes direct connections between west I-494 and east TH 55, a new interchange on I-494 and CSAH 63, a new interchange on TH 55 at CR 63 (Argenta Trail) and a new southern alignment east of existing CR 63. The primary purpose of these improvements is to develop a north-south corridor through the development area with access to I-494 and to south TH 3. The purpose of the I-494 and TH 55 connections is to serve the regional east-west movement. Together these are intended to relieve congestion at the I-494/TH 149, which are expected to be over capacity by year 2030. The new southern alignment is intended to create a new corridor from south TH 3 to north CR 63 and avoid route circuity on Jefferson Trail and existing CR 63.

Magnitude of Project Costs (i.e. conceptual construction cost estimate): HIGH

This does not include costs for project development, right of way, design, noise walls, or capacity improvements not listed on Table 3.



Provides System Connectivity (+ +)

Provides connectivity for new development in NE Eagan and NW Inver Grove Heights from I-494 and from the south and from I-494. Addresses regional trips between east TH 55 and west I-494, and relieves congestion at the I-494/TH 149 interchange.

Reduces Congestion (+ +)

Improves but does not eliminate congestion in 2030. Demand on the following segments is expected to exceed capacity.

- TH 55 and TH 149 Common Section and to I-494
- CR 63 near TH 55 and north to I-494

Accommodates Regional Trips on Trunk Highway System (+ +)

Trips from the south to the new development area are expected to use the new southern alignment and CR 63. Trips from I-494 are expected to use the CSAH 63 interchange rather than the TH 149 interchange. This will result in few regional trips diverted to local roadways. The east TH 55 to west I-494 movement is not addressed by these improvements, and must continue to rely on the TH 149 interchange.

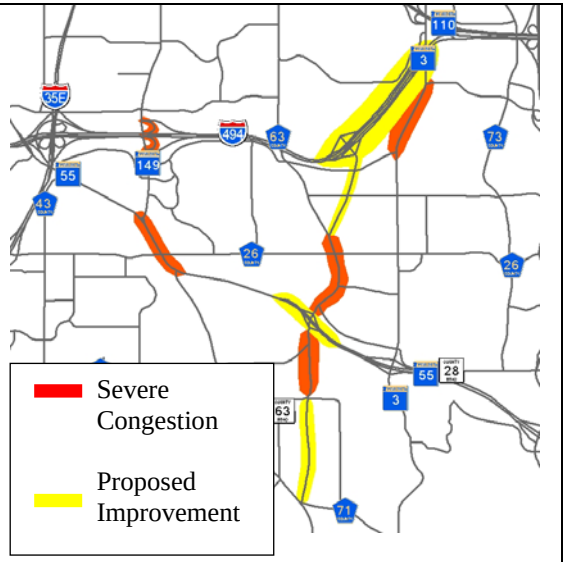
Environmental and Community Impacts (- -)

Construction of a new interchanges I-494 at CSAH 63 and on TH 55 at CR 63 will result in some environmental impacts but less than new construction outside of existing right-of-way. The new southern alignment is expected to result in some environment impacts from road construction on currently undeveloped land.

Scenario 6: Interchange at I-494 in new location between CSAH 63 and TH 3 with I-494 CD Road and new Southern Alignment

Description
Scenario 6 includes a new interchange on I-494 between CR 63 (Delaware Avenue/Argenta Trail) and TH 3, an interchange at TH 55 and CR 63, and a new southern alignment. CD roads are also provided along I-494 between the new interchange and the TH 3 west ramps. The primary purpose of these improvements is to develop a north-south corridor through the study area and provide access to the new development in northeast Eagan and northwest Inver Grove Heights. The CD road is intended to reduce the amount of new access to I-494 in the study area and protect the operations of the freeway.

Magnitude of Project Costs (i.e. conceptual construction cost estimate): MEDIUM
This does not include costs for project development, right of way, design, noise walls, or capacity improvement not listed on Table 3.



Provides System Connectivity (+)
Provides connectivity for new development in NE Eagan and NW Inver Grove commercial areas to I-494. Regional east-west trips on west I-494 and east TH 55 are not addressed and must rely on the I-494/TH 149 interchange.

Reduces Congestion (+)
Improves but does not eliminate congestion in 2030. Demand on the following segments is expected to exceed capacity.

- I-494/New Interchange EB On Ramp and WB Off Ramp
- I-494/TH 149 Interchange WB On Ramp and EB Off Ramp
- TH 55 through TH 149 Common Section
- CR 63 between new connection and TH 55

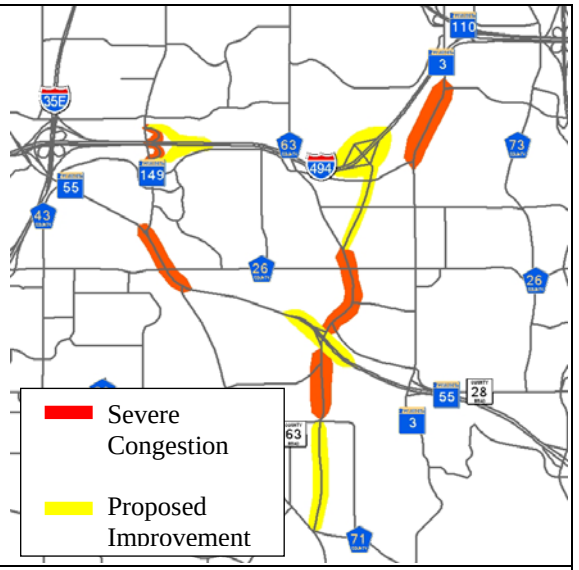
Accommodates Regional Trips on Trunk Highway System (+)
Regional trips through the north-south corridor are no longer expected to be diverted to local roadways. Regional east-west trips from TH 55 to I-494 are not address and continue to rely on the I-494/TH 149 interchange.

Environmental and Community Impacts (- -)
Construction of a new interchange and roadway east of CR 63 will result in greater environmental impacts than improvements located within existing right-of-way.

Scenario 7: Interchange at I-494 in new location between CSAH 63 and TH 3 Removal of I-494/TH 149 East Ramps and new Southern Alignment

Description
Scenario 7 includes a new interchange on I-494 between CR 63 (Delaware Avenue/Argenta Trail) and TH 3, and a split diamond interchange on TH 55 at CR 63 and TH 3, and a new southern alignment. The primary purpose of these improvements is to develop a north-south corridor through the study area and provide access to the new development in northeast Eagan and northwest Inver Grove Heights. The east ramps at the I-494/TH 149 interchange and the west ramps at the I-494/TH 3 interchange are removed to limit total access to I-494 and protect the operations of the freeway.

Magnitude of Project Costs (i.e. conceptual construction cost estimate): MEDIUM
This does not include costs for project development, right of way, design, noise walls, or capacity improvement not listed on Table 3.



Provides System Connectivity (+)
Provides connectivity for new development in NE Eagan and NW Inver Grove commercial areas to I-494. Regional east-west trips on west I-494 and east TH 55 are not addressed and must rely on the I-494/TH 149 interchange.

Reduces Congestion (+)
Improves but does not eliminate congestion in 2030. Demand on the following segments is expected to exceed capacity.

- I-494/New Interchange EB On Ramp and WB Off Ramp
- I-494/TH 149 Interchange WB On Ramp and EB Off Ramp
- TH 55 through TH 149 Common Section
- CR 63 near TH 55

Accommodates Regional Trips on Trunk Highway System (+)
Regional trips through the north-south corridor are no longer expected to be diverted to local roadways. Regional east-west trips from TH 55 to I-494 are not addressed and continue to rely on the I-494/TH 149 interchange.

Environmental and Community Impacts (- -)
Construction of a new interchange and roadway east of CR 63 will result in greater environmental impacts than improvements located within existing right-of-way.

APPENDIX B:

Detailed Issues Analysis and Findings

A. Summary of Scenarios

1	Baseline: 2030 planned/programmed improvements, unconstrained capacity in study area
2	New TH 3 southern alignment **plus** interchange at TH 55 and CSAH 63 (Argenta Trail)
3	Interchange at I-494 and CSAH 63 (Delaware Ave./Argenta Trail) **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail)
4	Interchange at I-494 and CSAH 63 (Delaware Ave./Argenta Trail) **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) **plus** direct connection between TH 55 (south) and I-494 (west)
5	Interchange at I-494 in new location between CSAH 63 and TH 3 **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) **plus** direct connection between TH 55 (south) and I-494 (west)
6	CD Road connection between existing TH 3 interchange and interchange at I-494 in new location between CSAH 63 and TH 3 **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail)
7	Interchange at I-494 in new location between CSAH 63 and TH 3 **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) **minus** existing I-494/TH 3 interchange **minus** existing I-494/TH 149 east ramps

B. Access to NE Eagan Development

The development of the remaining portion of northeast Eagan is estimated to generate an additional 76,500 trips per day. The baseline offers no improvements in regional access. Consequently this will overload a number of links, especially near I-494 connections. Forecast volumes will exceed 50,000 vehicles per day on TH 149 south of I-494 as a result of increased traffic to the I-494 interchange. In addition, traffic on the TH 55/TH 149 common section would exceed 60,000 vehicles per day, resulting in significant congestion.

The scenarios that best improve regional access to this area (i.e., additional access to I-494 at CSAH 63 located at the eastern edge of the NE Eagan study area) are scenarios 3 and 4. This new access would reduce demand at the existing TH 149 interchange and better serve the eastern portion of the study area.

Scenarios 5, 6, and 7 include a new TH 3 interchange at I-494, which would provide a lesser degree of access improvement since the access point would be farther to the east. Scenarios 4 and 5 include TH 55/I-494 direct access which would increase access overall, but this would be moderated by the likely need to close some access along TH 55 west of TH 149.

All scenarios, except of the 2030 baseline, include improved access at TH 55 and CSAH 63 (Argenta Trail). This would result in a slight benefit to NE Eagan by increasing overall capacity on TH 55 and permit traffic to access NE Eagan from south of TH 55 and avoid TH 55 cross-traffic.

Scenarios 7 would relocate access from the existing TH 149 to a new location east of the study area – a net negative reduction considering the total number of access points does not change and the access is less convenient to northeast Eagan.

C. Access to NW Inver Grove Heights Development

As with the Eagan area, the development of this area will demand for access to the regional system. The scenarios that best improve access to this area are those that include additional access to I-494. A new TH 3 interchange would be more centered on the NW Inver Grove Heights area, but an interchange at existing CSAH 63 would provide a similar benefit. Currently, east access to/from I-494 from TH 3 is indirect and occurs at TH 110.

Access improvements at TH 55/CSAH 63 also benefit the Inver Grove Heights area by reducing delays at TH 55. Scenarios with the I-494/TH 55 west direct access provide a better connection form the southern portion of the study area to the west.

Removal of the existing west TH 3 ramps under Scenarios 7 would provide a less convenient access from the eastern portion of the study area, despite the new TH 3 interchange.

D. Traffic Diversion in Mendota Heights/Sunfish Lake

Mendota Heights and Sunfish Lake lie to the immediate north of the study area. Under the baseline alternative traffic on Delaware Ave (CSAH 63) and Dodd Road (TH 149) is expected to absorb approximately six percent of the traffic generated by the study area, including 7,300 vehicles per day on Delaware Avenue and 4,700 additional vehicles on TH 149. Approximately 3,200 of these trips represent traffic to or from Sunfish Lake and Mendota Heights residences or other trip generators. However, other traffic would use the roadway due to lack of better access to the study areas.

Scenarios that provide an interchange at I-494 and CSAH 63 would result in a net decrease in traffic on both Dodd Road and CSAH 63. While there would be some traffic attracted to the interchange from north of I-494, most of that traffic currently uses TH 110 to access I-494, TH 52 and I-35E and would continue to do so in the future. The main benefit would be that some regional traffic that would access NW Inver Grove Heights and NE Eagan via CSAH 63 would instead use the interchange at I-494, thus reducing traffic on CSAH 63 north of I-494.

Scenarios 7 would result in a slight increase in traffic north of I-494 relative to other interchange scenarios because the lack of full access at TH 3 and TH 149 results in the need to use parallel routes to get to the I-494 access points, namely Salem Church Road and Mendota Heights Road. The increase, however, is less than 1000 vehicles per day.

E. Access and Capacity to Central/Southern Dakota County

The development in Eagan and Inver Grove Heights, plus the continued development of Rosemount and other parts of central and southern Dakota County results in traffic volumes on TH 3 in excess of its current two-lane capacity. This finding is consistent with the findings of the Mn/DOT Metro Division Transportation System Plan, which identifies this corridor as an unfunded need. As shown in Figure 7, traffic from central/southern Dakota County is nearly evenly split between traffic to/from the study area and regional traffic.

Scenarios that will improve access to and across TH 55 will benefit both the regional and Eagan/Inver Grove Heights markets of this objective. These include scenarios with an interchange at TH 55 and CSAH 63, which increase capacity across TH 55 by eliminating the conflicting TH 55 through movement.

Scenarios that include additional capacity or less-circuitous routing south of TH 55 also benefit regional and local travel markets. However, the diagonal routing of existing TH 149 provides a strong travel time advantage to traffic destined for the north and west which, as shown in Figure 7, shows the travel market from central/south Dakota County is to or from the north and west areas is at 16 percent of the total travel. Consequently, the benefit of a new alignment south of TH 55 is reduced.

The regional markets are best served by scenarios that provide new, full access interchanges to I-494. An interchange at a new TH 3 location would provide a less-circuitous route for regional movements to the north and east (TH 3/TH 52) than would an interchange at CSAH 63, which competes more with TH 149.

F. Capacity on TH 149 from I-494 to TH 3

The baseline 2030 traffic demand for TH 149 from I-494 through the TH 55 common section exceeds that capacity of a six-lane arterial, with forecast volumes of 53,000-66,000. Approximately 40 percent of the traffic between TH 55 and I-494 is generated by land uses in the Northeast Eagan and Northwest Inver Grove Heights areas.

Scenarios 3, 4, 5, 6 and 7 provide alternate access to I-494, thus reducing demand on TH 149. However, even in the scenarios with the greatest reduction (scenarios 4 and 5 which include the TH 55/I-494 direct connection) the demand still exceeds 35,000 vehicles per day and would thus warrant a six-lane facility. By making improvements through a new interchange at CSAH 63 and I-494, scenarios 3 and 4 would provide the greatest relief due to their closer proximity.

G. Capacity on TH 3 from TH 110 to TH 149

The baseline 2030 traffic demand for TH 3 from 65th Street East to TH 110 exceeds that capacity of a four-lane arterial in the northern part of the study area with forecast volumes of 45,000. Approximately 40 percent of the traffic between TH 55 and I-494 is generated by land uses in the Northwest Inver Grove Heights area. Scenarios 6 and 7, which relocates or eliminates the TH 3 and I-494 interchange significantly reduce demand on TH 3. Without additional capacity expansion, daily traffic volumes on TH 3 would exceed 10,000 vehicles per day under all alternatives and would therefore operate under congested conditions.

H. Access and Capacity on I-494

In general, I-494 is expected to have adequate capacity under most scenarios. I-494 is a six-lane facility through the study area, with auxiliary lanes between I-35E and TH 149/Dodd Road. Consequently the roadway should be able to accommodate 120,000 to 130,000 vehicles per day under typical conditions for a non-radial freeway. Capacity on I-494 (ADT of 131,000 to 135,000) is approached west of TH 149, but can be accommodated given the existing auxiliary lanes in that section. Volumes between TH 149 and TH 3 under all scenarios range from 101,000 to 120,000. Scenario 4 generates volumes of 120,000 in the segment between the new interchange and existing TH 3.

A second consideration on I-494 is the amount of access on I-494. Currently in the 4.3-mile segment of I-494 from I-35E to TH 110 there are three full interchanges and one-half interchange (TH 3) including the interchanges at the termini of the segments. FHWA and Metropolitan Council freeway access guidelines call for access spacing no closer than one mile. Operations on I-494 would be best maintained through no net change in the number of access points on I-494 (scenarios 2, 6 and 7).

Net new interstate access is added under scenarios 3, 4, and 5, which requires further operational analysis to determine whether freeway operations would be degraded by adding access. Scenarios 4 and 7 would provide better spacing between access locations on I-494 than the CSAH 63 interchange locations (scenarios 3 and 4).

Additional analysis is needed to determine which configuration of a TH 55/I-494 direct connection would minimize operational impacts on I-494.

Scenario 6 provides a collector-distributor road configuration on I-494. This scenario would add a net increase in access to I-494 (an additional set of access points to/from the east). However, it would separate the through movements on I-494 from movements between a new TH 3 interchange and the existing TH 3 west ramps. This movement serves as a TH 3 common section, adding approximately 10,000 vehicles per day to I-494.

I. Access and Capacity on TH 55

TH 55 will be at-or-above capacity under the 2030 baseline (scenario 1), particularly in the common section with TH 149. Alternatives that include an interchange at CSAH 63 and TH 55 improve the capacity of TH 55 by eliminating the signal at that location. However, bottlenecks would still occur at the remaining signals (CSAH 26, TH 149).

Scenarios that include a TH 55/I-494 direct connection increase traffic on TH 55. Demand from these direct connections increase traffic on TH 55 to the levels that additional access control is needed west of TH 149, including closure of existing access points between I-494 and TH 149.

J. Infrastructure Cost

While detailed cost estimates can not be made until more information is known about design and other engineering and environmental factors, the summary sheets in Appendix E provide high-level concept construction costs estimates that do not take into consideration costs for project development, design, right of way or other unanticipated project costs. The comparisons are based on whether additional roadways are included in the scenario, the number of new interchanges included, and whether the alternatives are system interchanges or local access interchanges. The costs do not consider whether making the improvement would avoid the need to expand capacity on other roadways.

APPENDIX C:

Traffic Forecast Model Methodology and Assumptions

A. Study Methodology

Dakota County previously developed a detailed traffic forecasting model in support its transportation planning efforts in 2002. However, the Metropolitan Council has more recently revised its travel demand models to reflect the 2001 Travel Behavior Inventory results as well as advances in the state-of-the-practice in travel demand models. In addition, the Council has revised its long-range regional development framework to the year 2030, whereas the County horizon year was 2025.

This study uses a methodology that combines the advantages of the Metropolitan Council model (updated travel behavior and long-term horizon years) with the advantages of the Dakota County model (more detailed roadway and land use information). Land use assumptions, discussed below were a combination of the Council forecasts plus additional information provided by the county and communities. The following method was used to develop forecasts for this study:

- The Twin Cities Metropolitan Council model, which has 151 zones in Dakota County, was used as the basis of the model forecasts for the purposes of trip generation, trip distribution and mode choice;

- The refined roadway network and land use distribution assumptions of the Dakota County model were used to better locate reflect model detail was added used. Including some additional zone refinements within the Northeast Eagan/Northwest Inver Grove Heights area a total of (1251) zones were used in Dakota County, or nearly 6 times the refinement of the Metropolitan Council.

The Dakota County model has a more refined level of geography than the Metropolitan Council's regional model. While the Council's model can be reasonably used to provide overall travel patterns and allocation of traffic at a regional level, the refinement within the Dakota County model does a better job of allocating the travel to the collector and arterial roadway system.

The Metropolitan Council model's trip generation rates differ from those used in site-based studies such as the Northeast Eagan and Northwest Inver Grove Heights AUARs. Those studies used data from the Institute of Transportation Engineers (ITE), which maintains a database of traffic data collected nationally over the past 30+ years. These rates are standard in site development traffic analysis. This study uses trip generation rates collected in a major survey of household travel activity in the Twin Cities area by the Metropolitan Council in 2001.

The forecasts were developed using two sets of travel demand modeling assumptions that may need to be reviewed and refined as part of any roadway development process:

- In some communities the development exceeds levels approved by the Council in its approved regional development framework. The Metropolitan Council and Minnesota Department of Transportation may require reconciliation of any development forecasts prior to project development approvals. This is typically done through comprehensive plan amendments or changes in the modeled development assumptions to reflect approved levels.

- Forecasts were developed using "unconstrained" highway system capacity (up to a maximum of three lanes per direction) in the study area in order to capture the potential demand. Because this is a different method than that assumed in model development, the stability of the results of the model cannot be guaranteed. Project-level forecasts typically assume only the existing, programmed and planned improvements to be in place, and model the roadway system to reflect traffic bottlenecks and diversions resulting from capacity shortages. The Metropolitan Council and Minnesota Department of Transportation may require that this difference be reconciled prior to project development approvals.

B. Summary of Development Assumptions

Year 2030 development assumptions were based on the Metropolitan Council's regional development framework as updated on March 8, 2006 with the following major exceptions:

- The Northwest Inver Grove Heights area is assumed developed consistent with the Inver Grove Heights Northwest Expansion Area Alternative Urban Areawide Review (AUAR) prepared for the City in 2005. The development assumed in that study included 7,090 housing units, 1,675 thousand square feet (KSF) of retail land use and 2,130 KSF of non-retail land uses.

- The Northeast Eagan Areawide Study, prepared for the City in 2005, included an additional 410 thousand square feet (KSF) of retail land use and 5,330 KSF of non-retail land use.

- Development is assumed in Lakeville and Empire township at levels above the Metropolitan Council's published forecasts based on consultation with county and city staffs regarding current and anticipated developments that may be addressed as part of the comprehensive planning process.

- Additional development is assumed in Rosemount, consistent with comprehensive plan application to the Metropolitan Council. Rosemount is actively planning the development of the area in the vicinity of Akron Avenue and County 42 to TH 52, and prepared a comprehensive plan amendment in 2005 and an AUAR in 2006. No explicit assumptions have been made for the redevelopment of the University of Minnesota research farm area in Rosemount, consequently no new development is assumed in that area beyond that included in current plans.

Tables C-1 through C-3 summarize the development assumptions by community compared to the published Metropolitan Council Regional Development Framework.

Table C-1: Assumed Population in Key Cities

	2000	2025 County Model [1]	2030 Regional Development Framework [2]	2030 North - South Study [3]	Difference (N-S Study vs. RDF*)	
Apple Valley	45,527	69,900	66,000	66,000	–	–
Eagan	63,557	65,500	69,000	69,500	500	1%
Empire Township	1,638	10,200	6,500	12,000	5,500	85%
Farmington	12,365	22,400	32,000	32,000	–	–
Inver Grove Heights	29,750	47,100	41,900	50,700	8,800	21%
Lakeville	43,128	91,000	86,000	91,100	5,100	6%
Mendota Heights	11,434	11,100	12,400	12,400	–	–
Rosemount	14,619	35,100	35,700	41,000	–	–
Sunfish Lake	504	490	530	530	–	–
Total	222,522	352,790	350,030	375,230	25,200	7%

(1) Source: Dakota County Traffic Model (2002)
(2) Source: Metropolitan Council (March 8, 2006)
(3) Includes development from AUARs, pending comprehensive plan amendments and previous forecasts
*RDF = Regional Development Framework

Table C-2: Assumed Household in Key Cities

	2000	2025 County Model [1]	2030 Regional Development Framework [2]	2030 North - South Study [3]	Difference (N-S Study vs. RDF*)	
Apple Valley	16,344	25,900	27,500	27,500	-	-
Eagan	23,773	29,800	29,900	30,100	200	1%
Empire Township	515	3,700	2,000	3,700	1,700	85%
Farmington	4,169	8,100	12,500	12,500	-	0%
Inver Grove Heights	11,257	19,100	18,000	21,800	3,800	21%
Lakeville	13,609	35,500	33,500	35,500	2,000	6%
Mendota Heights	4,178	5,000	5,100	5,100	-	-
Rosemount	4,742	13,000	13,500	13,700	-	-
Sunfish Lake	173	200	200	200	-	-
Total	78,760	140,300	142,200	150,100	7,900	6%

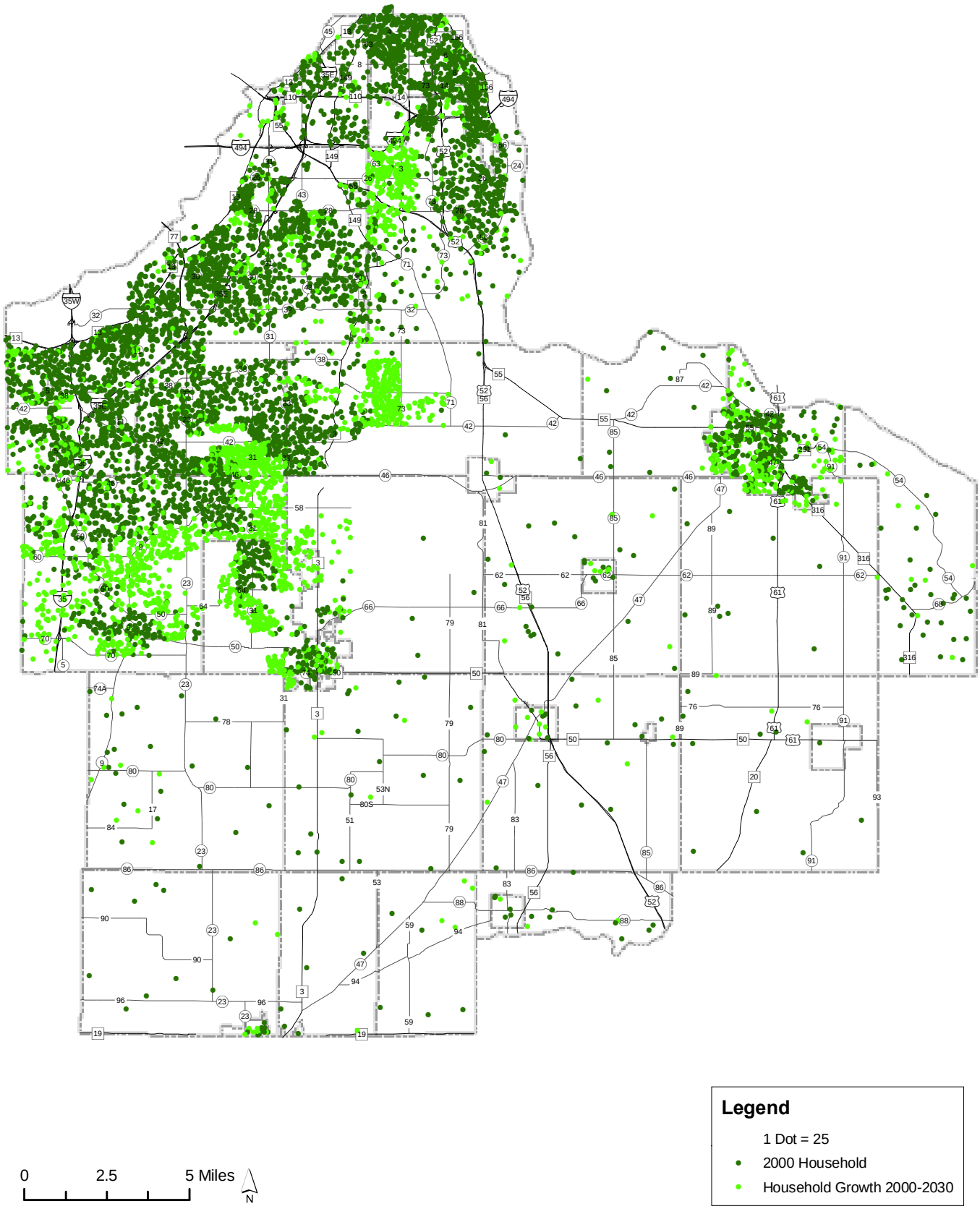
(1) Source: Dakota County Traffic Model (2002)
(2) Source: Metropolitan Council (March 8, 2006)
(3) Includes development from AUARs, pending comprehensive plan amendments and previous forecasts
*RDF = Regional Development Framework

Table C-3: Assumed Employment in Key Cities

	2000	2025 County Model [1]	2030 Regional Development Framework [2]	2030 North - South Study [3]	Difference (N-S Study vs. RDF*)	
Apple Valley	11,250	14,200	22,000	22,000	–	–
Eagan	42,100	48,600	54,200	69,000	14,800	
Empire Township	200	300	300	300	–	
Farmington	3,800	-	9,900	9,900	–	–
Inver Grove Heights	7,000	11,000	12,100	17,000	4,900	40%
Lakeville	9,900	13,200	14,400	14,400	–	0%
Mendota Heights	8,100	9,800	10,300	10,300	–	
Rosemount	6,100	11,100	12,200	17,580	–	
Sunfish Lake	20	–	–	–	–	–
Total	88,470	108,200	135,400	160,480	25,080	19%

(1) Source: Dakota County Traffic Model (2002)
(2) Source: Metropolitan Council (March 8, 2006)
(3) Includes development from AUARs, pending comprehensive plan amendments and previous forecasts
*RDF = Regional Development Framework

Figures 3 and 4 represent the general magnitude of current and assumed future residential and employment growth distribution in Dakota County. Of note are the patterns of continued residential growth to the south and east together with the infilling of the Northwest Expansion area in Inver Grove Heights. Employment growth is more concentrated in certain area, particularly Eagan and Rosemount.



J:\Maps\59826\mxd\TAZ_HH.mxd

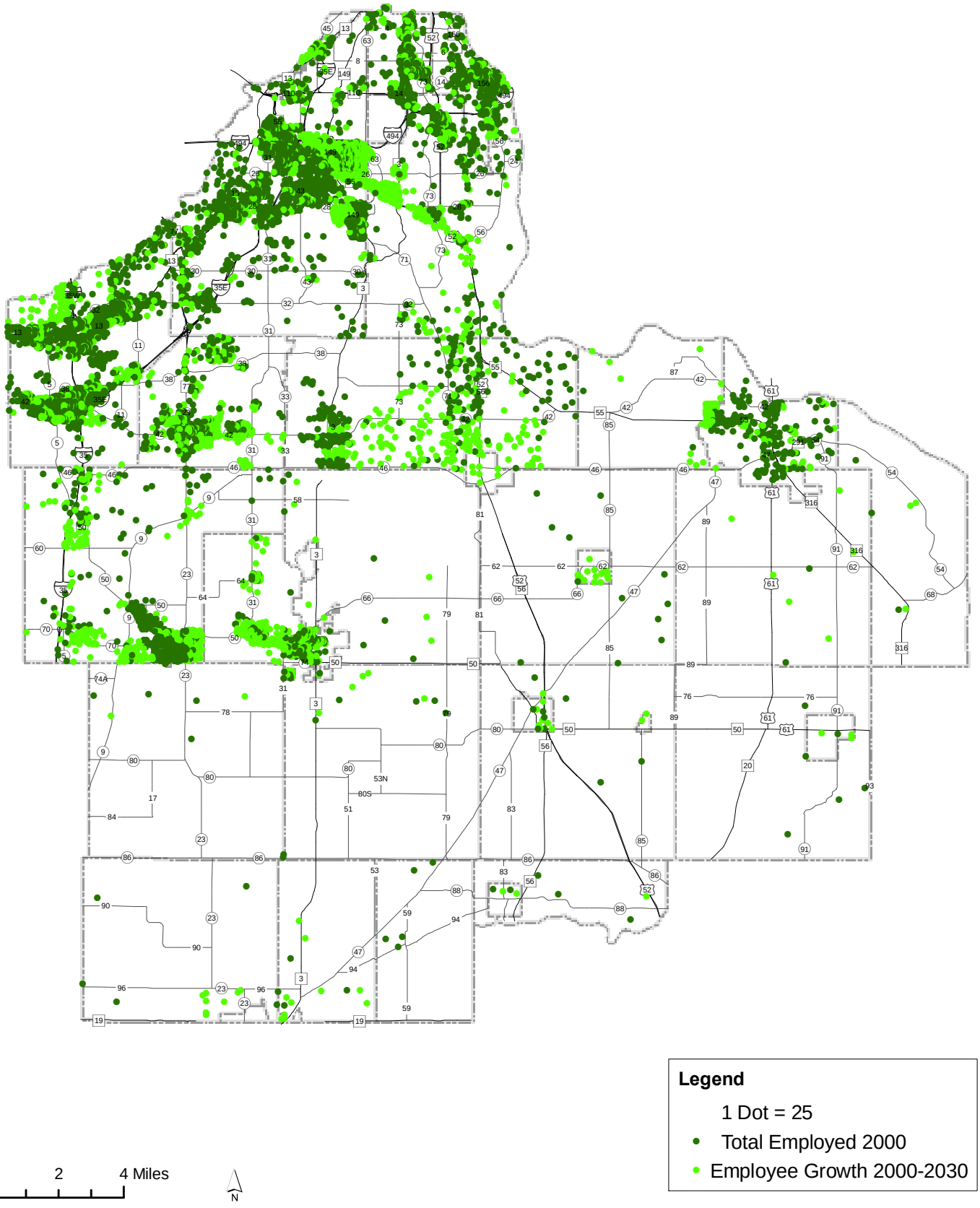
SRF Consulting Group, Inc.

Year 2000 Households and Assumed 2000 to 2030 Growth

Figure 5

Dakota County North-South Corridor

Dakota County, MN



J:\Maps\55926\mxd\TAZ_EMP.mxd

SRF Consulting Group, Inc.

Year 2000 Employment and Assumed 2000 to 2030 Growth

Figure 6

Dakota County North-South Corridor Study

Dakota County, MN

C. General Travel Characteristics

The assumed development of northeast Eagan and northwest Inver Grove Heights is forecast to generate a total of more than 205,000 daily trips. Virtually none of the Northeast Eagan trips remain within that study area (two percent), while eight percent of the NW Inver Grove Heights stays in the study area. This can be attributed to the greater mix of land uses in that portion of the study area, with a blend of residential and commercial/industrial uses. An estimated 8,200 trips per day would travel between the two portions of the study area. Approximately 91 percent of the total trips generated by the study area have one end outside of both areas.

Table C-4: Trip Generation Origin/Destination Patterns

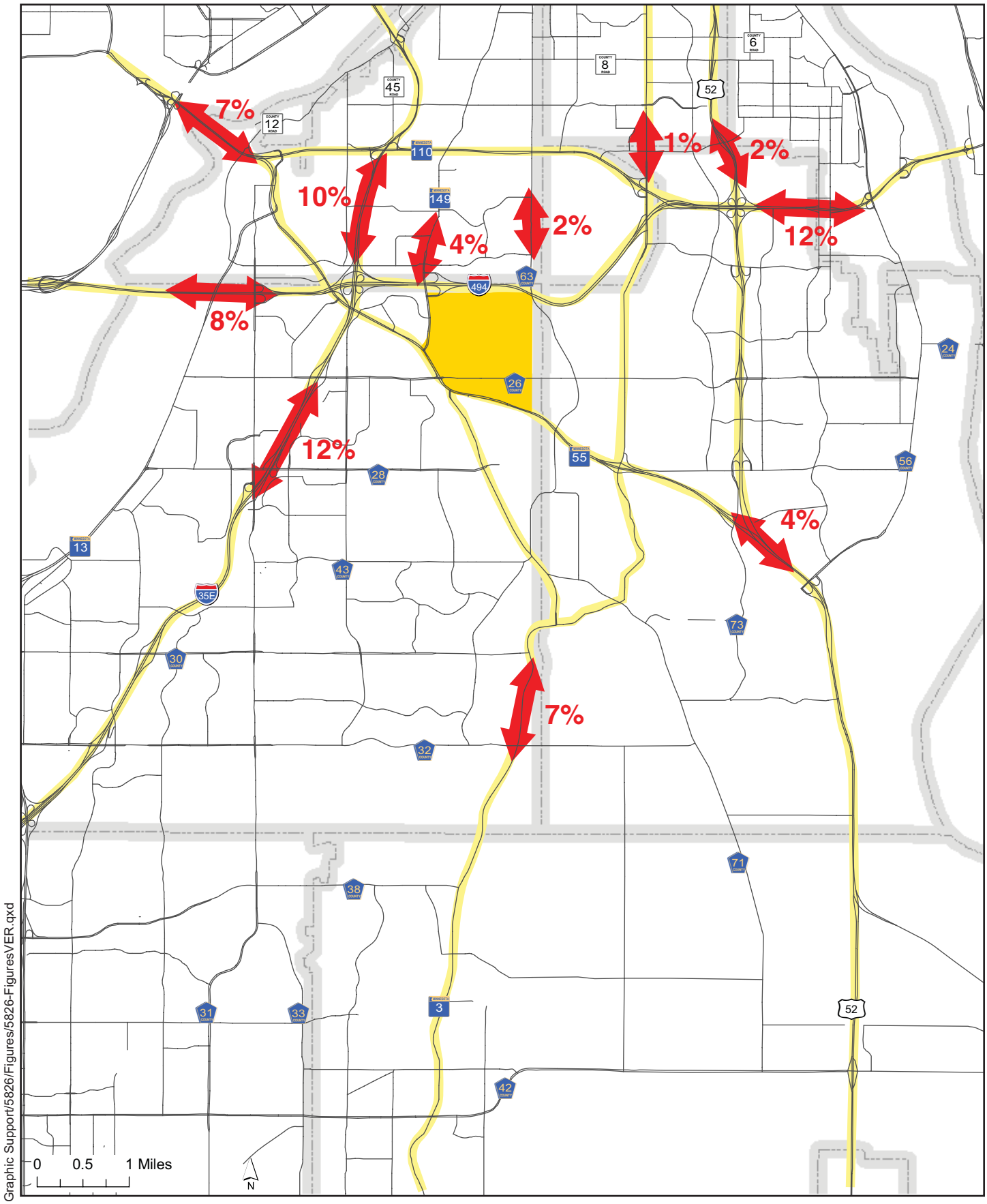
	Northeast Eagan	Northwest Inver Grove Heights	Total Study Area
Trips within own study area	1,300	10,000	11,300
(Percent of Total)	*(2%)*	*(8%)*	*(5%)*
Trips between NE Eagan and NW Inver Grove Heights	4,100	4,100	8,200
(Percent of Total)	*(5%)*	*(3%)*	*(4%)*
Beyond Study Area	70,800	115,500	186,300
(Percent of Total)	*(93%)*	*(89%)*	*(91%)*
Total	76,200	129,600	205,800
(Percent of Total)	*(100%)*	*(100%)*	*(100%)*

These totals differ from the reported trips in the AUARs because they are calculated using a different method as described above. (The NW Inver Grove Heights AUAR estimated approximately 152,200 daily trips and the NE Eagan study estimated 74,500 daily trips before applying discount factors for "pass-by" and diverted trips.) The estimated totals are within one standard deviation of the estimated trips using ITE data.

Figure 5 shows the distribution of traffic to/from the Northeast Eagan portion of the study area. Forty-one percent of the trips approach/depart the area to or from the west, northwest or southwest and 28 percent approach/depart to or from the east, southeast or northeast. Because this portion of the study area is exclusively non-residential land uses, it generates nearly of it travel to or from portions of the region with residential land uses (home-to-work traffic). The key approaches are the two freeways (I-494 and I-35E) serving the area. A total of 11 percent uses the combined TH 55/TH 3/TH 149 non-freeway approach from the southeast. Not shown in Figure 5 is the significant portion of traffic that is to-or-from Eagan (approximately 25 percent of the total).

Figure 6 shows the traffic distribution for the Inver Grove Heights approaches. The percent using the regional traffic approaches are generally lower than for the Eagan area, with the major exception being the TH 52 corridor to the north serving the St. Paul market. A total of the 58 percent of the NW Inver Grove Heights traffic uses the regional approach, compared to 69 percent of the traffic from the Eagan portion of the study area. Another significant portion of the trips is Eagan-based (23 percent) or from the eastern portion of Inver Grove Heights but does not use the regional system.

Another key travel market to review is the traffic using the Dakota County North/South corridor (TH 3/TH 149) as shown in Figure 7. Nearly half of the traffic (48 percent) begins or ends in the study area. Another 45 percent of the traffic goes beyond the study area, primarily to the regional approaches. The approaches to the east/northeast are generally higher than those to the west/northwest. This is attributed to the presence of TH 77 and I-35W (and to a lesser extent Pilot Knob Road) as access points to the north and west.



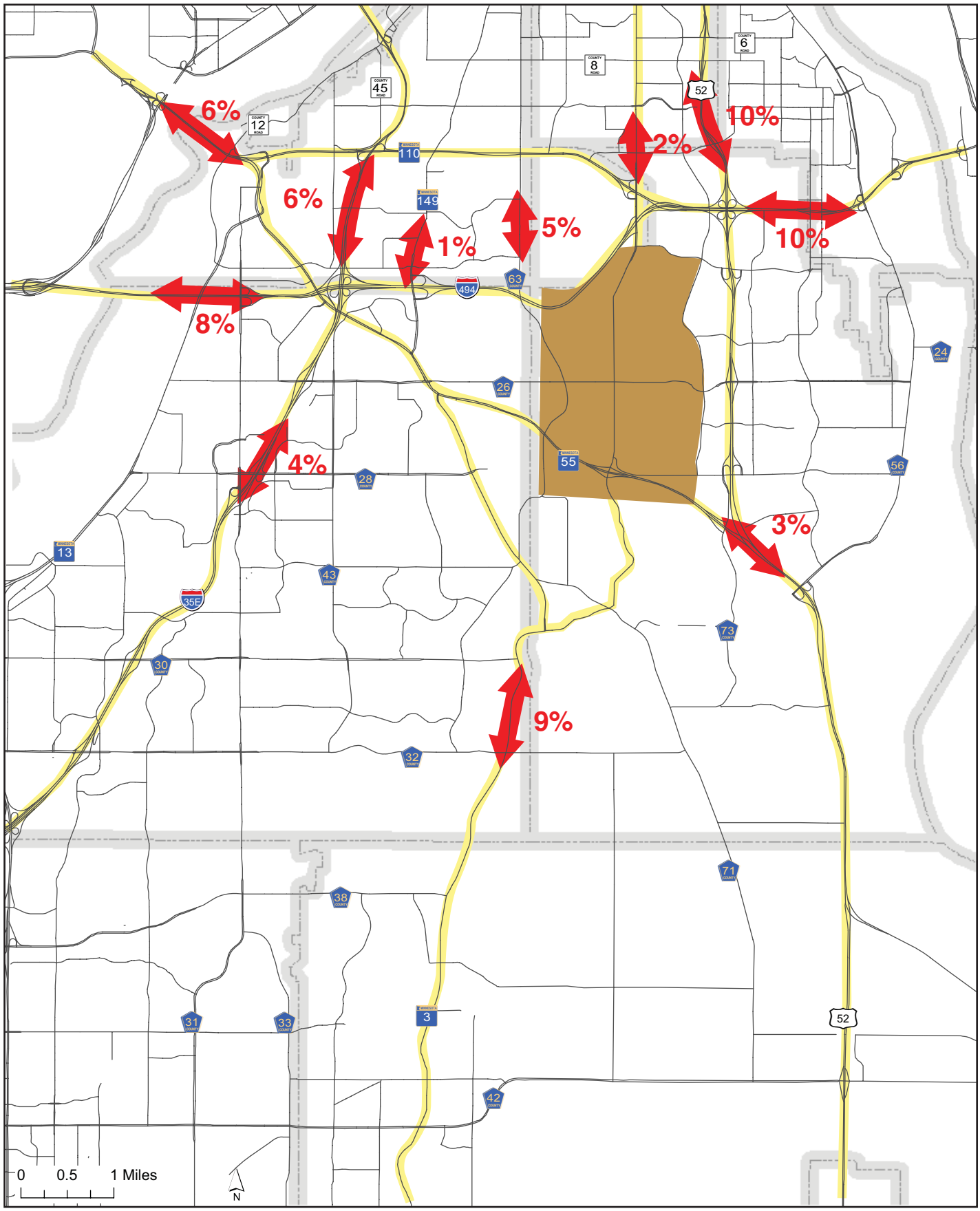
SRF Consulting Group, Inc.

01/08/07

NE EAGAN REGIONAL DIRECTION OF APPROACH

Dakota County North-South Corridor Study
Dakota County, MN

Figure 7



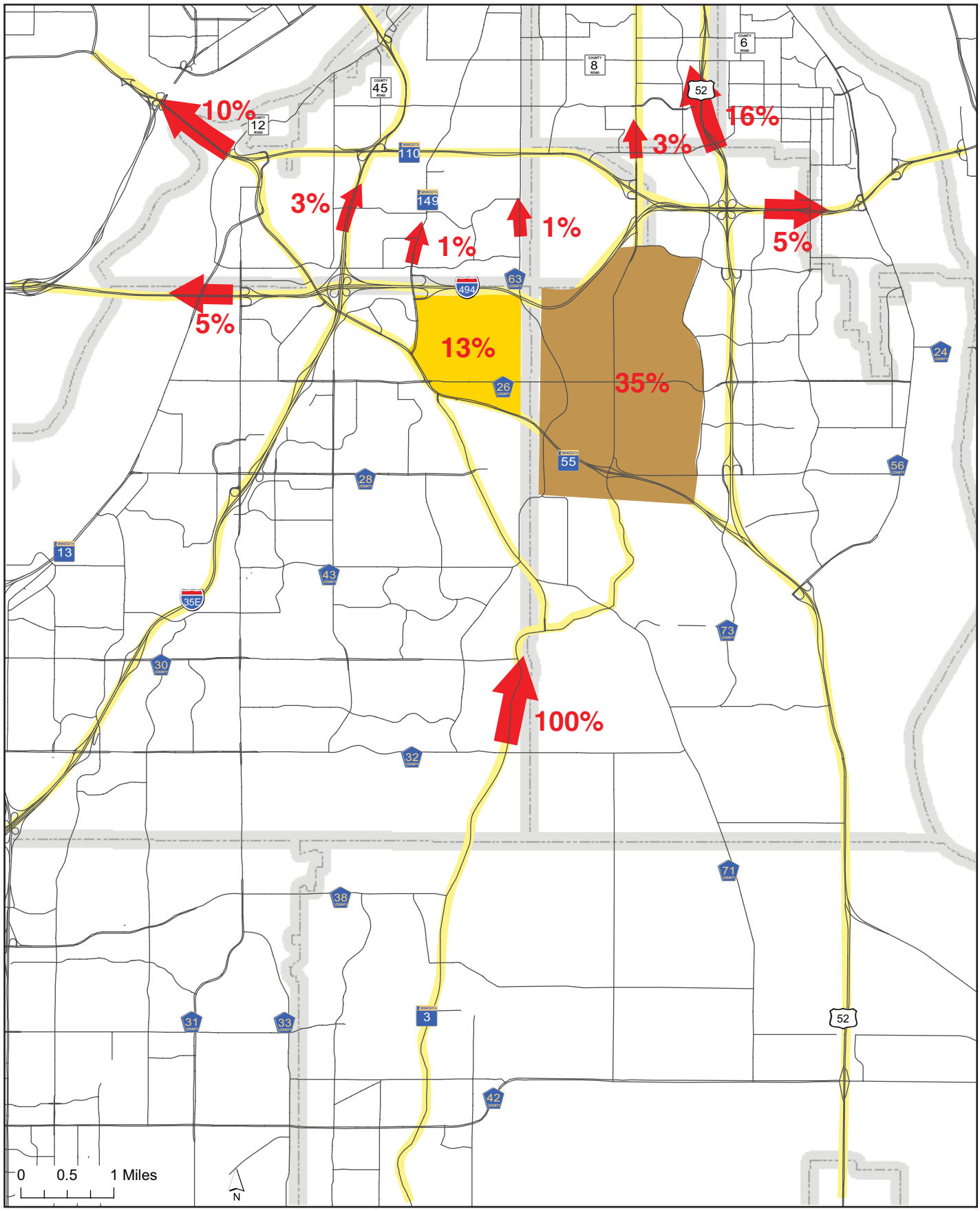
SRF Consulting Group, Inc.

01/08/07

NW INVER GROVE HEIGHTS DIRECTION OF APPROACH

Dakota County North-South Corridor Study
Dakota County, MN

Figure 8



Graphic Support/5826/Figures/5826-FiguresVER.qxd

SRF Consulting Group, Inc.

01/08/07

SOUTH (TH 3 / TH 149) DIRECTIONAL DISTRIBUTION

Dakota County North-South Corridor Study
Dakota County, MN

Figure 9

APPENDIX D:

2030 Traffic Forecasts for Component Alternatives

Traffic Forecast Maps for Eleven Alternatives

2030 traffic forecasts were developed for the 11 alternatives. These alternatives include:

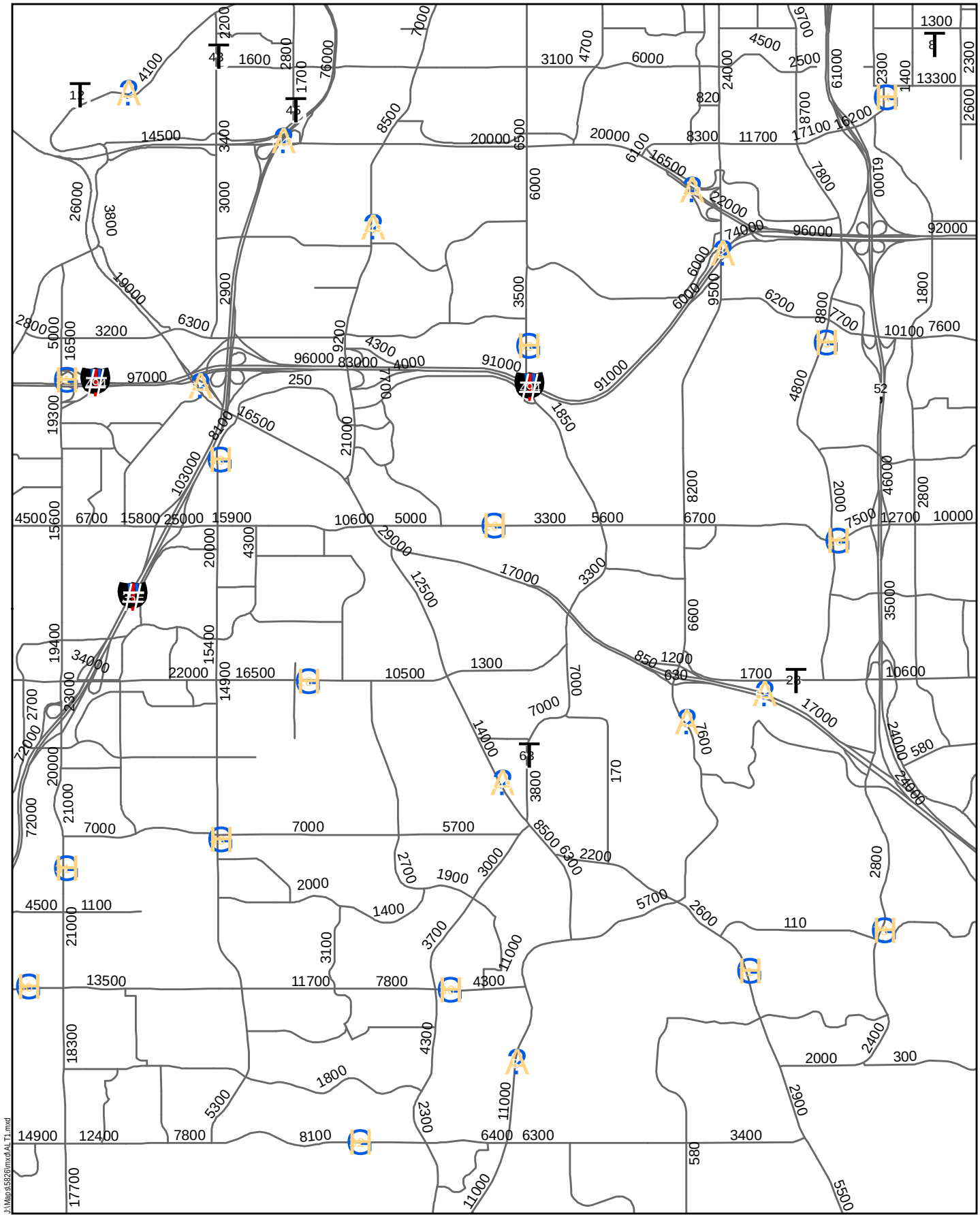
- 2030 baseline (Alternative 1);
- Four major project improvement components (Alternatives 2, 3, 4 and 5) and
- The six considered scenarios (Alternatives 6, 7, 8, 9, 10 and 11).

Average daily traffic volume for each alternative is mapped on Figures 8 thru 20.

Please note, the structure and naming of alternatives was revised during the course of the study.

1	Baseline: 2030 planned/programmed improvements, unconstrained capacity in study area (SCENARIO 1)
2*	Interchange at TH 55 and CSAH 63 (Argenta Trail)
3*	Direction connection between TH 55(south) and I-494 (west)
4*	Interchange at I-494 and CSAH 63 (Delaware Ave./Argenta Trail)
5*	Interchange at I-494 in new location between CSAH 63 and TH 3
6	New TH 3 southern alignment **plus** interchange at TH 55 and CSAH 63 (Argenta Trail) (SCENARIO 2)
7	Interchange at I-494 and CSAH 63 (Delaware Ave./Argenta Trail) **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) (SCENARIO 3)
8	Interchange at I-494 and CSAH 63 (Delaware Ave./Argenta Trail) **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) **plus** direct connection between TH 55(south) and I-494 (west) (SCENARIO 4)
9	Interchange at I-494 in new location between CSAH 63 and TH 3 **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) **plus** direct connection between TH 55(south) and I-494 (west) (SCENARIO 5)
10	CD Road connection between existing TH 3 interchange and interchange at I-494 in new location between CSAH 63 and TH 3 **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) (SCENARIO 6)
11	Interchange at I-494 in new location between CSAH 63 and TH 3 **plus** new TH 3 southern alignment with interchange at TH 55 and CSAH 63 (Argenta Trail) **minus** existing I-494/TH 3 interchange **minus** existing I-494/TH 149 east ramps (SCENARIO 7)

* not included in final scenarios



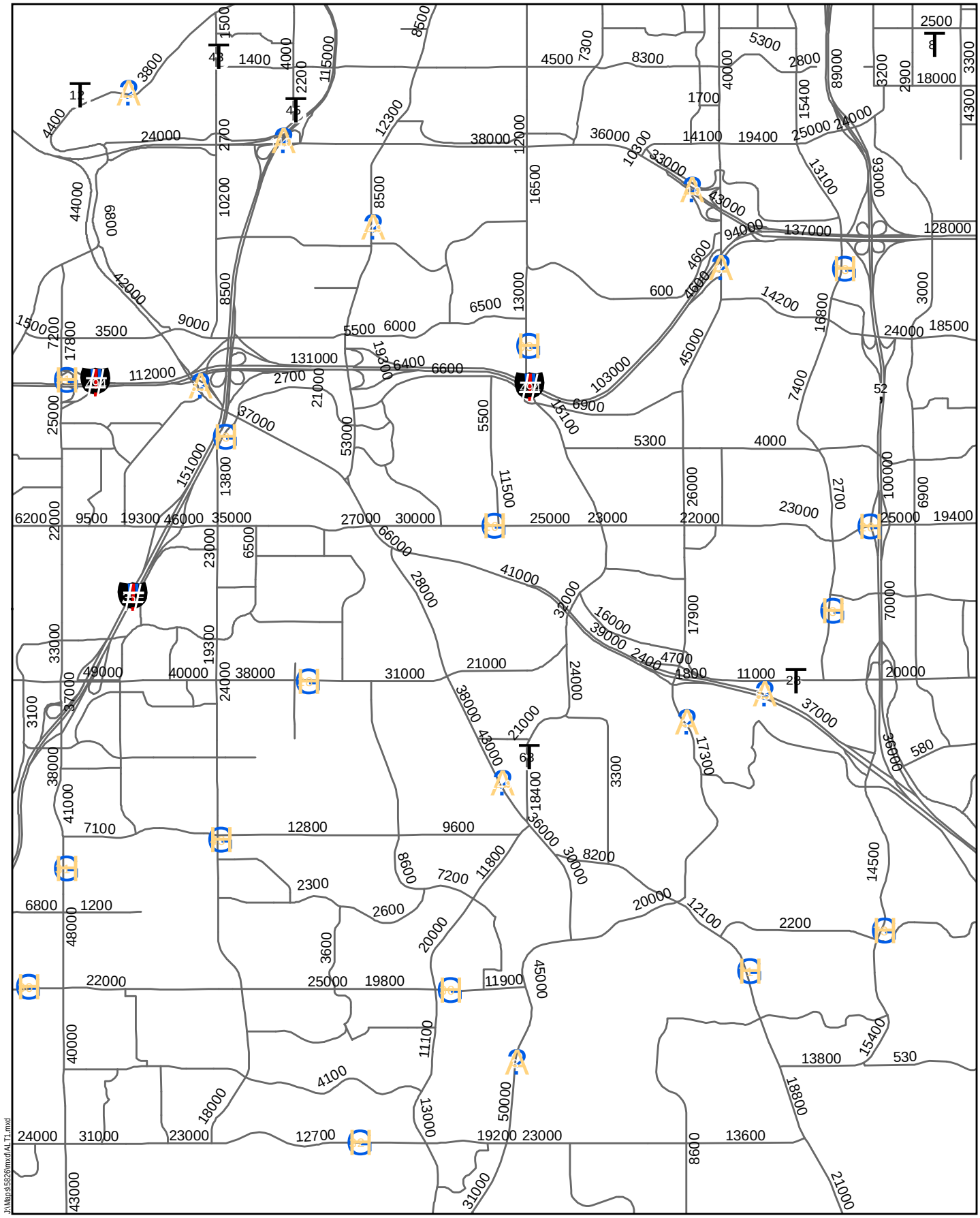
SRF Consulting Group, Inc.

Year 2000 Average Daily Traffic Volumes

Dakota County North - South Corridor Study

Dakota County

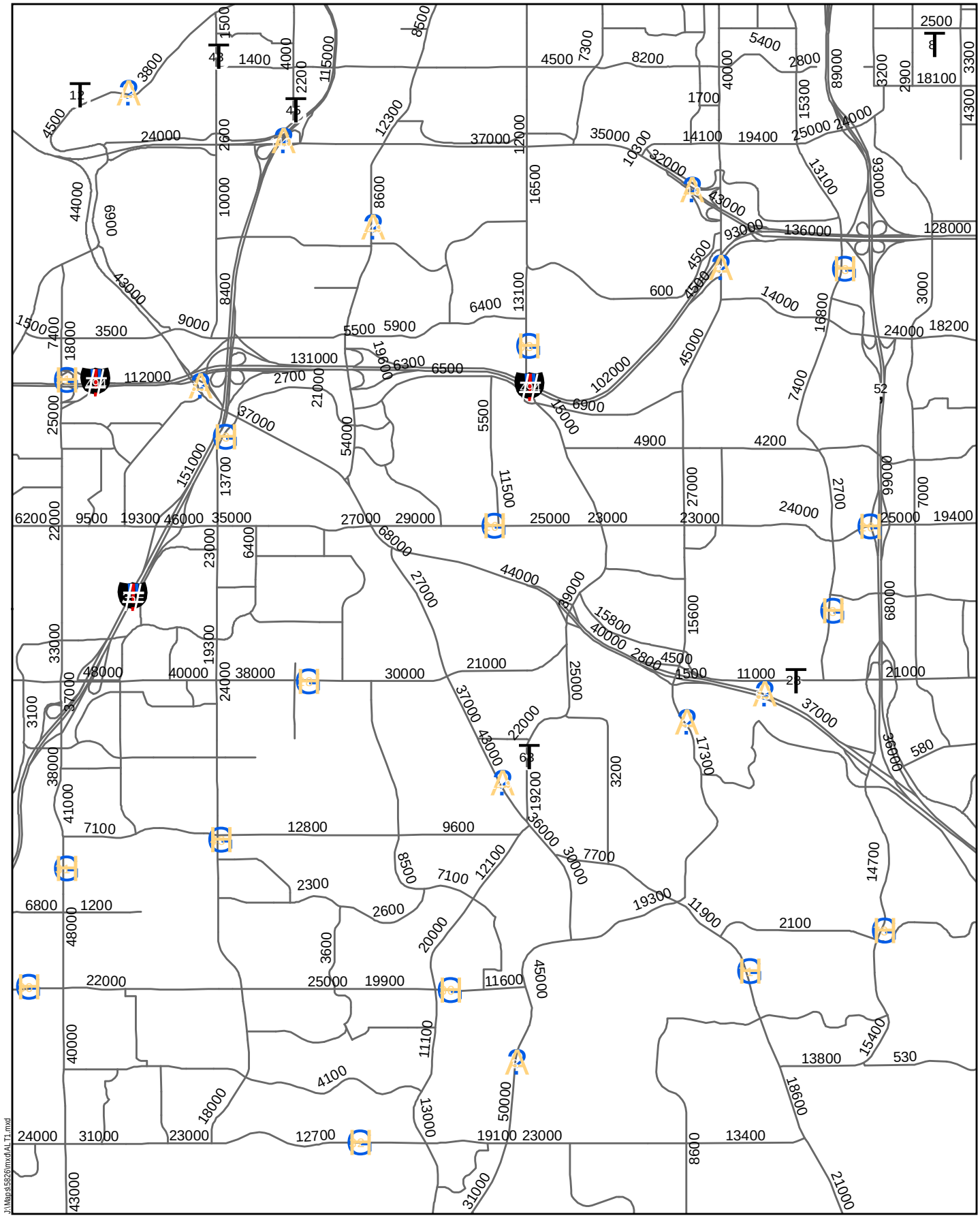
Figure 10



Baseline 2030 Planned/Programmed Improvements, Unconstrained Capacity In Study Area **Figure 11**

Dakota County North - South Corridor Study

Dakota County



SRF Consulting Group, Inc.

Interchange At TH 55 And CSAH 63 (Argenta Trail) (Draft Alt. 2)

Dakota County North - South Corridor Study

Dakota County

Figure 12

APPENDIX E:

Baseline Scenario and Assumed Scenario Improvements

Baseline Scenario and Assumed Scenario Improvements

A. Summary of Scenario 1: Baseline 2030

Description

The Baseline 2030 traffic forecasts (see Figure 7 and 8) include assumptions of planned and/or programmed improvements. The capacity in the study area used for the traffic assignment was unconstrained. This results in traffic forecasts that represent demand volumes for each roadway, rather than traffic that is distributed according to existing roadway capacities. The traffic volumes identified in this forecast are used to identify roadways that are expected to be over capacity in year 2030. Locations expected to be over capacity will be discussed under the improvement alternatives to evaluate whether analyzed improvements help to mitigate the congested areas.

Potential Traffic Impacts

Traffic forecasts indicate that daily volumes on a significant number of roadways are expected to be over capacity by year 2030. Daily ramp volumes of 14,000 to 16,000 are assumed to be "near capacity" and volumes greater than 16,000 vpd are assumed to be over capacity. Threshold volumes for four-lane and six-lane roadways are 12,000 vpd and 30,000 vpd, respectively. The capacity of a six-lane roadway is assumed to be 45,000 vpd. Some of these locations with large traffic volumes are the result of new development in the northeast Eagan and northwest Inver Grove Heights area. Other locations are expected to have large traffic volumes as a result of increased regional travel. Major movements in the study area include east-west through movements on TH 55. North-south movements occur most frequently on TH 3 and TH 149. TH 149 has two areas of concern for future congestion, both at the interchange with I-494 and in common section with TH 55. TH 3 and CR 63 (Argenta Trail) south of I-494 are both expected to be over capacity in year 2030 as these facilities will serve the new development area. South of CSAH 30, traffic to and from the new development area concentrates on TH 3, resulting in traffic volumes four times greater than the capacity of a two-lane road.

Stakeholder Issues

Many stakeholders in the study area are likely to be impacted by the Baseline 2030 traffic forecasts. Traffic volumes are expected to be over capacity on state, county, and local roadways. Improvements that are identified to help mitigate these issues will almost certainly require cooperation between these agencies. For example, development of a new interchange on I-494 will require analysis and documentation for both the Federal Highway Administration (FHWA) and the Minnesota Department of Transportation (Mn/DOT). However, supporting local roadways to provide access to new developments may be designed and implements primarily by local authorities. Therefore, cooperation in development of a complete and complementary network of roadways will be vital in solving anticipated congestion issues.

Segment Analysis

Roadway improvements would be required to accommodate the forecasted traffic volumes in the study area in year 2030. These include improvements on state, county, and local roadways. Table E-1 lists the improvements expected to be required. Improvements include expansion to four or six lanes if those roadways are expected to be over capacity. In some limited cases, the traffic forecasts show that a six-lane arterial facility would still be expected to be over capacity. In these cases, "6+" is used to illustrate that additional lanes or a grade-separated solution should be considered.

Table E-1: Additional Improvements in Study Area Required Under Baseline 2030

Roadway Type	Roadway Name	Segment	Existing Number of Lanes	Required Number of Lanes
State Highways	TH 3	North of Upper 55th St E	4	6
		Upper 55th St E to TH 149	2	4
		TH 149 to CSAH 32	2	6+
	TH 55	TH 110 to TH 52	4	6
	TH 110	I-35E to I-494	4	6
	TH 149	I-494 to TH 55	4	6
		Common section with TH 55	4	6+
		TH 55 to CSAH 28	2	4
		CSAH 28 to CR 71	2/4	6
		CSAH 71 to TH 3	2	4
County Roadways	CSAH 26	TH 149 to CSAH 73	2	4
	CSAH 28	I-35E to TH 149	4	6
		TH 149 to TH 55	2	4
	CSAH 30	Dodd Rd to TH 3	2	4
	CSAH 31	South of CSAH 26	4	6
	CR 63	North of TH 149	2	4
Local Roadways	Upper 55th St E	TH 3 to TH 52	2	4

B. Summary of I-494 and CSAH 63 Interchange Improvement (Project A)

Description of Improvement

Project A features a new interchange on I-494 at CR 63 (Delaware Avenue/Argenta Trail). The primary purposes of this improvement is to provide more direct access to the development area in northeast Eagan and northwest Inver Grove Heights and relief to the I-494/TH 149 interchange, which is expected to be over capacity by year 2030. This is also intended to reduce traffic volumes on TH 3 south of I-494, which is also expected to be over capacity by year 2030.

Potential Traffic Impacts

Traffic forecasts indicate that daily volumes at the I-494/TH 149 interchange and on TH 3 south of I-494 will still be over capacity with this improvement. At the I-494/ TH 149 interchange, the daily volume on the eastbound off ramp is expected to decrease from 21,000 to 16,800 vehicles per day (vpd), a reduction of 4,200 vpd. Daily ramp volumes of 14,000 to 16,000 are assumed to be "near capacity" and volumes greater than 16,000 vpd are assumed to be over capacity. Traffic volumes on TH 3 south of I-494 are expected to decrease by approximately 7,000 vpd to approximately 37,000 vpd, but are still well over the capacity of a two lane roadway (12,000 vpd). Table E-2 provides additional details of the main impacts of this project. Due to these traffic volumes, this improvement improves, but does not eliminate the anticipated congestion issues.

Table E-2: Changes in Daily Forecast Traffic Volumes

	2030 Vehicles Per Day	
	Baseline	Project A
TH 149 Ramps to West I-494	19,300/21,000	15,200/16,800
TH 3 South of I-494	45,000	37,000

Stakeholder Issues

Development of a new interchange on I-494 at CR 63 involves many benefits, challenges and impacts to stakeholders. The additional access to the interstate and the proximity of this interchange to the existing interchange at TH 149 will require additional analysis and discussion with Federal Highway Administration (FHWA) and Mn/DOT. However reducing traffic volumes at the TH 149 interchange and on TH 3 would be a benefit to the state highway system. Dakota County would benefit from this improvement by addressing the need for access to the development area from I-494. The issue of cost sharing for this improvement will need to be addressed since it is located on a county roadway. The Cities of Eagan and Inver Grove Heights are expected to benefit from this improvement by allowing access to the development area from the regional system. The planning and design of the interchange would need to take into account potential environmental impacts in Sunfish Lake and Mendota Heights, as well as Inver Grove Heights.

Segment Analysis

Roadway improvements would be required to accommodate the forecasted traffic volumes in the study area in year 2030. These include improvements on state, county, and local roadways. Table E-3 lists the improvements expected to be required. Improvements include expansion to four or six lanes if those roadways are expected to be over capacity. The threshold volumes for four-lane and six-lane roadways are 12,000 vpd and 30,000 vpd, respectively. The capacity of a six-lane roadway is assumed to be 45,000 vpd. In some limited cases, the traffic forecasts show that a six-lane arterial facility would still be expected to be over capacity. In these cases, "6+" is used to illustrate that additional lanes or a grade-separated solution should be considered.

Table E-3
Additional Improvements in Study Area Required

Roadway Type	Roadway Name	Segment	Existing Number of Lanes	Required Number of Lanes
State Highways	TH 3	North of Upper 55th St E	4	6
		Upper 55th St E to TH 149	2	4
		TH 149 to CSAH 32	2	6+
	TH 55	TH 110 to TH 52	4	6
	TH 110	I-35E to I-494	4	6
	TH 149	I-494 to TH 55	4	6
		Common section with TH 55	4	6+
		TH 55 to CSAH 28	2	4
		CSAH 28 to CR 71	2/4	6
		CSAH 71 to TH 3	2	4
County Roadways	CSAH 26	TH 149 to CSAH 73	2	4
	CSAH 28	I-35E to Elrene Rd	4	6
		TH 149 to TH 55	2	4
	CSAH 30	Dodd Rd to TH 3	2	4
	CSAH 31	South of CSAH 26	4	6
	CR 63	North of TH 149	2	4
Local Roadways	Upper 55th St E	TH 3 to TH 52	2	4

C. Summary of New I-494 Interchange Improvement between CR 63 and TH 3 (Project B)

Description of Improvement

Project B includes a new interchange on I-494 between CR 63 (Delaware Avenue/Argenta Trail) and TH 3. The primary purpose of this improvement is to provide access to the new development in northeast Eagan and northwest Inver Grove Heights, serve the regional north-south movements through the study area, and provide relief to the I-494/TH 149 interchange, which is expected to be over capacity by year 2030. Currently, there is no interchange on I-494 between TH 149 and TH 3 and trips to and from the new development on I-494 will need to use one of these existing interchanges.

Potential Traffic Impacts

Traffic forecasts indicate that daily volumes at the I-494/TH 149 interchange will still be over capacity with this improvement. Daily ramp volumes of 14,000 to 16,000 are assumed to be "near capacity" and volumes greater than 16,000 vpd are assumed to be over capacity. At the I-494/TH 149 interchange, the daily volume on the eastbound off ramp is expected to decrease from 21,000 to 17,600 vehicles per day (vpd), a reduction of 3,400 vpd. The west ramps of the new interchange are also expected to be over capacity with volumes greater than 16,000 vpd. CR 63 between the connection to the new interchange and TH 55 is expected to have a traffic volume of 46,000 vpd, which is larger than the capacity of a six-lane roadway. Traffic volumes on TH 3 between Jefferson Trail and I-494 are expected to decrease with this improvement, but are still greater than the existing capacity can accommodate. Table E-4 provides additional details of the main impacts of this project. Due to these traffic volumes, this improvement improves, but does not eliminate some of the anticipated congestion issues.

Table E-4
Changes in Daily Forecast Traffic Volumes

	2030 Vehicles Per Day	
	Baseline	Project B
I-494/TH 149 WB On Ramp	19,300	17,000
I-494/TH 149 EB Off Ramp	21,000	17,600
I-494/New Interchange EB On Ramp	-	16,400
I-494/New Interchange WB Off Ramp	-	16,000
CR 63 between new connection and TH 55	32,000	46,000

Stakeholder Issues

Development of a new interchange on I-494 involves many benefits, challenges and impacts to stakeholders. The additional access to the interstate and the proximity of this interchange to existing interchanges at TH 149 and TH 3 will require additional analysis and discussion with Federal Highway Administration (FHWA) and Mn/DOT. The

forecasted reduction in traffic volumes at the TH 149 interchange and on TH 3 would be a benefit to the state highway system. Dakota County would benefit from this improvement by serving the regional north-south movement and providing access for the new development area to and from I-494. The planning and design of the new interchange would need to take into account potential environmental impacts in Sunfish Lake, Mendota Heights, Eagan, and Inver Grove Heights.

Segment Analysis

Roadway improvements would be required to accommodate the forecasted traffic volumes in the study area in year 2030. These include improvements on state, county, and local roadways. Based on the traffic forecasts, Table E-5 lists the improvements needed to accommodate this project. Improvements include expansion to four or six lanes for existing roadways that are expected to be over capacity. The threshold volumes for four-lane and six-lane roadways are 12,000 vpd and 30,000 vpd, respectively. The capacity of a six-lane roadway is assumed to be 45,000 vpd. In some limited cases, the traffic forecasts show that a six-lane arterial facility would still be expected to be over capacity. In these cases, "6+" is used to illustrate that additional lanes or a grade-separated solution should be considered.

Table E-5
Additional Improvements in Study Area Required

Roadway Type	Roadway Name	Segment	Existing Number of Lanes	Required Number of Lanes
State Highways	TH 3	North of Upper 55th St E	4	6
		Upper 55th St E to TH 149	2	4
		South of TH 149	2	6+
	TH 55	TH 110 to TH 52	4	6+
	TH 110	I-35E to I-494	4	6
	TH 149	I-494 to TH 55	4	6
		Common section with TH 55	4	6+
		TH 55 to CSAH 28	2	4
		CSAH 28 to CR 71	2/4	6
		CSAH 71 to TH 3	2	4
County Roadways	CSAH 26	TH 149 to CSAH 73	2	4
	CSAH 28	I-35E to Elrene Rd	4	6
		TH 149 to TH 55	2	4
	CSAH 30	Dodd Rd to TH 3	2	4
	CSAH 31	South of CSAH 26	4	6
	CR 63	New Connection to TH 55	2	6+
		TH 55 to TH 149	2	4
Local Roadways	Upper 55th St E	TH 3 to TH 52	2	4
New Roadways	New Interchange Connection	I-494 to CR 63	-	6

D. Summary of I-494 and TH 55 Direct Connections Improvement (Project D)

Description of Improvement

Project D includes new ramp connections between west I-494 and East TH 55. The primary purpose of this improvement is to serve the regional east-west movement using these roads and provide relief to the I-494/TH 149 interchange, which is expected to be over capacity by year 2030. Currently, there is no connection between TH 55 and I-494 and trips making this movement must use the I-494/TH 149 interchange or other option.

Potential Traffic Impacts

Traffic forecasts indicate that daily volumes at the I-494/TH 149 interchange will still be near or over capacity with this improvement. Daily ramp volumes of 14,000 to 16,000 are assumed to be "near capacity" and volumes greater than 16,000 vpd are assumed to be over capacity. At the I-494/TH 149 interchange, the daily volume on the eastbound off ramp is expected to decrease from 21,000 to 14,300 vehicles per day (vpd), a reduction of 6,700 vpd. An additional impact is to TH 55 between TH 149 and I-494. Under the Baseline scenario, the 2030 traffic volume expected on this segment is 37,000 vpd. With the Project D improvement this volume is anticipated to increase to 49,000 vpd, which is larger than the capacity of a six-lane roadway. Table E-6 provides additional details of the main impacts of this project. Due to these traffic volumes, this improvement improves, but does not eliminate some of the anticipated congestion issues.

Table E-6
Changes in Daily Forecast Traffic Volumes

	2030 Vehicles Per Day	
	Baseline	Project D
I-494/TH 149 WB On Ramp	19,300	14,300
I-494/TH 149 EB Off Ramp	21,000	14,300
TH 55 between I-494 and TH 149	37,000	49,000

Stakeholder Issues

Development of a new interchange on I-494 at TH 55 involves many benefits, challenges and impacts to stakeholders. The additional access to the interstate and the proximity of this interchange to the existing interchange at I-35E will require additional analysis and discussion with Federal Highway Administration (FHWA) and Mn/DOT. However reducing traffic volumes at the TH 149 interchange would be a benefit to the state highway system. Dakota County would benefit from this improvement by serving the regional movement between east TH 55 and west I-494. The planning and design of the interchange would need to take into account potential environmental impacts in Mendota Heights and Eagan.

Segment Analysis

Roadway improvements would be required to accommodate the forecasted traffic volumes in the study area in year 2030. These include improvements on state, county, and local roadways. Table E-7 lists the improvements expected to be required. Improvements include expansion to four or six lanes if those roadways are expected to be over capacity. The threshold volumes for four-lane and six-lane roadways are 12,000 vpd and 30,000 vpd, respectively. The capacity of a six-lane roadway is assumed to be 45,000 vpd. In some limited cases, the traffic forecasts show that a six-lane arterial facility would still be expected to be over capacity. In these cases, "6+" is used to illustrate that additional lanes or a grade-separated solution should be considered.

Table E-7
Additional Improvements in Study Area Required

Roadway Type	Roadway Name	Segment	Existing Number of Lanes	Required Number of Lanes
State Highways	TH 3	North of Upper 55th St E	4	6
		Upper 55th St E to TH 149	2	4
		South of TH 149	2	6+
	TH 55	TH 110 to I-494	4	6
		I-494 to TH 149	4	6+
		TH 149 to TH 52	4	6
	TH 110	I-35E to I-494	4	6
	TH 149	I-494 to TH 55	4	6
		Common section with TH 55	4	6+
		TH 55 to CSAH 28	2	4
		CSAH 28 to CR 71	2/4	6
		CSAH 71 to TH 3	2	4
County Roadways	CSAH 26	TH 149 to CSAH 73	2	4
	CSAH 28	I-35E to Elrene Rd	4	6
		TH 149 to TH 55	2	4
	CSAH 30	Dodd Rd to TH 3	2	4
	CSAH 31	South of CSAH 26	4	6
	CR 63	North of TH 149	2	4
Local Roadways	Upper 55th St E	TH 3 to TH 52	2	4

Scenario 8

Description of Improvement

Scenario 8 includes a new interchange on I-494 between CR 63 (Delaware Avenue/Argenta Trail) and TH 3, connections from west I-494 to east TH 55, a new interchange on TH 55 at CR 63, and a new southern alignment for CR 63. These improvements are intended to address a number of issues, including providing access to the new development in northeast Eagan and northwest Inver Grove Heights, serving the regional north-south movements through the study area, and providing relief to the I-494/TH 149 interchange, which is expected to be over capacity by 2030. Taken together, a north-south corridor is created in the study area by the combination of the new interchanges on I-494 and TH 55 and the new southern alignment. The I-494/TH 55 connections are intended to help serve this regional east-west movement.

Potential Traffic Impacts

Traffic forecasts indicate that daily volumes at the I-494/TH 149 interchange will be below capacity with this improvement. Daily ramp volumes of 14,000 to 16,000 are assumed to be "near capacity" and volumes greater than 16,000 vpd are assumed to be over capacity. At the I-494/TH 149 interchange, the daily volume on the eastbound off ramp is expected to decrease from 21,000 to 12,500 vehicles per day (vpd), a reduction of 8,500 vpd. The west ramps of the new interchange are expected to be over capacity with volumes greater than 16,000 vpd. CR 63 between the connection to the new interchange and TH 55 is expected to have a traffic volume of 48,000 vpd, which is larger than the capacity of a six-lane roadway. Traffic volumes on TH 3 between Jefferson Trail and I-494 are expected to decrease with this improvement, but are still greater than the existing capacity can accommodate. CR 63 is not expected to exceed the capacity of a two-lane roadway north of the new interchange connection under this alternative. Table 1 provides additional details of the main impacts of this scenario. Due to these traffic volumes, this improvement does not eliminate some of the anticipated congestion issues.

APPENDIX F:

Federal Highway Administration, Minnesota Division

Guidance for Preparation of an Interstate Access Request

INSERT PDF titled “Appendix F –
FHWA Minnesota Division – IJR – Guide”

APPENDIX G:

Metropolitan Council
Transportation Policy Plan Appendix I:

Evaluation Criteria and Review Procedures for Highway Interchange Requests